



**Dialogic® Brooktrout® SR140 Fax Software with
Avaya IP Office 7.0 and Avaya IP Office 500 Control Unit**
Installation and Configuration Integration Note

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1 Scope

This document is intended as a general guide for configuring a basic installation of the **Avaya IP Office 7.0 and Avaya IP Office 500 Control Unit** for use with Dialogic® Brooktrout® SR140 Fax over IP (FoIP) software platform. The interoperability includes SIP call control and T.38/T.30 media.

This document is not intended to be comprehensive, and thus does not replace the manufacturer's detailed configuration documentation. Users of this document should already have a general knowledge of how to install and configure the **Avaya IP Office 7.0 and Avaya IP Office 500 Control Unit**.

The sample configuration shown and/or referred in the subsequent sections was used for **Avaya DevConnect IP Office Release 7.0 certification testing** performed at **Avaya DevConnect Labs**. Therefore, it is quite possible that the sample configuration will not match an exact configuration or versions that would be present in a deployed environment. However, the sample configuration does provide a possible starting point to work with the equipment vendor for configuring your device. Please consult the appropriate manufacturer's documentation for details on setting up your specific end user configuration.

For ease of reference, the Dialogic® Brooktrout® SR140 Fax Software and Dialogic® Brooktrout® TR1034 Fax Boards will sometimes be denoted herein, respectively, as SR140 and TR1034. The **Avaya IP Office 7.0** will be denoted herein as Avaya IPO 7.0 and the **Avaya IP Office 500 Control Unit** will be denoted Avaya IPO 500, or some other form thereof. All references to the SDK herein refer to the Dialogic® Brooktrout® Fax Products SDK.

2 Configuration Details

The following systems were used for the sample configuration described in the document.

2.1 Avaya IP Office 7.0 and Avaya IP Office 500 Control Unit

Vendor	Avaya
SW Model	IP Office Release 7.0
Hardware	IP Office 500 V2
Firmware Version	7.0 (5)
IP Device	Dialogic® Brooktrout® SR140 Fax Server
Protocol to SR140 Fax Software	SIP
Additional Notes	• T.38 is supported on IP Office 500 hardware. • Either VCM 32 or VCM 64 modules are required. • IP Office "Third party IP endpoint license" is needed.

2.2 Dialogic® Brooktrout® SR140 Fax Software

Vendor	<i>Dialogic</i>
Model	<i>Dialogic® Brooktrout® SR140 Fax Software</i>
Software Version	<i>Tested with SDK 6.4.0</i>
Protocol to IPO 500	<i>SIP</i>
callctrl.cfg file	<i>All defaults except the SR140 was configured as a SIP Client and the Avaya IPO as a SIP Registrar as described in Section 6, Figures 17 and 18.</i>

2.3 Network System Configuration

The diagram below details the sample configuration used in connection with this document.

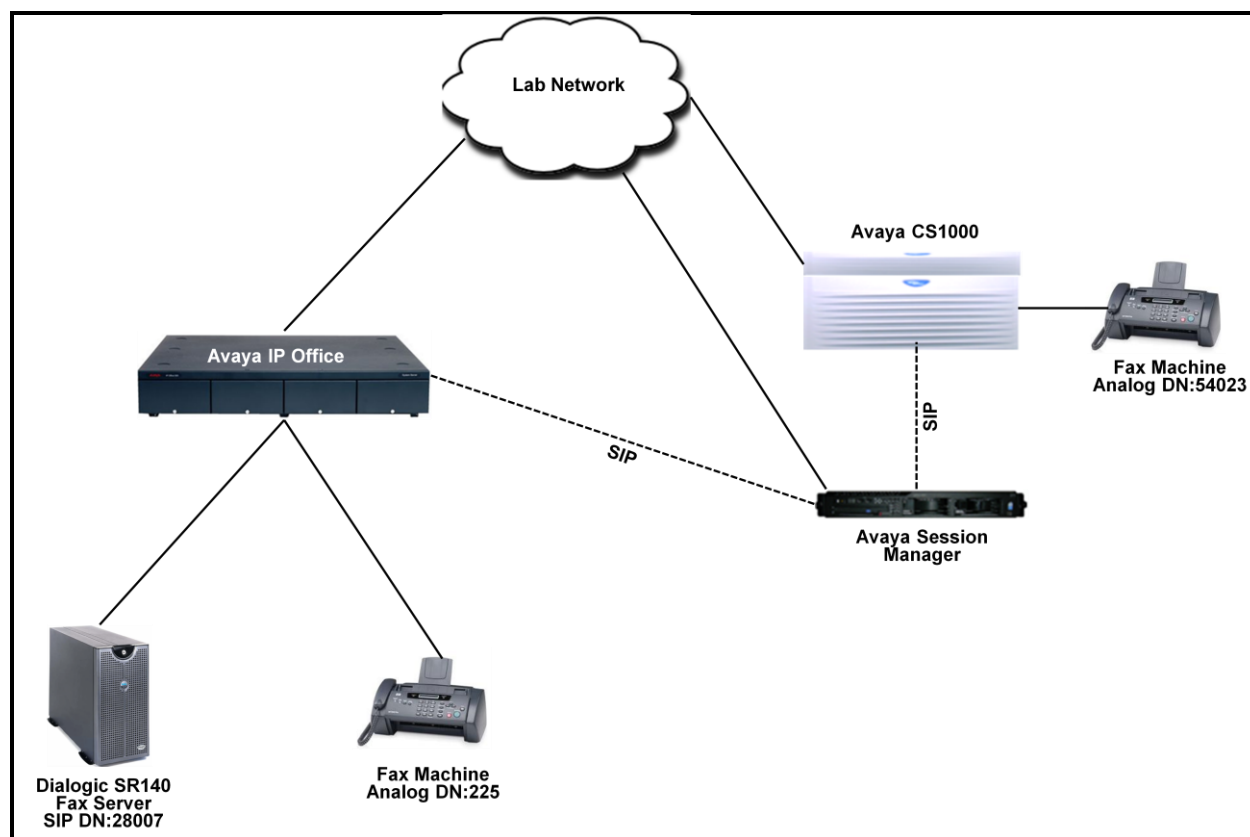


Figure 1: SR140-IPO Lab Configuration

- SR140 Fax Server = Fax Server including Dialogic® Brooktrout® SR140 Fax Software and a test fax application.

