Avaya Solution & Interoperability Test Lab

Application Notes for OpenText RightFax with Avaya IP Office 9.1 – Issue 1.0

Abstract

These Application Notes describe the configuration steps required for OpenText RightFax to interoperate with Avaya IP Office 9.1. OpenText RightFax is a fax server application that uses the SIP trunk interface with T.38 fax from Avaya IP Office to send and receive fax.

Readers should pay attention to **Section 2**, in particular the scope of testing as outlined in **Section 2.1** as well as the observations noted in **Section 2.2**, to ensure that their own use cases are adequately covered by this scope and results.

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 configuration steps required for OpenText RightFax to interoperate with Avaya IP Office 9.1. OpenText RightFax is a fax server application that uses the SIP trunk interface with T.38 fax from Avaya IP Office 500 V2 to send and receive fax.

For each user on Avaya IP Office desired to use fax, a fax extension is assigned and configured on OpenText RightFax. Incoming fax is routed by Avaya IP Office to OpenText RightFax via an available SIP channel. The received incoming fax can be viewed by the fax user using the RightFax FaxUtil application. Similarly, outgoing fax can be sent by the fax user via the same application.

2. General Test Approach and Test Results

The feature test cases were performed manually. Fax calls to and from RightFax were made. The faxes were sent and received using the RightFax FaxUtil application and an analog fax machine at the PSTN.

The serviceability test cases were performed manually by disconnecting and reconnecting the Ethernet connection to RightFax and rebooting the RightFax server.

DevConnect Compliance Testing is conducted jointly by Avaya and DevConnect members. The jointly-defined test plan focuses on exercising APIs and/or standards-based interfaces pertinent to the interoperability of the tested products and their functionalities. DevConnect Compliance Testing is not intended to substitute full product performance or feature testing performed by DevConnect members, nor is it to be construed as an endorsement by Avaya of the suitability or completeness of a DevConnect member's solution.

2.1. Interoperability Compliance Testing

The compliance testing included feature and serviceability areas.

The feature testing focused on verifying the following on RightFax:

- Proper handling of faxes via SIP trunk with T.38: send/receive, internal fax, external fax over ISDN (PRI), simultaneous bi-directional faxes, and miscellaneous failure scenarios.
- Proper handling of faxes with different pages, resolutions, complexity, paper sizes, and data rates.
- No adverse impact on the internal and external VoIP calls during fax transmission.

The serviceability testing focused on verifying the ability of RightFax to recover from adverse conditions, such as disconnecting/reconnecting the Ethernet connection to RightFax and rebooting the RightFax server.

2.2. Test Results

All test cases were executed and verified as successful with the following observations,

- Sending of faxes from RightFax fails when the transmission rate is set to 4800 and 2400 on the RightFax and the Avaya IP Office SIP trunk.
- When the connection to RightFax is lost either due to Ethernet disconnect or server reboot, only the pages sent or received before the above occurs are received.

2.3. Support

North American Technical support for RightFax can be obtained by contacting OpenText at

- Phone: (800) 540-7292
- Email: support@opentext.com

For other locations go to http://www.opentext.com/2/global/company/company-contact.html

3. Reference Configuration

The configuration used for the compliance testing is shown below. IP Office is connected to RightFax via a SIP trunk and to an Emulated PSTN via an ISDN PRI line. Fax extension of 71xxx is configured on the RightFax server which sends and receives fax calls to/from a fax machine in the PSTN. A local fax machine was also configured on an analog port of the IP Office.

All incoming calls to the fax extensions are routed by IP Office over the SIP trunks to RightFax, and all outgoing faxes are routed by RightFax over the SIP trunks to IP Office.

