

Avaya Solution & Interoperability Test Lab

Application Notes for Dialogic[™] Brooktrout[™] SR140 SDK 6.4.0 Fax Software with Avaya IP Office 7.0 – Issue 1.0

Abstract

These Application Notes describe the compliance testing of Dialogic[™] Brooktrout[™] SR140 Fax Software and with Avaya IP Office. Dialogic Brooktrout SR140 Fax Software is a host base Fax over IP engine that sends and receives fax.

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

The purpose of this document is to explain the integration of Avaya IP Office (IPO) with DialogicTM BrooktroutTM SR140 Fax Software (SR140). The SR140 registers to IPO as a SIP end point and is able to send and receive fax to both local and remote systems.

2. General Test Approach and Test Results

All tests were performed manually. Only functional testing was performed: no performance testing was done.

2.1. Interoperability Compliance Testing

The following tests were performed as part of the compliance testing.

- SR140 can successfully register to IPO as SIP endpoint.
- SR140 can send and receive fax within the local IPO system.
- SR140 can send and receive fax with the remote Avaya CS1000 system (emulated PSTN).
- SR140 can send and receive multiple pages of fax.
- SR140 can send and receive fax when ECM value is enabled and disabled.

2.2. Test Results

All tests produced the expected result.

2.3. Support

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

- URL <u>http://www.dialogic.com/support/cims.aspx</u>
- Phone 973-993-1443

3. Reference Configuration

Figure 1 illustrates the configuration which was used for testing.





4. Equipment and Software Validated

Software Component	Version
Avaya IP Office 500 Control Unit	7.0
Avaya IP Office Manager	9.0
Avaya Communication Server 1000	7.5
Avaya Aura® Session Manager	6.1
Dialogic Brooktrout Fax Server OS	Windows XP SP2
Dialogic [™] Brooktrout [™] SR140	SDK 6.4.0

Note that T.38 is only supported on IP Office 500 hardware. It requires IP Office to be equipped with VCM 32 or VCM 64 voice compression modules. One VCM channel is used for each fax call.

Also IP Office Admin Suite is installed on a separate PC connected via local LAN. It is used to configure the Avaya IP Office 500 control unit.

5. Configure IP Office

The configuration and verification operations illustrated in this section were performed using the Avaya IP Office Manager program from the system it is installed on. When this program is started, a tree structure consisting of icons representing the configurable components of the system is displayed as shown in **Figure 2**. When one of these icons is selected, the corresponding system component can be configured.

Assumption is made that Avaya CS1000 can communicate to IPO via Session Manager using SIP. This is required for emulated PSTN testing. For complete information on IPO and CS1000 installation and configuration refer to **Section 9[1]**.



Figure 2: IPO Manager Component Tree

This section explains the configuration of the following components of IP Office that is required for the compliance testing:

- System Configuration.
- Extension Configuration.
- User Configuration.

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SPOC 10/14/2011	

5.1. Licensing

Avaya IP Telephones and SIP telephones included in the configuration each consume an Avaya IP Endpoint and 3rd Party IP Endpoint license respectively. For complete information on Licensing refer to documents referred in Section 9[1].

5.2. System Configuration

Select the **System** icon shown in **Figure 2** and enter the **IP Address** and **IP Mask** of the IPO as shown in **Figure 3** below. Click on **OK** to continue.

2					r - × •	< >
System LAN1 LAN2 DNS	Voicemail Telephony	Directory Services	System Events	SMTP SMDR	Twinning VCM CCR	
LAN Settings VoIP Network	Topology SIP Registrar					
IP Address	10 · 10 · 10 ·	1				
IP Mask	255 255 255	240				
Primary Trans. IP Address	0.0.0.	0				
RIP Mode	RIP 2 Broadcast (RIP 1	Compatibil 🐱				
	Enable NAT					
Number Of DHCP IP Addresses	1					
DHCP Mode						
Server O Client O D	ialin 💿 Disabled	A	dvanced			
				QK OK		Help

Figure 3: System Parameters: LAN1

5.3. Extension Configuration

This section explains the steps to add an extension. During compliance testing two extensions were added. One analogue extension was added to serve the fax machine and another SIP extension was added to serve the SR140.