3 Prerequisites

Avaya IP Office Release 7.0 supports T.38 FoIP and requires the following hardware and license to support T.38 Fax over IP.

- Avaya IP Office 500 hardware
- Either VCM 32 or VCM 64 modules
- IP Office "Third party IP endpoint license"

4 Summary of Limitations

- None

5 Avaya IP Office Setup Notes

5.1 Network Addresses

The following table lists the IP addresses and their descriptions used in subsequent sections.

Device #	Device Make, Model, and Description	Device IP Address
1	IP Office	10.10.10.1
2	SR140 Fax Server	10.10.10.20

5.2 Avaya IP Office Configuration

The configuration and verification operations illustrated in this section were performed using the Avaya IP Office Manager program installed on its own system. 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 the Avaya CS1000 can communicate to the IPO via the Session Manager using SIP. This is required for emulated PSTN testing. The CS1000 installation and configuration information is outside of the scope of this IP Office Configuration Guide.

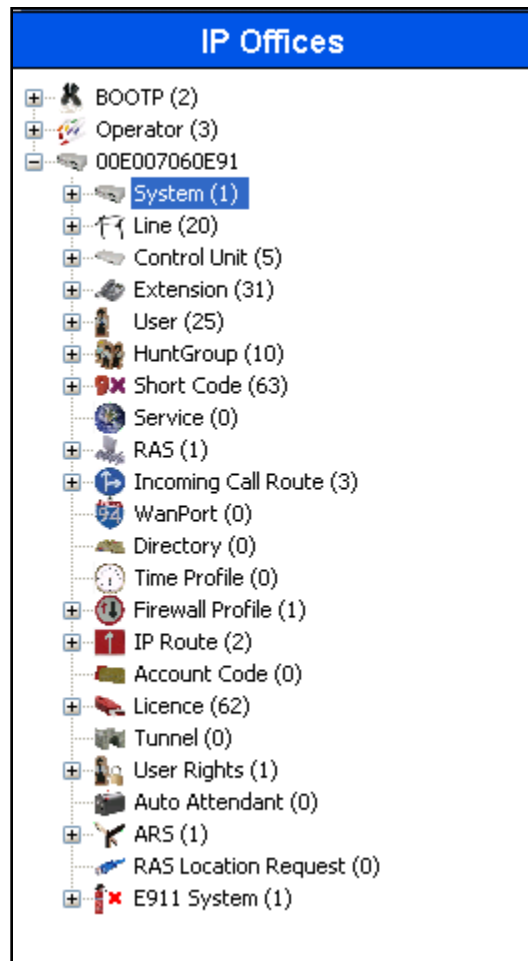


Figure 2: IPO Manager Component Tree

The next sections explain how the following components were configured for compliance testing:

- Licensing
- System Configuration
- Extension Configuration
- User Configuration

5.2.1 Licensing

IP Telephones and SIP telephones included in the configuration each consume an **Avaya IP Endpoint** license. In order to use a SIP endpoint with IP Office, a "Third party IP endpoint license" is needed. Additional information on Avaya IPO Licensing may be found in the Avaya documentation posted on the Avaya Support website. Refer to [Section 9\[1\]](#) for a link to the Avaya documentation.

5.2.2 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 **OK** to continue.

System Parameters: LAN1

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 ☐ Client ☐ Dialin ☒ Disabled

Advanced

OK Cancel Help

Figure 3: System Parameters: LAN1

5.2.3 Extension Configuration

This section explains the steps to set up a User extension within IP Office. 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 fax server.

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](#).