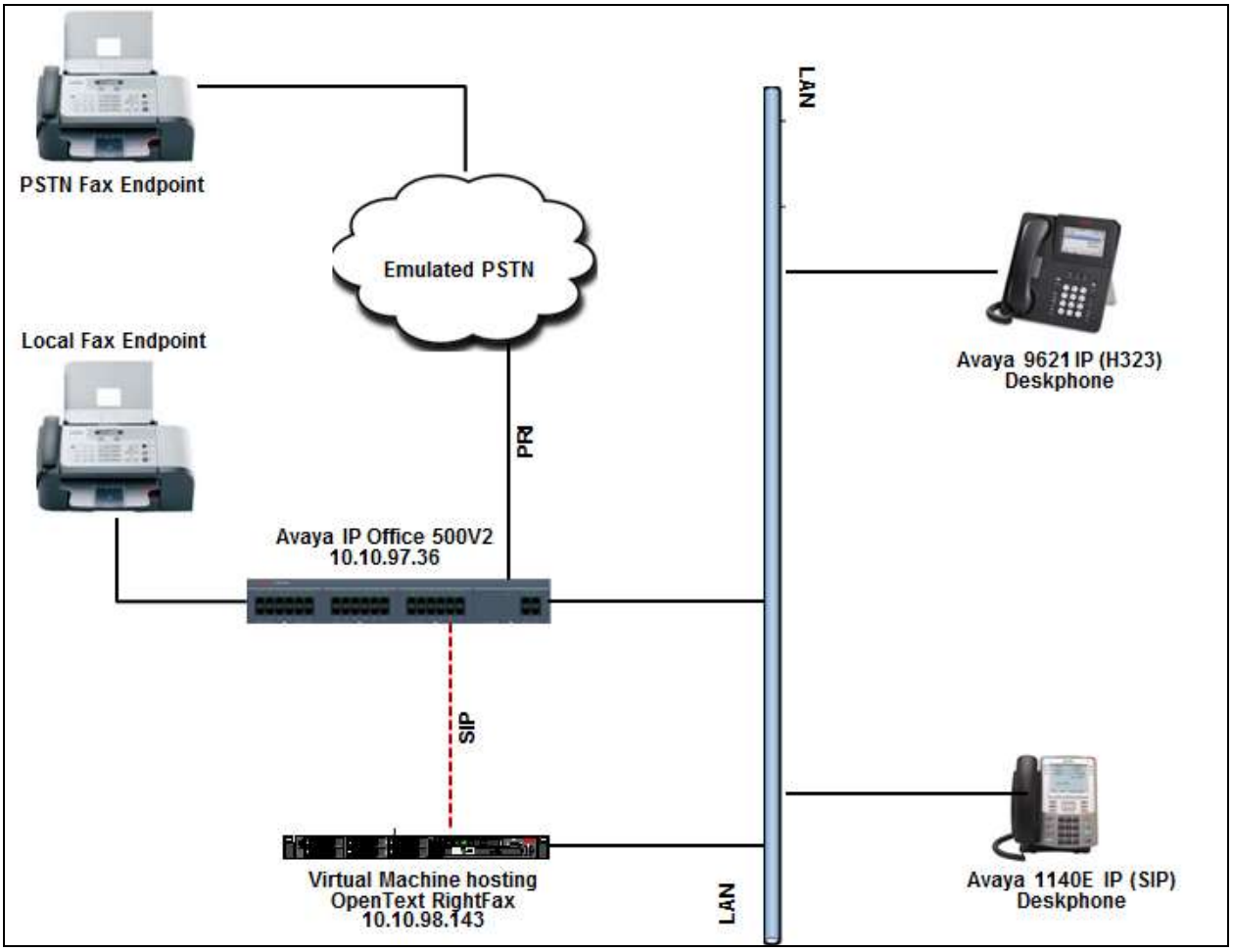


Figure 1: Compliance Testing Configuration

4. Equipment and Software Validated

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

Equipment/Software	Release/Version
Avaya IP Office on IP500 V2	9.1.4 build 137
Avaya IP Deskphones: • 9621G (H.323) • 1140 (SIP)	 6.4014 4.4.018
OpenText RightFax on Microsoft Windows Server 2008 R2 Enterprise SP1 64-bit, running on a VMWare Virtual Machine	10.6.2.1110
Dialogic Brooktrout SR140 Configuration Tool	6.7.3 Build 3

Compliance testing is applicable when the tested solution is deployed with a standalone IP Office 500 V2 only.

5. Configure Avaya IP Office

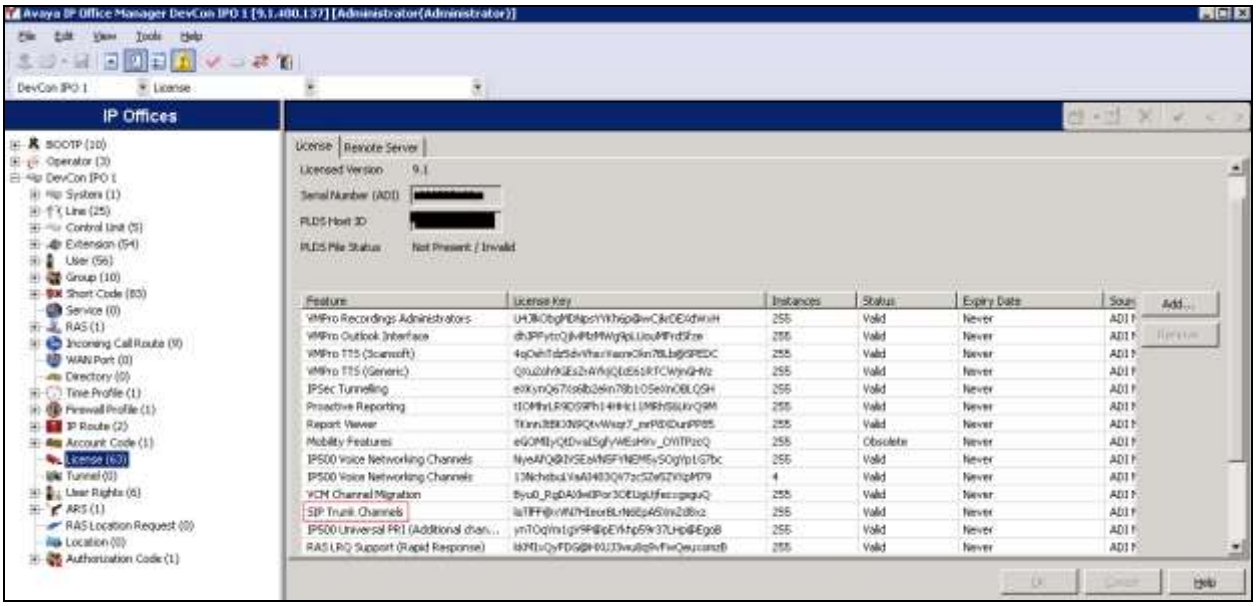
This section provides the procedures for configuring IP Office, assuming it has been installed and licensed. The procedures include the following areas:

- Verify Avaya IP Office license
- Obtain LAN IP address
- Enable SIP trunks
- Administer SIP line
- ISDN PRI Line configuration
- Administer incoming call route
- Administer short code
- Administer Analog Extension/User
- Save configuration