An analogue extension can be selected from the **Extension** icon seen in **Figure 2**. During compliance testing an **Extension ID** of **25** was selected and the **Base Extension** was populated with **225**. The rest of the fields are left at default as shown in **Figure 4** below.

	Analogue Extension: 25 225	☆ • × √ < >
Extn Analogue		
Extension Id	25	
Base Extension	225	
Caller Display Type	On 🗸	
Device type	Analogue Handset	
Module	BP2	
Port	1	
		QK <u>C</u> ancel <u>H</u> elp

Figure 4: Configuring an Analogue Extension

To configure this analogue extension as a fax port, select the **FAX Machine** radio button under the **Analogue** tab as shown in **Figure 5** below. Click on **OK** to complete the configuration.

,	Analogue Extension: 25 225	☆ • × • < >
Extn Analogue		
Equipment Classification Quiet Headset Paging Speaker Standard Telephone Door Phone 1 Door Phone 2 VIR Port	Flash Hook Pulse Width Use System Defaults Minimum Width 20 ms Maximum Width 500 ms C-Message Waiting Lamp Indication Type	
FAX Machine MOH Source	None	
	Hook Persistency 100	🗘 ms
	ζ	QK <u>C</u> ancel <u>H</u> elp

Figure 5: Configuring an Analogue Extension to be FAX port

To add a new SIP extension, right-click the **Extension** icon shown in **Figure 2** and select **New > SIP Extension** (not shown). Set the **Base Extension** parameter to the extension to be assigned, and accept the default values for the remaining parameters as shown in **Figure 6** below.

XXX	SIP Extension: 8007 28007	📸 • 🗙 • < >
Extn VoIP T38 Fax		
Extension Id	8007	
Base Extension	28007	
Caller Display Type	On 💉	
Reset Volume After Calls		
Device type	Unknown SIP device	
Module	0	
Port	0	
Force Authorization		
	<u>o</u> k	Cancel <u>H</u> elp

Figure 6: Adding a SIP Extension

In the **VoIP** tab select **T38** from the Fax Transport Support drop down menu as shown in **Figure 7** below. The rest of the fields are left at default.

1	SIP Extension: 8007 280	07*	→ × × × × × × × × × × × × × × × × × × ×
Extn VoIP 738 Fax			
IP Address	β · ο · ο · ο	VoIP Silence Suppression	
Compression Mode	Automatic Select 🗸	Local Hold Music	
Fax Transport Support	Т38	🗹 Allow Direct Media Path	
TDM->IP Gain	Default	🔽 Re-invite Supported	
IP->TDM Gain	Default	Use Offerer's Preferred Codec	
DTMF Support	RFC2833	Reserve Avaya IP endpoint license	
		Reserve 3rd party IP endpoint lice	nse
		<u>о</u> к	<u>Cancel</u> <u>H</u> elp

Figure 7: Adding Fax transport Support to the SIP Extension

All values in the **T38 Fax** tab are left at default as shown in **Figure 8** below. Click on **OK** to complete the configuration of adding a SIP extension.

XXX	SIP Extension:	8007 28007	📸 • 🗙 • < >
Extn VoIP T38 Fax	>		
T38 Fax Version Transport Redundancy Low Speed High Speed TCF Method Max Bit Rate (bps) EFlag Start Timer (msecs) EFlag Stop Timer (msecs) Tx Network Timeout (secs) V Use Default Values	3 UDPTL	 Scan Line Fix-up TFOP Enhancement Disable T30 ECM Disable EFlags For First DIS Disable T30 MR Compression NSF Override Country Code Vendor Code 	
			Cancel Help

Figure 8: T38 Fax Tab

5.4. User Configuration

This section explains the steps of assigning the Users to the Extensions created in Section 5.3.