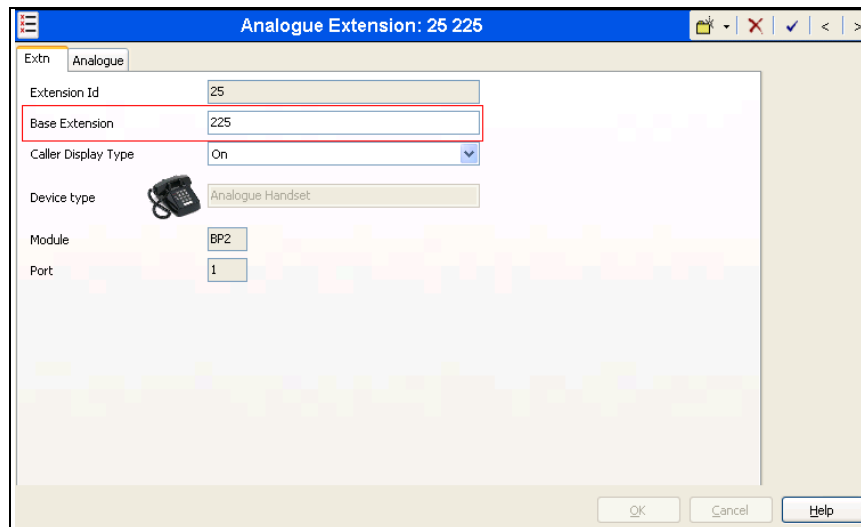


Figure 4: Configuring an Analogue Extension

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

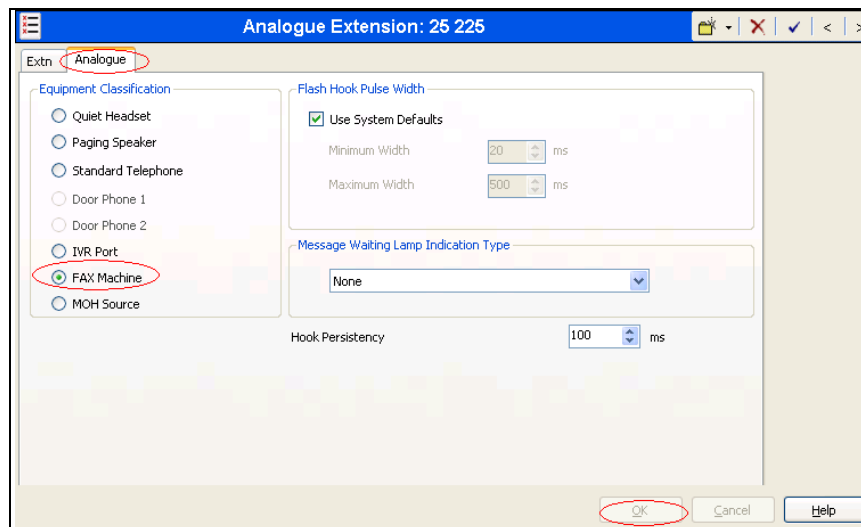


Figure 5: Configuring an Analogue Extension to be FAX port

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](#).

SIP Extension: 8007 28007

Ext'n 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 ☒

OK Cancel Help

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](#). Leave the remaining fields at their default values and click **OK**.

SIP Extension: 8007 28007

Ext'n VoIP T38 Fax

IP Address 0 . 0 . 0 . 0

Compression Mode Automatic Select

Fax Transport Support T38

TDM->IP Gain Default

IP->TDM Gain Default

DTMF Support Inband

☐ VoIP Silence Suppression

☐ Local Hold Music

☒ Allow Direct Media Path

☒ Re-invite Supported

☐ Use Offerer's Preferred Codec

☐ Reserve Avaya IP endpoint license

☐ Reserve 3rd party IP endpoint license

OK Cancel Help

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**. Click **OK** to complete the configuration of adding a SIP extension.

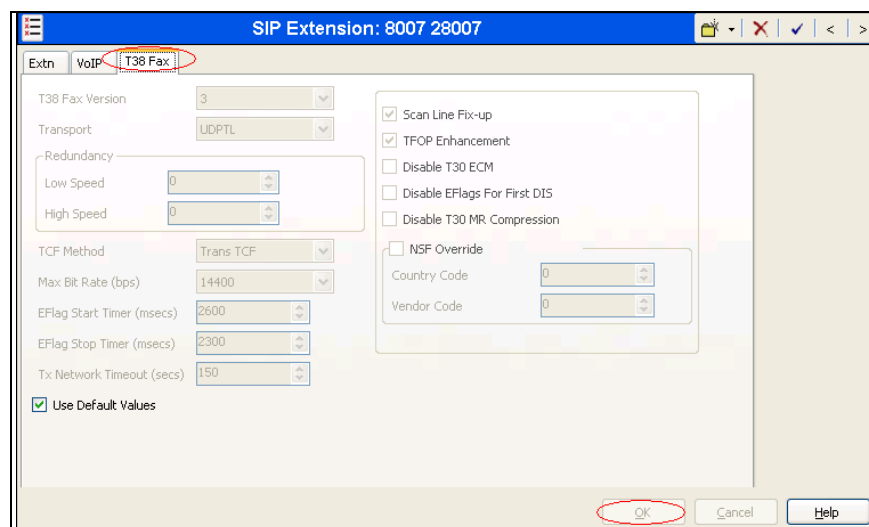
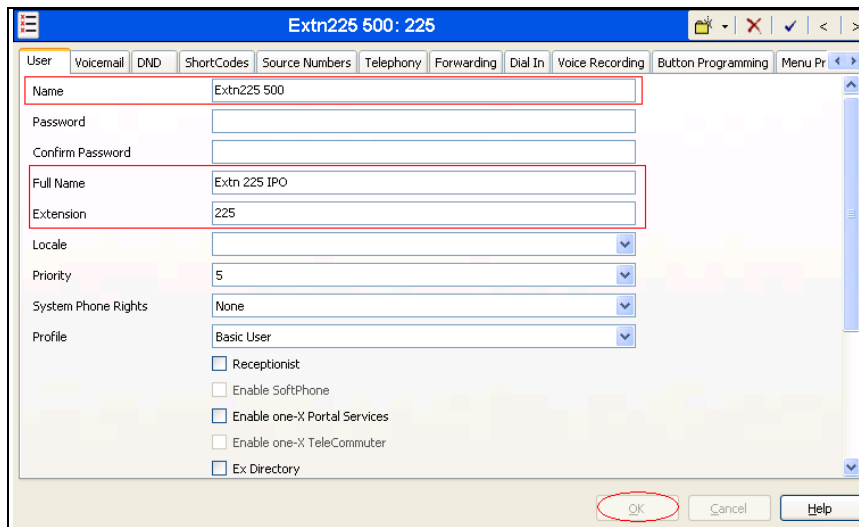


Figure 8: T38 Fax Tab

5.2.4 User Configuration

This section explains the steps to assign the Users or endpoints to the Extensions created in [Section 5.2.3](#). Right-click the **User** icon shown in [Figure 2](#) and select **New** (not shown) to create a user for each of the extensions created in [Section 5.2.3](#).