5.1. Verify Avaya IP Office License

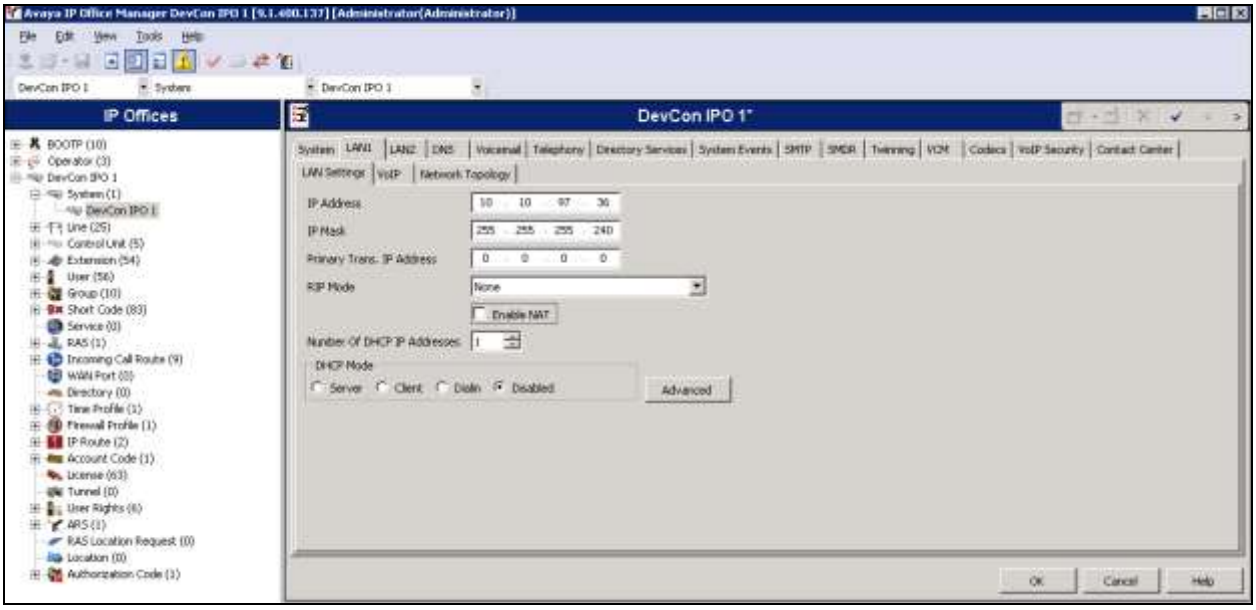
From a PC running the IP Office Manager application, select **Start → All Programs → IP Office → Manager** to launch the Manager application. Select the applicable IP Office system, and log in using the appropriate credentials.

The **Avaya IP Office Manager** screen is displayed. From the configuration tree in the left pane, select **License** to display the **License** screen in the right pane. Verify that the **License Status** for **SIP Trunk Channels** is "Valid", and that the **Instances** value is sufficient for the desired maximum number of simultaneous faxes. If there is insufficient capacity of SIP Trunks, contact an Avaya representative to make the appropriate changes.



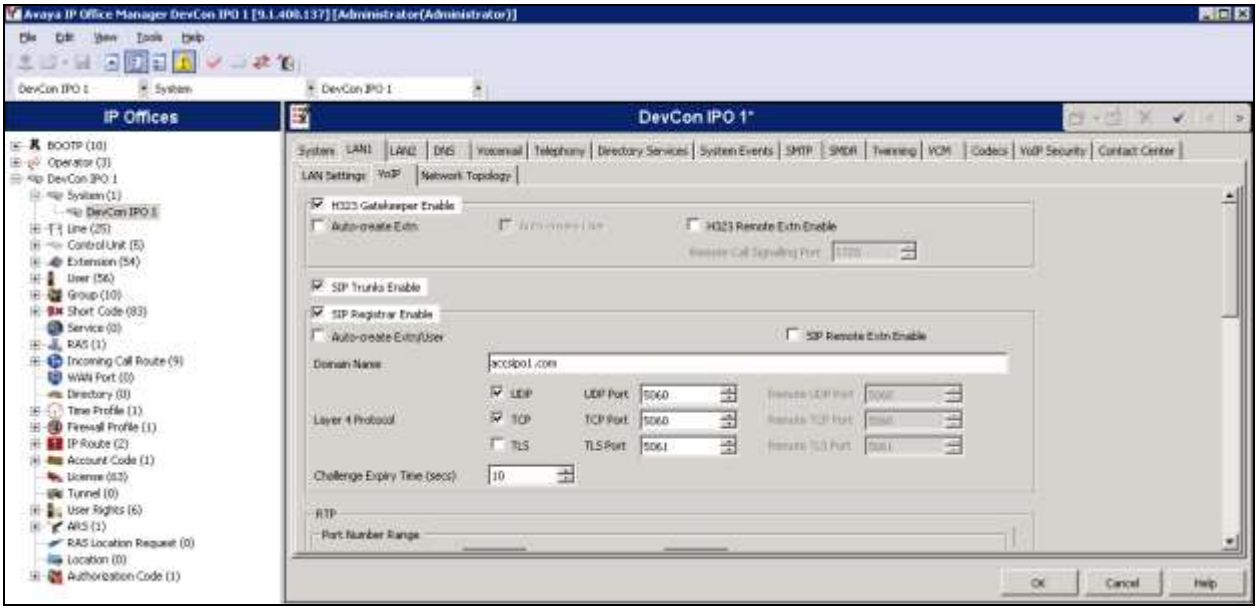
5.2. Obtain LAN IP Address

From the configuration tree in the left pane, select **DevCon IPO 1 → System** to display the **DevCon IPO 1** screen in the right pane, where **DevCon IPO 1** is the name of the IP Office system. Select the **LAN1** tab, followed by the **LAN Settings** sub-tab in the right pane. Make a note of the **IP Address**, which will be used later to configure RightFax in **Section 6.5**. Note that IP Office can support SIP trunks on the LAN1 and/or LAN2 interfaces, and the compliance testing used the LAN1 interface.