Right-click the User icon shown in Figure 2 and select New (not shown) to create a user for each of the extension created in Section 5.3.

Figure 9 shows the configuration of the user being assigned to the analogue extension. Populate the Name and Full Name fields and enter the analogue extension created from Section 5.3 in the Extension field. The rest of the fields are left at default. Click on OK to complete the configuration.

				Extn225	500:22	5			🗗 - 🗙	✓ <
Jser	Voicemail	DND	ShortCodes	Source Numbers	Telephony	Forwarding	Dial In	Voice Recording	Button Programming	Menu Pr
Name			Extn22	5 500						
Passw	vord									
Confir	m Password									
Full Na	ame		Extn 2	25 IPO						
Exten	ision		225							
Locale								~		
Priorit	.Y		5					~		
Syster	m Phone Riq	hts	None					~		
Profile	e		Basic L	lser				~		
			Rec	eptionist						
			Ena	ble SoftPhone						
			Ena	ble one-X Portal Se	rvices					
			Ena	ble one-X TeleCom	muter					
			Ex I	Directory						

Figure 9: Assigning User to Analogue Extension

Figure 10 shows the configuration of the user being assigned to the SIP extension. Populate the Name, Password, Confirm Password and Full Name fields. Enter the SIP extension created from Section 5.3 in the Extension field. The rest of the fields are left at default.

×××					ipfax:	28007					- ¹	X	 I 	< >
L	lser	Voicemail	DND	ShortCodes	Source Numbers	Telephony	Forwarding	Dial In	Voice Recording	Buttor	Progra	nming	Menu i	Pr ∢ ≻
$\left \right $	Name			ipfax										^
	Passw	ord		****										
	Confin	m Password		***										
	Full Na	me		ipfax										
	Extens	sion		28007										
	Locale								*					
	Priority	/		5					*					
	Syster	n Phone Rig	hts	None					*					
	Profile			Basic U	ser				*					
				🗌 Rece	eptionist									
				Enal	ole SoftPhone									
				📃 Enal	ole one-X Portal Ser	vices								
				Enal	ole one-X TeleComr	nuter								
				Ex D	irectory									~
									Ōĸ		Cano	el	H	elp

Figure 10: Assigning User to SIP Extension

Re-type the password from Figure 10 in the Login Code field under the Telephony > Superviosr Settings tab as shown in Figure 11 below. Leave the rest of the fields at default values and click on OK to complete the configuration.

	ipfax: 28007			🗗 - 🗙	✓ < >
User Voicemail DND S	hortCodes Source Numbers Telephor	V Forwarding	Dial In Voice Recording	Button Programming	Menu Pr 🔹 🕨
Call Settings Supervisor Set	tings Multi-line Options Call Log				
Login Code	****		Force Login		
Login Idle Period (secs)			Force Account Code		
Monitor Group	<none></none>	~			
Coverage Group	<none></none>	~			
Status on No-Answer	Logged On (No change)	✓	Outgoing Call Bar		
Reset Longest Idle Time] Inhibit Off-Switch Forward	d/Transfer	
 All Calls 			Can Intrude		
O External Incoming			Cannot be Intruded		
) Can Trace Calls		
Ofter Call Work Time (cecc)	System Default (10)	A	Automatic After Call Work		
Pircor Cair Work Time (Secs)		V			
<		IIII			>
			OK		Help

Figure 11: Login Code configuration

The above SIP user assigned during compliance testing will be later used by the SR140 to register to IPO.

6. Configure Dialogic Brooktrout Fax Server

The section explains the steps to configure the SR140 so that it can register to IPO as a SIP client and then be able to send and receive fax. Assumption is made that the Dialogic Brooktrout Fax Software SDK v6.4.0 is installed successfully with the *fdtool.exe* and the correct licenses are installed.