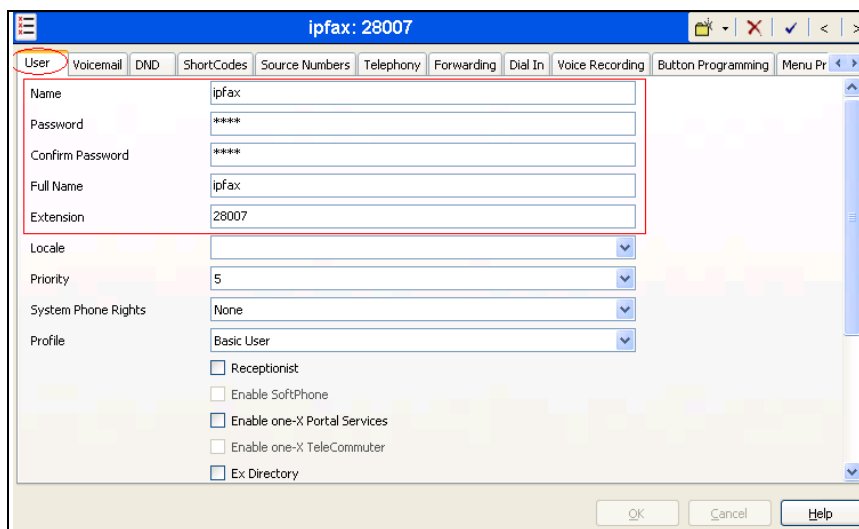
Figure 9 shows the configuration of the user being assigned to the analogue extension. Populate the **Name** and **Full Name** fields and enter the analogue extension created from [Section 5.2.3](#) in the **Extension** field. Leave the remaining fields at their default values and click **OK**.



The screenshot shows a configuration window titled "Extn225 500: 225". It has a tabbed interface with "User" selected. The "Name" field contains "Extn225 500" and the "Full Name" field contains "Extn 225 IPO". The "Extension" field contains "225". Other fields like "Password", "Confirm Password", "Locale", "Priority", "System Phone Rights", and "Profile" are at their default values. The "OK" button is circled in red.

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 5.2.3](#) in the **Extension** field. Leave the remaining fields at their default values and click **OK**.



The screenshot shows a configuration window titled "ipfax: 28007". It has a tabbed interface with "User" selected. The "Name" field contains "ipfax", "Password" and "Confirm Password" contain "****", and "Full Name" contains "ipfax". The "Extension" field contains "28007". Other fields like "Locale", "Priority", "System Phone Rights", and "Profile" are at their default values. The "OK" button is circled in red.

Figure 10: Assigning User to SIP Extension

Re-type the password from **Figure 10** into the **Login Code** field under the **Telephony > Supervisor Settings** tab as shown in **Figure 11**. Leave the remaining fields at default values and click **OK** to complete the configuration.

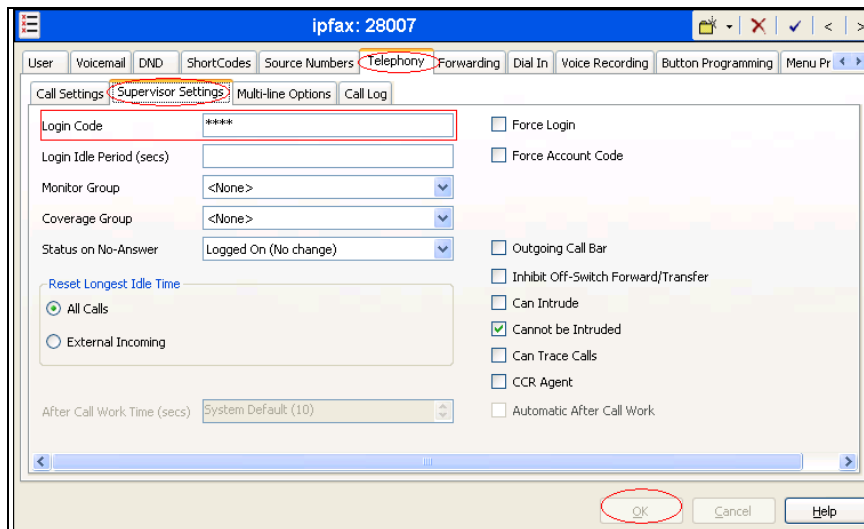


Figure 11: Login Code configuration

Note: The above SIP user assigned extension settings will be used when registering the SR140 to IPO as explained in [Section 6.1](#).

6 Dialogic® Brooktrout® SR140 Software Setup Notes

This section explains the steps to configure as well as how to register the SR140 as a SIP Client with IP Office. Once completed, the SR140 will be able to send and receive faxes through IP Office. It is assumed Dialogic Brooktrout Fax Software SDK v6.4.0 fdtool.exe and SR140 license are installed successfully on the fax server.