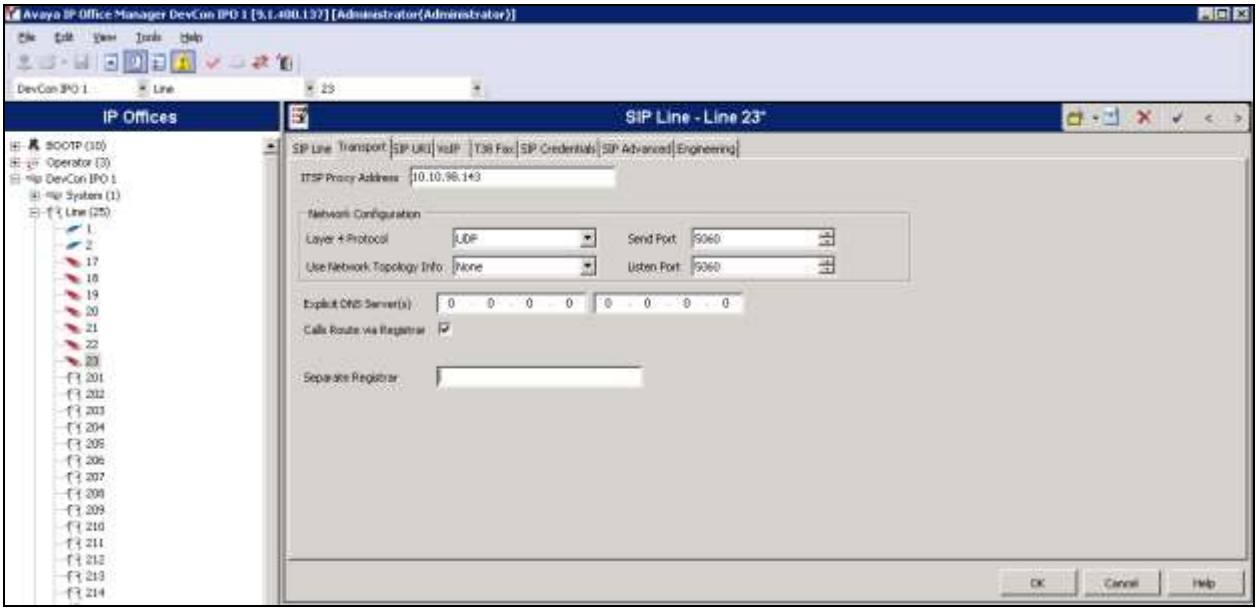
5.3. Enable SIP Trunks

Select the **VoIP** sub-tab. Ensure that **SIP Trunks Enable** is checked, as shown below.