6.1. Brooktrout Configuration

On the server where the SDK is successfully installed, navigate to Start > All Programs > Brooktrout Configuration (not shown). Figure 12 below shows the main configuration screen. Click on Next to proceed.



Figure 12: Brooktrout Configuration Tool

Figure 13 shows the hardware confi	guration. Click on Next to proceed.
------------------------------------	-------------------------------------

X	Hardware Infor	mation			^
	Bo	Board Information - Module 0x41			
	Name		Value		
	Board Name:		SR140		
	Number of Ports:		0		
	Number of Voice Chan	e Channels: 2			
Jialogic I	Number of Fax Channe	els:	2		
Ŭ	Description:		Virtual Modu	e: SR140	
	Software Inform	nation Version		Build	
	Boston Bfv API	6.4.1		3	
	Bostop Driver	640		1	

Figure 13: Hardware Information

Figure 14 shows the Protocol Selection screen. Select the SIP radio button and click on Next to continue.



Figure 14: Protocol Selection

Select the ways the calls need to be routed. For SR140 integration with IPO the **Dynamic** routing by a Proxy server radio button was selected as shown in Figure 15 below. Click on Next to proceed.



Figure 15: Call Routing Selection

Specify the IP address and Port number of the IPO as the **Primary Proxy Server** as shown in **Figure 16** below (during compliance testing the IP address of IPO was 10.10.10.1 and the port number was 5060). Leave the remaining field at default and click on **Next** to continue.



Figure 16: SIP Proxy Server Setup

Select the **Yes** radio button to setup SIP Registrar and click on **Next** to continue as shown in **Figure 17** below.

Brooktrout Configuration Tool - 1	Wizard Mode	Shared	X
	SIP Registrar Setup		
	A SIP Registrar is used for registering your current location so that incoming calls can appropriately by a SIP Proxy Server. Do you want to register your location with a SIP Registrar Server?	be routed	
Dialogic	© Mes © No		
	Help < Back Next >	<u>C</u> ancel	

Figure 17: SIP Registrar Setup

Populate the fields marked in red with the appropriate values as shown in **Figure 18** below. The IP address and port numbers are for IPO (as shown in Figure 16). The username and password are the same as the values configured in **Section 5.4**. Click on **Next** to continue.



Figure 18: SIP Registrar Server Setup

Additional SIP Registrar Servers can be setup. However for compliance testing only one was setup and therefore select **No** in the radio button as shown on **Figure 19** below and click in **Next** to continue.



Figure 19: Completing SIP Registrar Server Setup

Figure 20 shows the Fax Setup screen. During compliance testing the Maximum Bit Rate was left at the default value of 14400. Click on Next to continue.



Figure 20: Fax Setup

Figure 21 shows the completion of the Brooktrout Configuration Tool. Click on Apply to complete the configuration.



Figure 21: Configuration Complete

To configure the **Contact IPv4 Address**, start the Brooktrout Configuration Tool as explained in **Section 6.1** and click on **Advanced Mode** as shown in **Figure 22** below.



Figure 22: Accessing Advanced Mode

Figure 23 asks user the confirmation to exit Wizard Mode and launch Advanced Mode. Click on Yes to launch Advanced Mode.



Figure 23: Confirmation to launch Advanced Mode

In Advanced Mode select SIP and then the IP Parameters tab as shown in Figure 24 below.

Figure 24: Accessing IP Parameters tab

Enter the IP Address of the SR140 server in the **Contact IPv4 Address** field as shown in **Figure 25** below. Click on **Save** and **Apply** in that order.