6.1 SR140 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 **Next** to proceed.

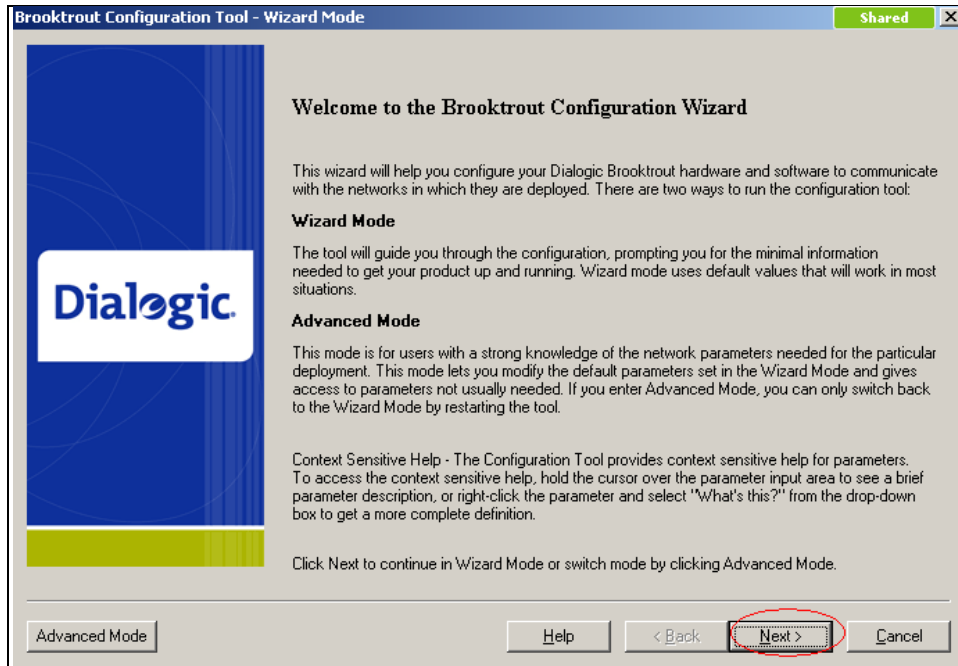


Figure 12: Brooktrout Configuration Tool

Figure 13 shows the hardware configuration. Click **Next** to proceed.

The screenshot shows the 'Brooktrout Configuration Tool - Wizard Mode' window. On the left is a blue sidebar with the Dialogic logo. The main area is titled 'System Report' and contains two sections: 'Hardware Information' and 'Software Information'. The 'Hardware Information' section includes a table for 'Board Information - Module 0x41' with the following data:

Name	Value
Board Name:	SR140
Number of Ports:	0
Number of Voice Channels:	120
Number of Fax Channels:	120
Description:	Virtual Module: SR140

The 'Software Information' section includes a table with the following data:

Name	Version	Build
Boston Bfv API	6.4.0	2
Boston Driver	6.4.0	1

At the bottom of the window are buttons for 'Help', '< Back', 'Next >', and 'Cancel'.

Figure 13: Hardware Information

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

The screenshot shows the 'Brooktrout Configuration Tool - Wizard Mode' window at the 'Protocol Selection' step. The left sidebar with the Dialogic logo is present. The main area has the title 'Protocol Selection' and the following text: 'This product supports two standards for placing and receiving calls in an IP Network. Please select the IP Call Control protocol used in your network and click Next to continue.' Below this text are two radio buttons: 'SIP' (which is selected and circled in red) and 'H.323'. At the bottom of the window are buttons for 'Help', '< Back', 'Next >' (which is also circled in red), and 'Cancel'.

Figure 14: Protocol Selection

For SR140 integration with IPO, select the **Dynamic routing by a Proxy server** radio button as shown in **Figure 15** below. Click **Next** to proceed.

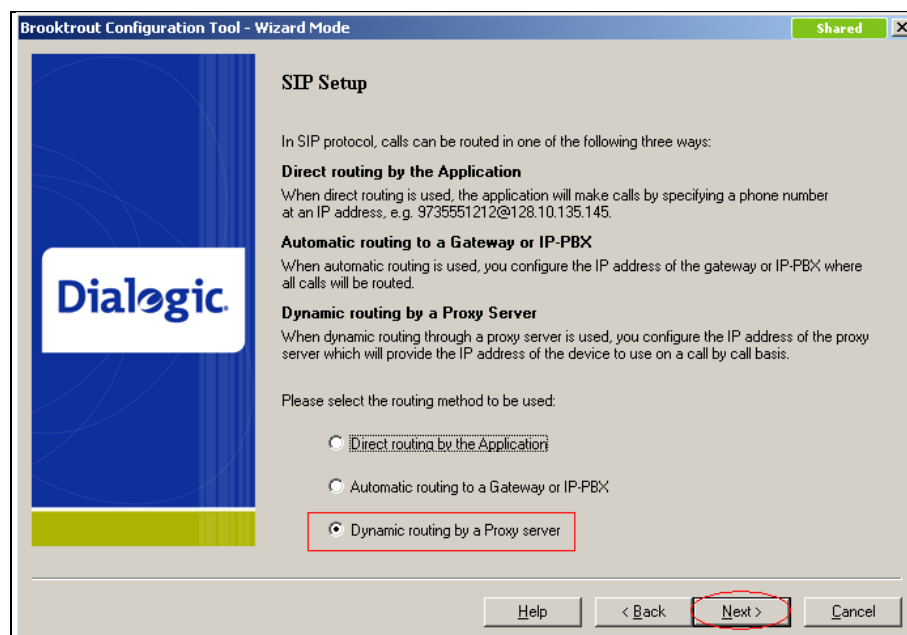


Figure 15: Call Routing Selection

Enter the IP address and Port number of the IPO into the **Primary Proxy Server** field as shown in **Figure 16** (during compliance testing the IP address of the IPO was 10.10.10.1 and the port number was 5060). Leave the remaining fields at their default values and click **Next**.