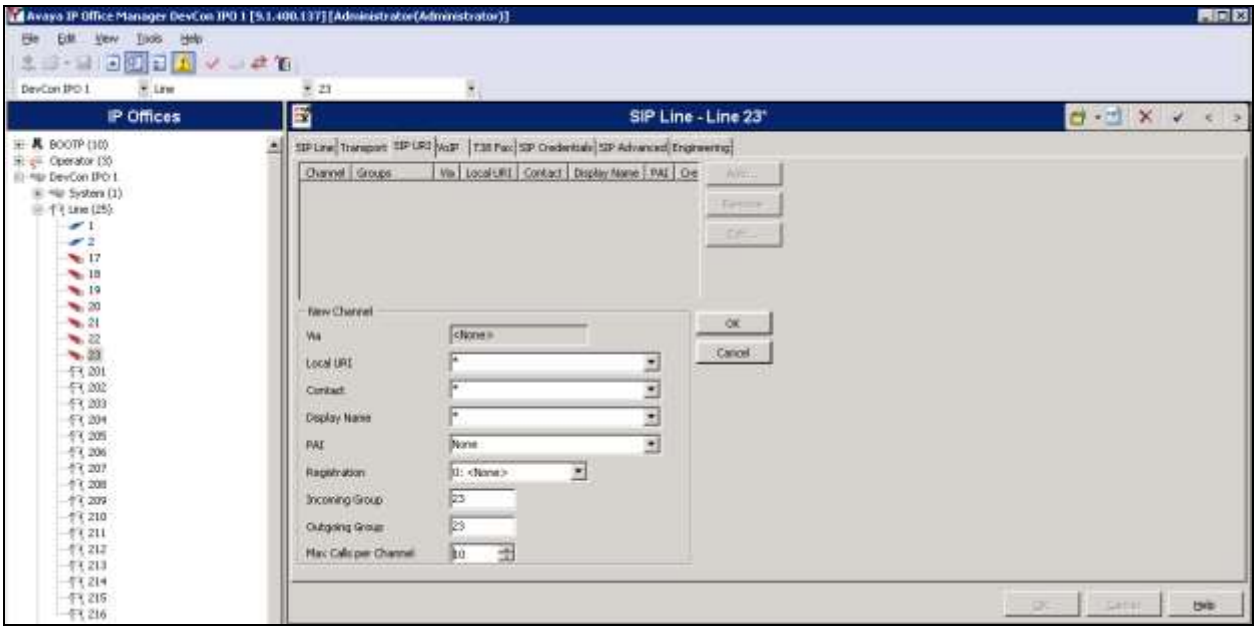


5.4. Administer SIP Line

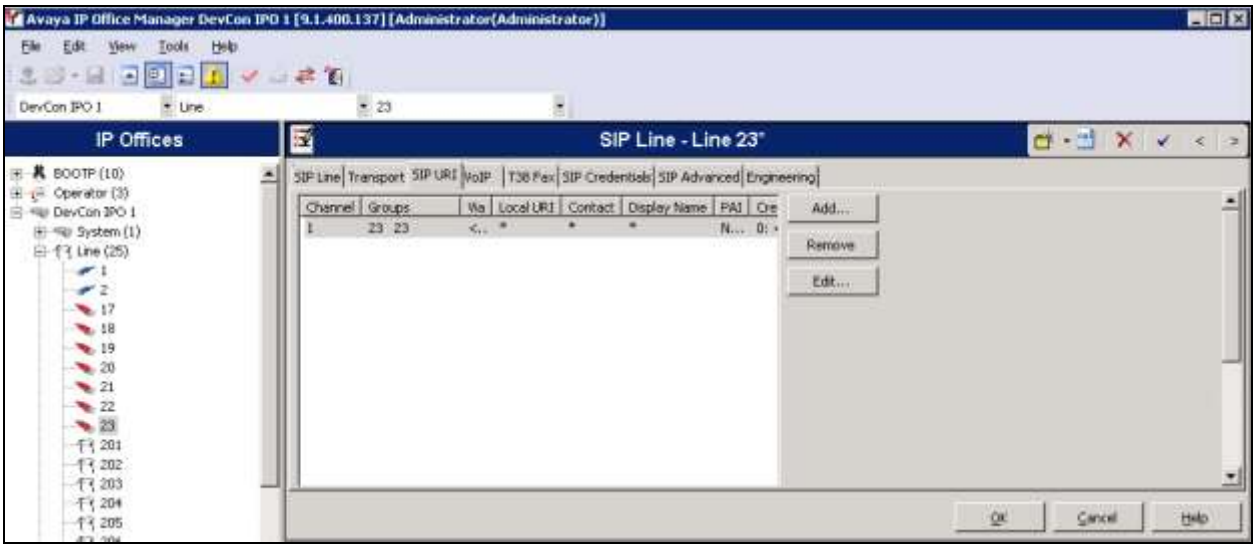
From the configuration tree in the left pane, right-click on **Line**, and select **New → SIP Line** from the pop-up list to add a new SIP line. Select the **Transport** tab in the right pane. For **ITSP Proxy Address**, enter the IP address of RightFax. Set the **Layer 4 Protocol** field to **UDP**. Retain the default values for the remaining fields.



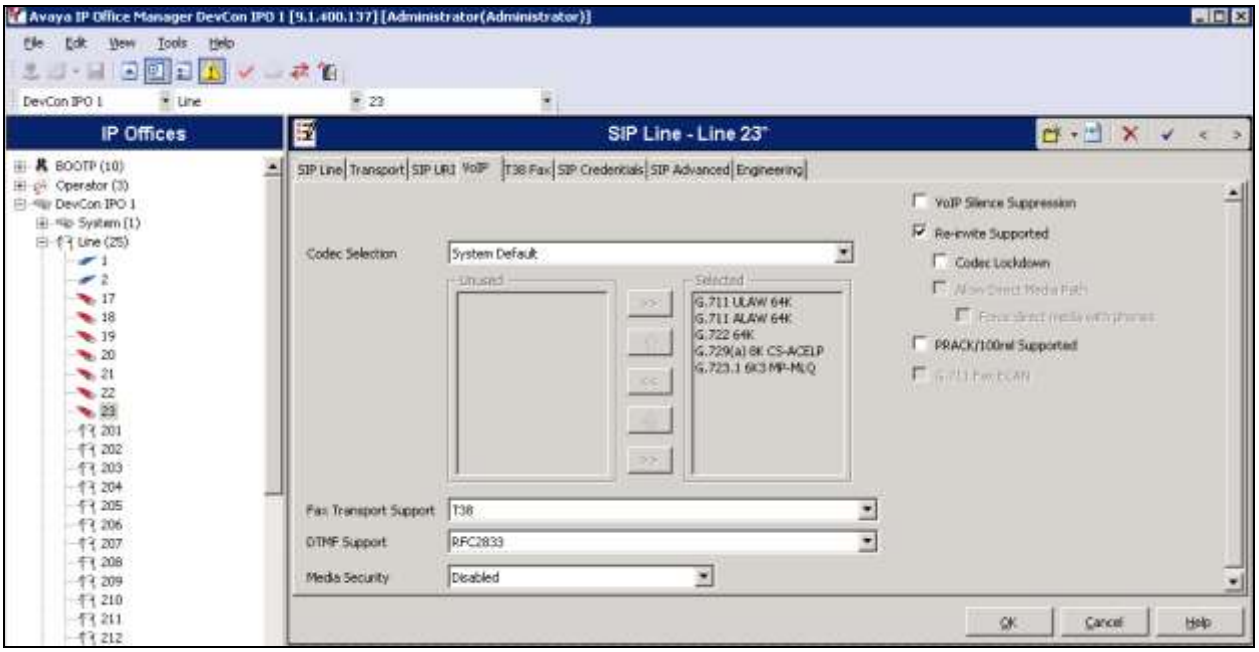
Select the **SIP URI** tab, and click **Add** to display the **New Channel** section. Enter the wildcard character "*" for **Local URI**, **Contact**, and **Display Name**. Enter an unused group number such as "23" for **Incoming Group** and **Outgoing Group**. Set **Max Calls per Channel** to the maximum number of simultaneous faxes allowed by the RightFax license, in this case "10". Retain the default values in the remaining fields. Click **OK**.