Brooktrout Configuration Tool - Advance File View Options Help	ed Mode	Shared 📃 🗙
Home Back Next Save Apply	😒 🥊 🍞 License Help	
- Brooktrout (Boston Host Service - Running) Driver Parameters (All boards)	General Information IP Parameters T.38 Parameter	s RTP Parameters
- BTCall Parameters (All boards)	Maximum SIP Sessions:	256
→ Call Control Parameters Module 0x41: SR140	Primary Gateway:	:0
i⊟- IP Call Control Modules	Primary Proxy Server:	10.10.10.1
	Additional Proxy Server #2:	:0
	Additional Proxy Server #3:	:0
	Additional Proxy Server #4:	:0
	Primary Registrar Server URL:	10.10.10.1 : 5060
	Additional Registrar Server #2:	:0
	Additional Registrar Server #3:	:0
	Additional Registrar Server #4:	:0
	From Value:	28007@10.10.10.1
	Contact IPv4 Address:	10 . 10 . 10 . 20 5060
	Username:	28007
	Session Name:	no_session_name
	Session Description:	
	Description URI:	

Figure 25: Configuring Contact IPv4 Address

6.2. Launching fdtool

fdtool.exe file is installed as part of the SR140 SDK 6.4.0. **fdtool** is used to send and receive the fax and to launch it, double-click on the *fdtool.exe* from the path it is installed on.

Figures 26a and **26b** shows the main screen of fdtool when it has been initialized and a fax has been successfully sent to an extension 225.

: <u>T</u> ools <u>H</u> elp	r 46.4.0 Build 1			Shared
Configure	Initialize SR140 [41]	Dia	al Reset I	Dial All Reset A
erations remain	ning O	Iterations:	-	Stop All Hide
Channel	Status	Dialstring		
01 - 001/000	Waiting for call	(225)		
02 - 000/000	Waiting for call			
	1			
Port History	Channel 1			
09:59:41.719	Dialling "225"			
	Connected			
09:59:59.407				
09:59:59.407 09:59:59.407	Sending "faxqualsend.tif"			
09:59:59.407 09:59:59.407 09:59:59.422	Sending "faxqualsend.tif" Local ID is "fdtool"			-
09:59:59.407 09:59:59.407 09:59:59.422 09:59:59.438	Sending "faxqualsend.tif" Local ID is "fdtool" Start Sending fax			
09:59:59.407 09:59:59.407 09:59:59.422 09:59:59.438 09:59:59.434	Sending "faxqualsend.tif" Local ID is "fdtool" Start Sending fax Getting Remote ID			
09:59:59.407 09:59:59.407 09:59:59.422 09:59:59.438 09:59:59.454 10:00:03.250	Sending "faxqualsend.tif" Local ID is "fdtool" Start Sending fax Getting Remote ID Remote ID is ""			

Figure 26a: fdtool

	Initialize SR140 [41]		•	Dial	Reset	Dial All	Reset A
terations remain	ing O	Iteratio	ins:			Stop All	Hide
Channel	Status	Dialstring					
01 - 001/000	Waiting for call	225					
02 - 000/000	Waiting for call						
Port History	Channel 1						
10:01:08.469	Summary						
10:01:08.469	Total Pages = 1						
10:01:08.485	Duration = 69 seconds						
10:01:08.485	ECM = enable, with 256 byte fi	rames					
10:01:08.485	Line Format = MMR						
	Send complete.						
10:01:08.500							
10:01:08.500 10:01:08.547	Terminating call						

Figure 26b: fdtool (cont)

7. Verification Steps

The following tests were conducted to verify the success of the integration:

- Registration of SR140 server to IPO was confirmed through wireshark traces.
- Single and multi-page faxes were sent from the SR140 to a physical fax machine and vice versa.
- ECM value on the SR140 was disabled and faxes were successfully sent.

8. Conclusion

All of the executed test cases have passed and met the objectives outlined in **Section 2**. The Dialogic Brooktrout Fax Software v6.4.0 is considered compliant with Avaya IP Office Release 7.0.

9. Additional References

[1] Product documentation for Avaya products may be found at: <u>https://support.avaya.com/css/Products/</u>

[2] Product documentation for Dialogic Brooktrout SR140 may be found at: <u>http://www.dialogic.com/products/ip_enabled/FoIP/SR_140.htm</u>

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