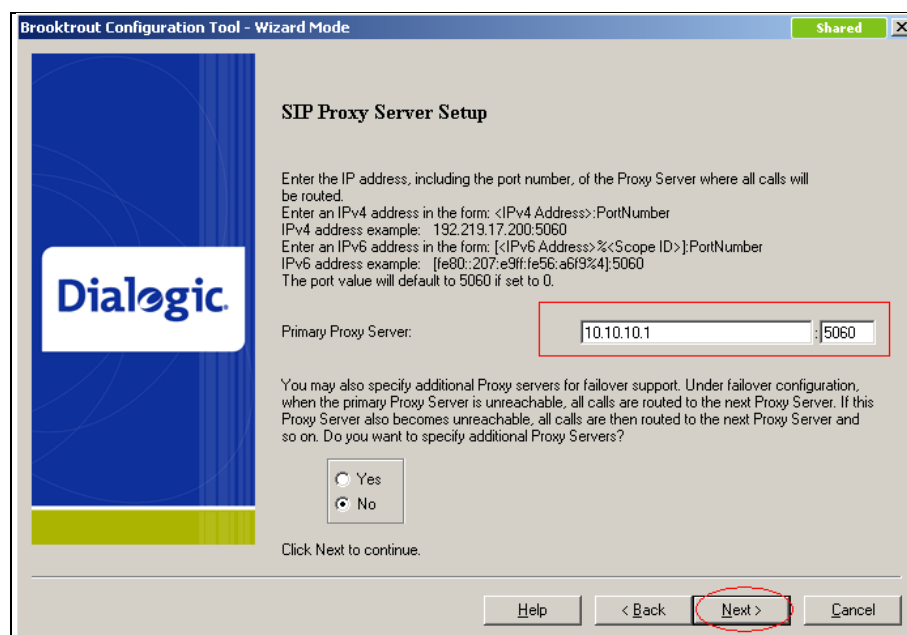


Figure 16: SIP Proxy Server Setup

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

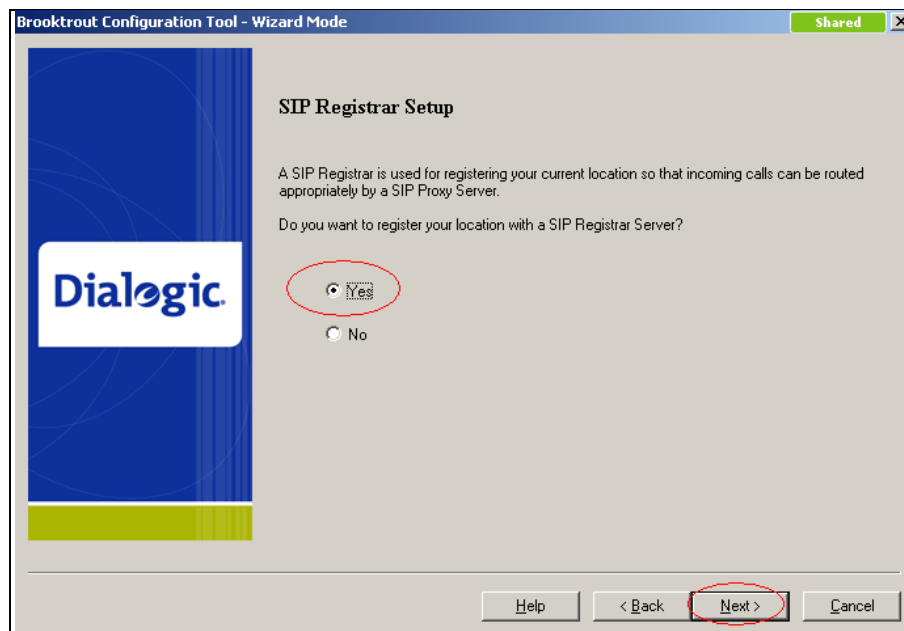


Figure 17: SIP Registrar Setup

Populate the fields marked in red with the appropriate values as shown in **Figure 18**. The IP address and port numbers are for the IPO (same as in Figure 16). The username and password are the same as configured in Figure 10 in [Section 5.2.4](#). Click **Next** to continue.

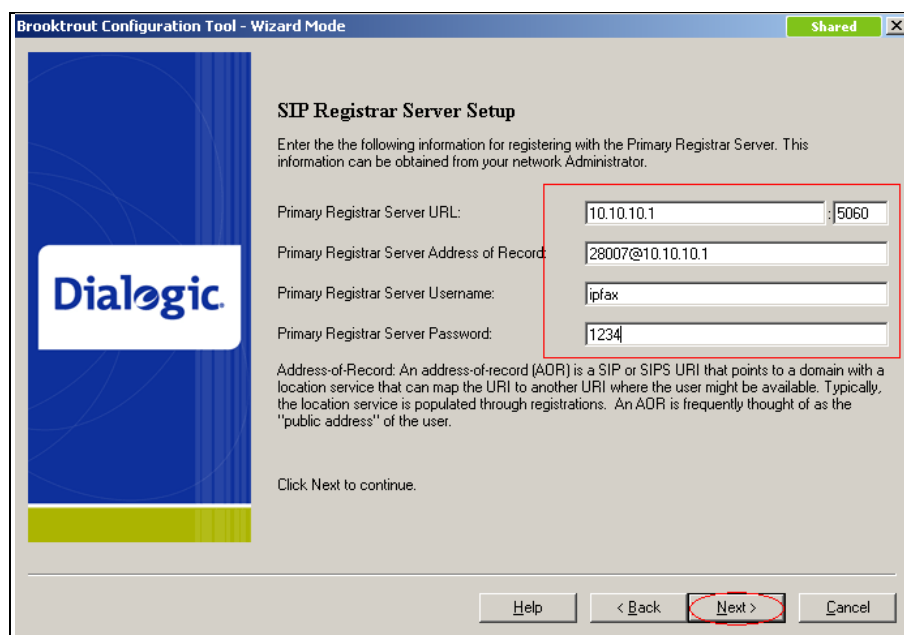


Figure 18: SIP Registrar Server Setup

Additional SIP Registrar Servers can be set up; however, for compliance testing only one was setup and therefore the **No** radio button was selected as shown on **Figure 19**. Click **Next** to continue.