The screen is updated, as shown below.

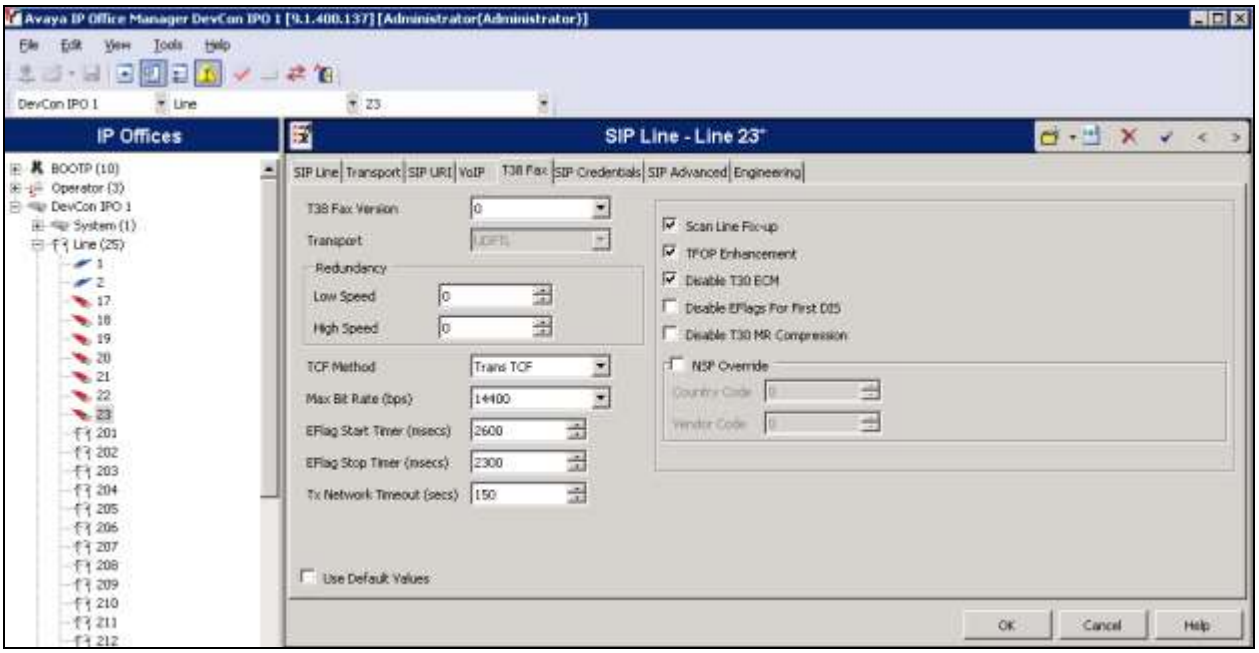


Select the **VoIP** tab. Check **Re-invite Supported**. For **Fax Transport Support**, select "T38" from the drop-down list. Retain the default values in the remaining fields.



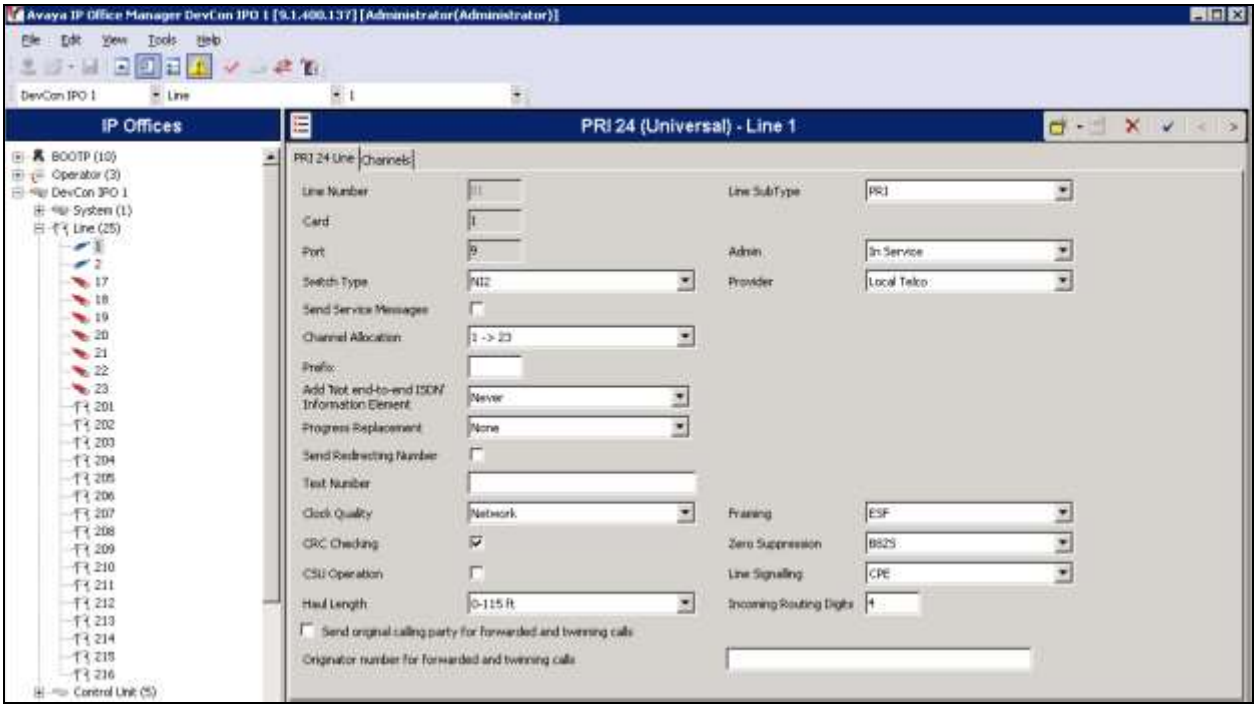
Select the **T38 Fax** tab. Uncheck **Use Default Values** toward the bottom of the screen to access all fields.

For **T38 Fax Version**, select "0". Check **Disable T30 ECM** in the right section. Retain the default values in the remaining fields. Click **OK**.



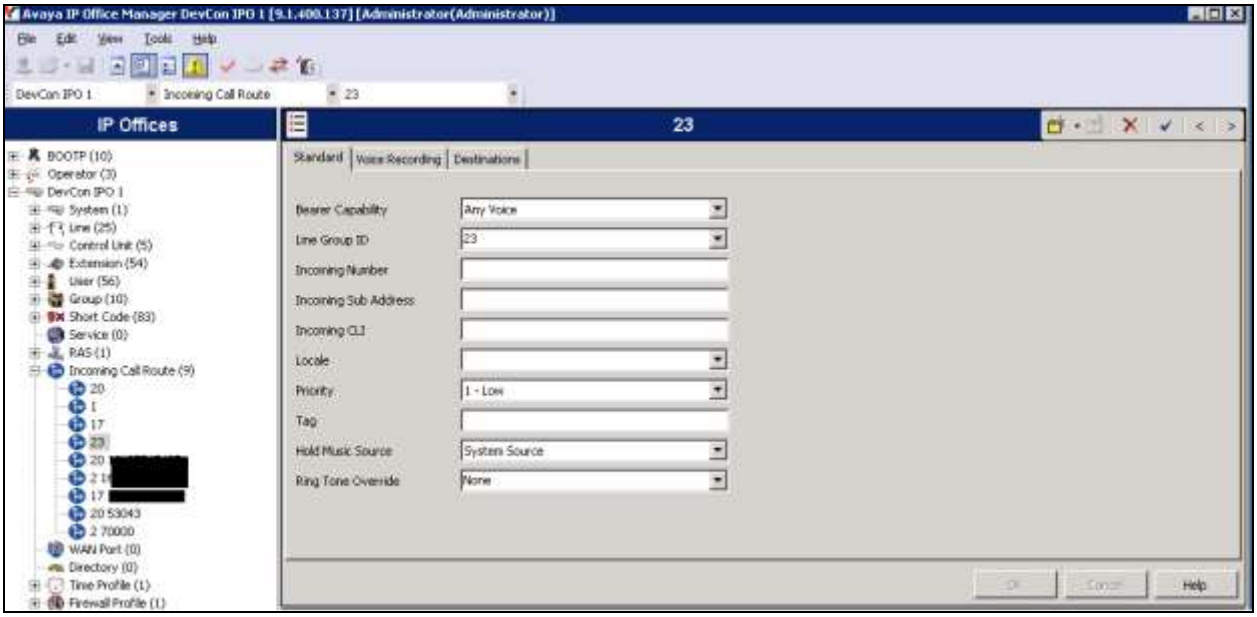
5.5. ISDN PRI Line Configuration

An ISDN PRI Line was pre-configured on the IP Office for connectivity to PSTN. Since it is an integral part of the test configuration, a screenshot is included in this section for informational purposes.