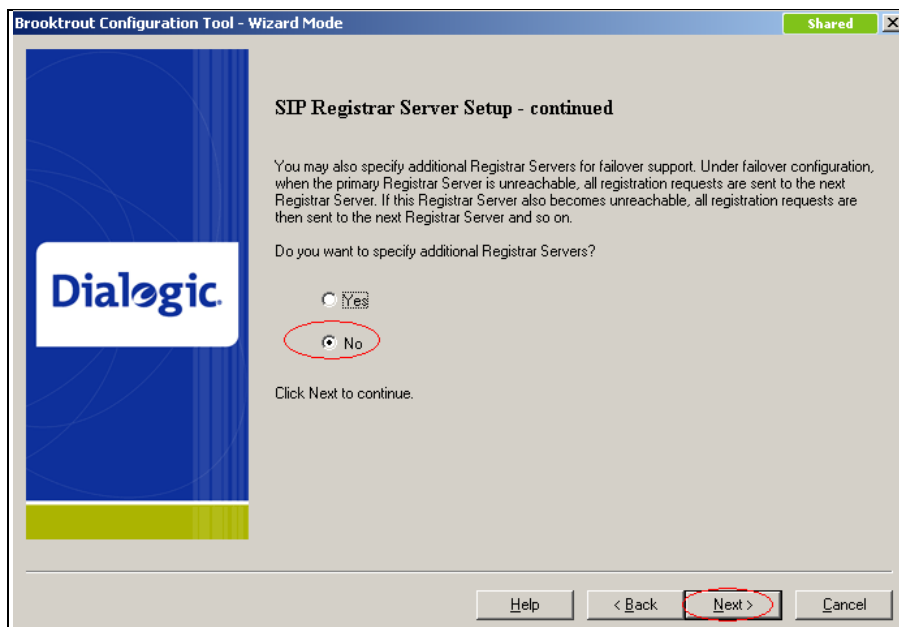


Figure 19: Completing SIP Registrar Server Setup

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

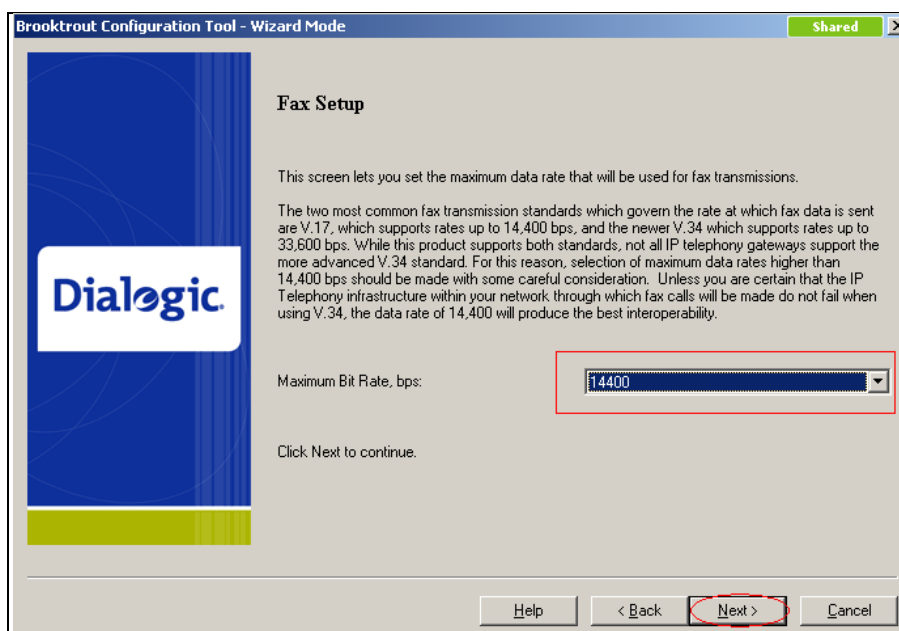


Figure 20: Fax Setup

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

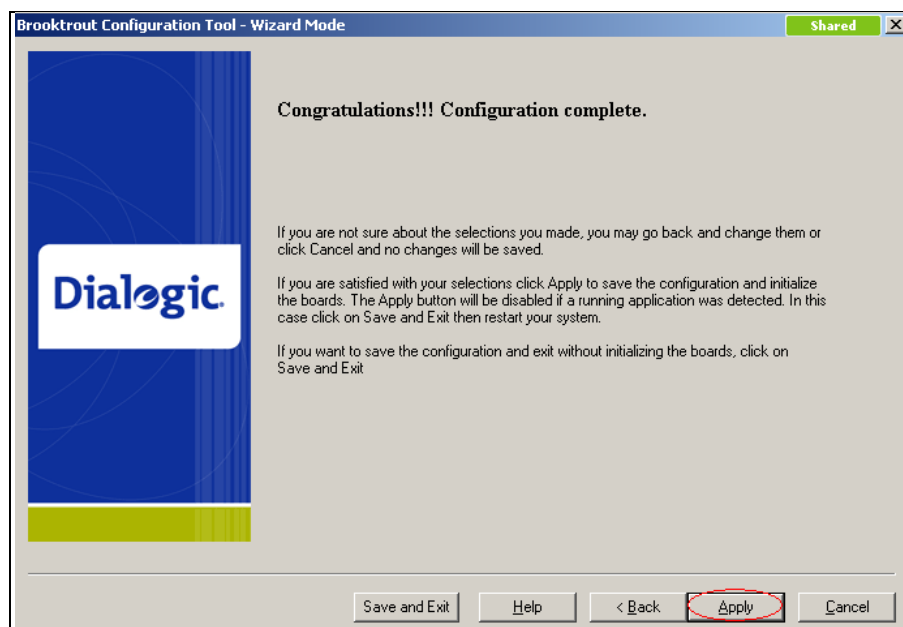


Figure 21: Configuration Complete

To configure the **Contact IPv4 Address**, start the Brooktrout Configuration Tool by navigating to **Start > All Programs > Brooktrout Configuration** (not shown) and click **Advanced Mode** as shown in Figure 22.



Figure 22: Accessing Advanced Mode

Click **Yes** to launch Advanced Mode as shown in **Figure 23**.

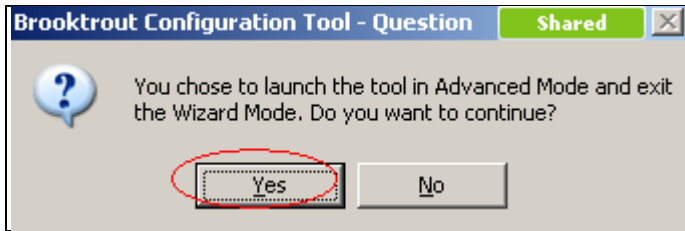


Figure 23: Confirmation to launch Advanced Mode

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

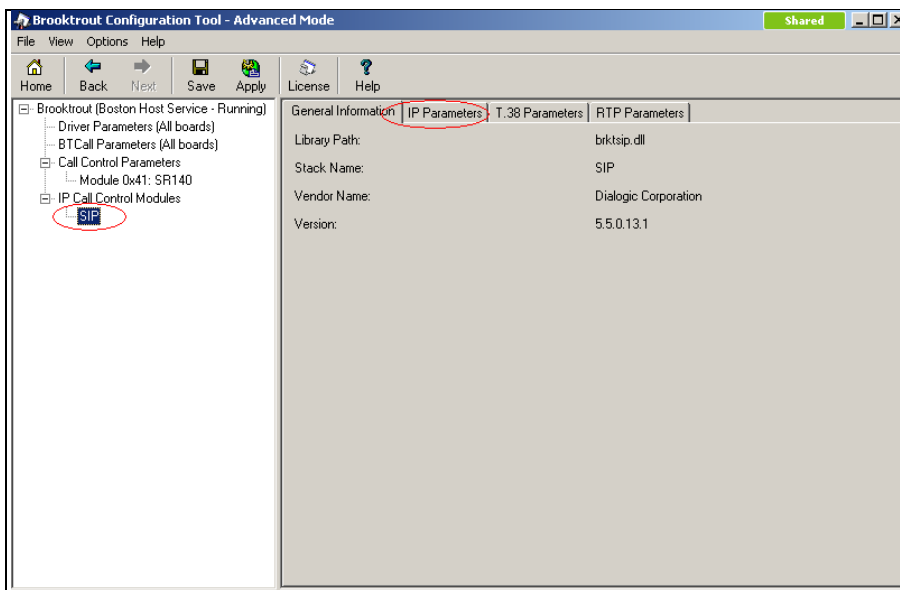


Figure 24: Accessing IP Parameters tab

Enter the IP Address of the SR140 server in the **Contact IPv4 Address** field as shown in **Figure 25**. Click **Save** followed by **Apply**.

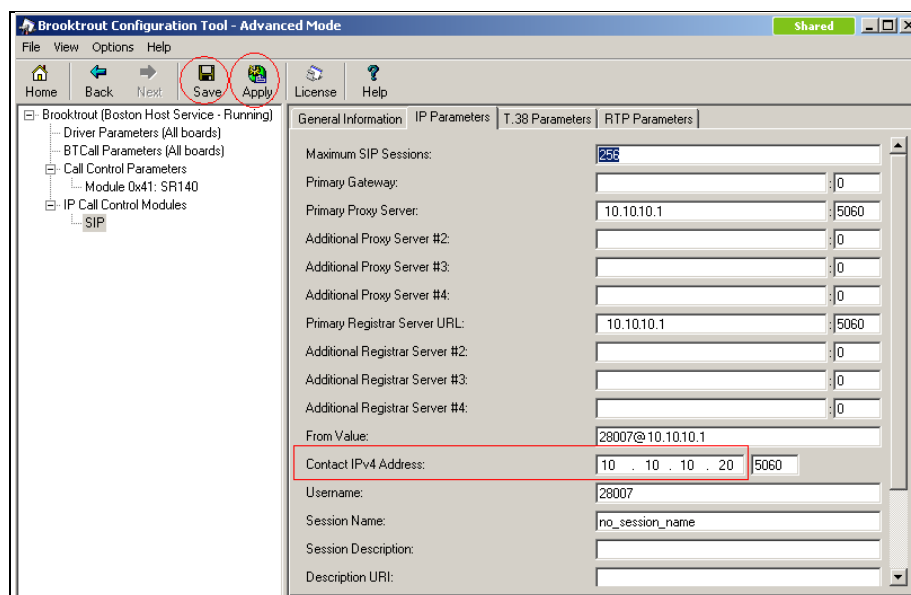


Figure 25: Configuring Contact IPv4 Address

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 multiple pages 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 Conclusions

All of the executed test cases passed and met the objectives outlined in [Section 2](#). The Dialogic Brooktrout SR140 Fax Software v6.4.0 is considered compliant with Avaya IP Office Release 7.0 by the Avaya DevConnect Technical Team as of August 12, 2011.



9 Additional References

[1] Product documentation for Avaya products may be found at:

<https://support.avaya.com/css/Products/>

[2] Product documentation for Dialogic Brooktrout SR140 may be found at:

http://www.dialogic.com/products/ip_enabled/FoIP/SR_140.htm

10 Frequently Asked Questions

- *"I'm configured as near as possible to this the sample configuration described in this document, but calls are still not successful; what is my next step?"*
 - ➔ Provide this document to your gateway support.
 - ➔ Ensure T.38 is enabled on the gateway.
 - ➔ Confirm that basic network access is possible by pinging the gateway.
- *"How do I obtain Wireshark traces?"*
 - ➔ The traces can be viewed using the Wireshark network analyzer program, which can be freely downloaded from <http://www.wireshark.org>.
 - ➔ To view the call flow in Wireshark, open the desired network trace file and select "Statistics->VoIP Calls" from the drop down menu. Then highlight the call and click on the "Graph" button.