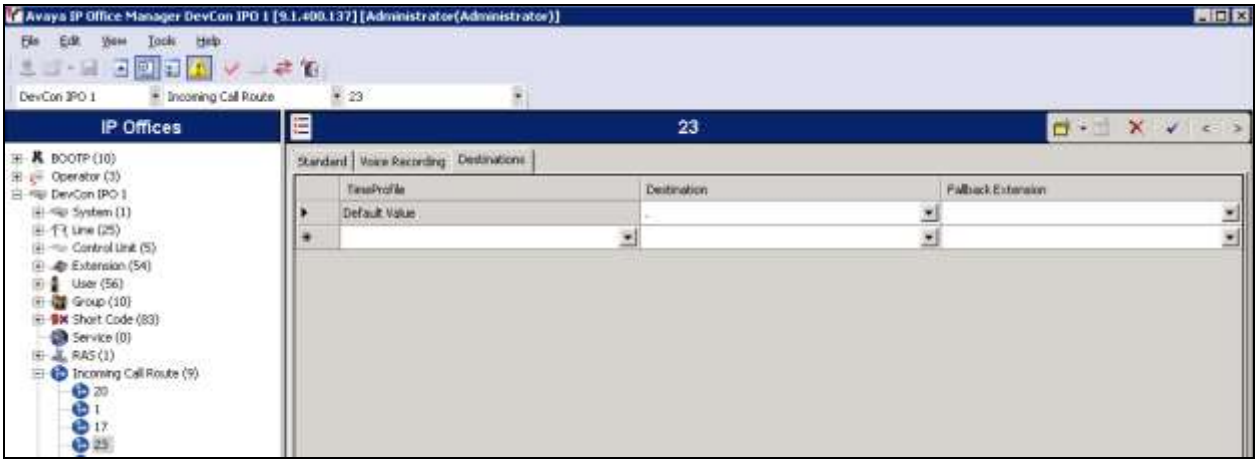


5.6. Administer Incoming Call Route

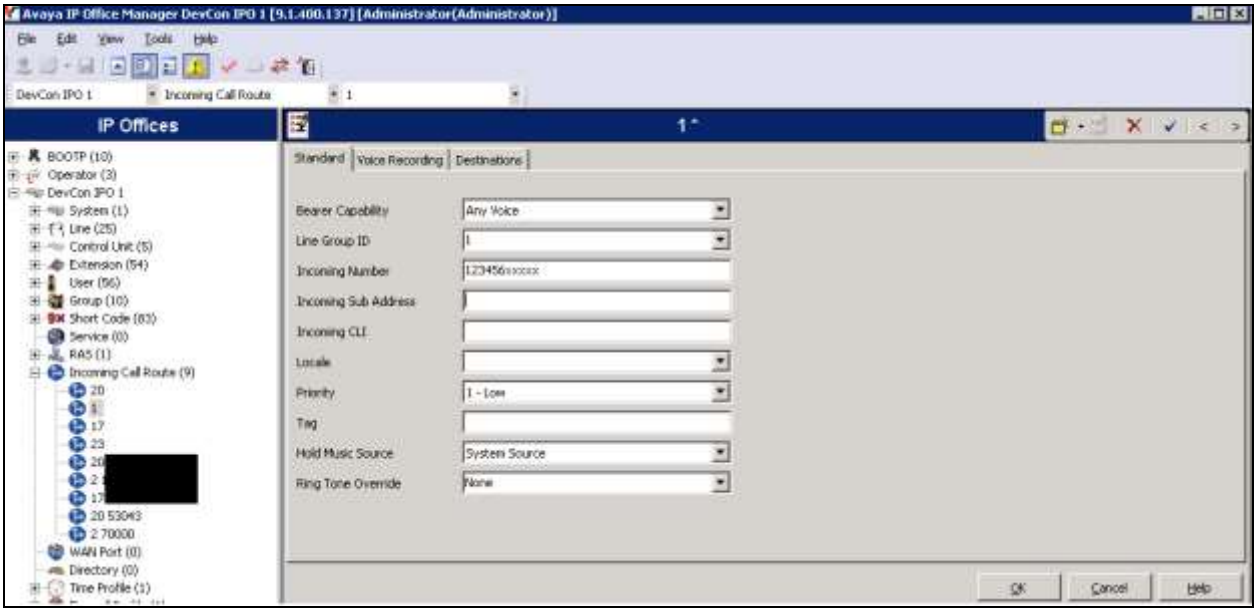
From the configuration tree in the left pane, right-click on **Incoming Call Route**, and select **New** from the pop-up list to add a new route. For **Line Group Id**, select the incoming group number from **Section 5.4**, in this case "23". Click **OK**.



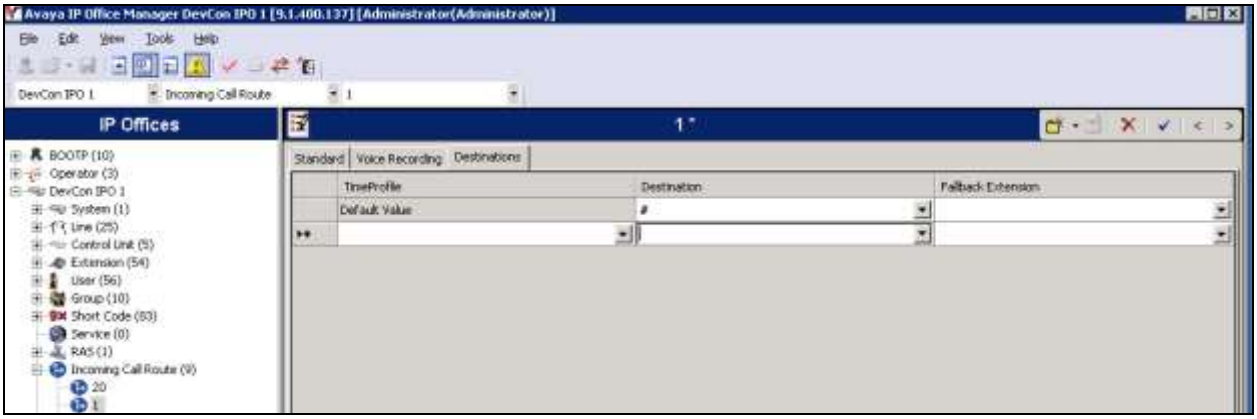
Select the **Destinations** tab. For **Destination**, enter "." to match any dialed number from RightFax.



Repeat the procedure for Line Group 1, which was automatically created by the system for the PRI trunk. From the configuration tree in the left pane, right-click on **Incoming Call Route**, and select **New** from the pop-up list to add a new route (not shown). For **Line Group Id**, select the incoming group number from **Section 5.5**, in this case "1". For Incoming Number, enter "123456XXXXX" to match any call where the called party number has 123456 as the leading digits. Click **OK**.



Select the **Destinations** tab. For **Destination**, enter "#". When this route is matched by a call, the "#" in the **Destination** field is replaced by the digits in the called party number that matches the "XXXXX" wildcards. For example, if the calling party number is 12345671000, the destination will be 71000.

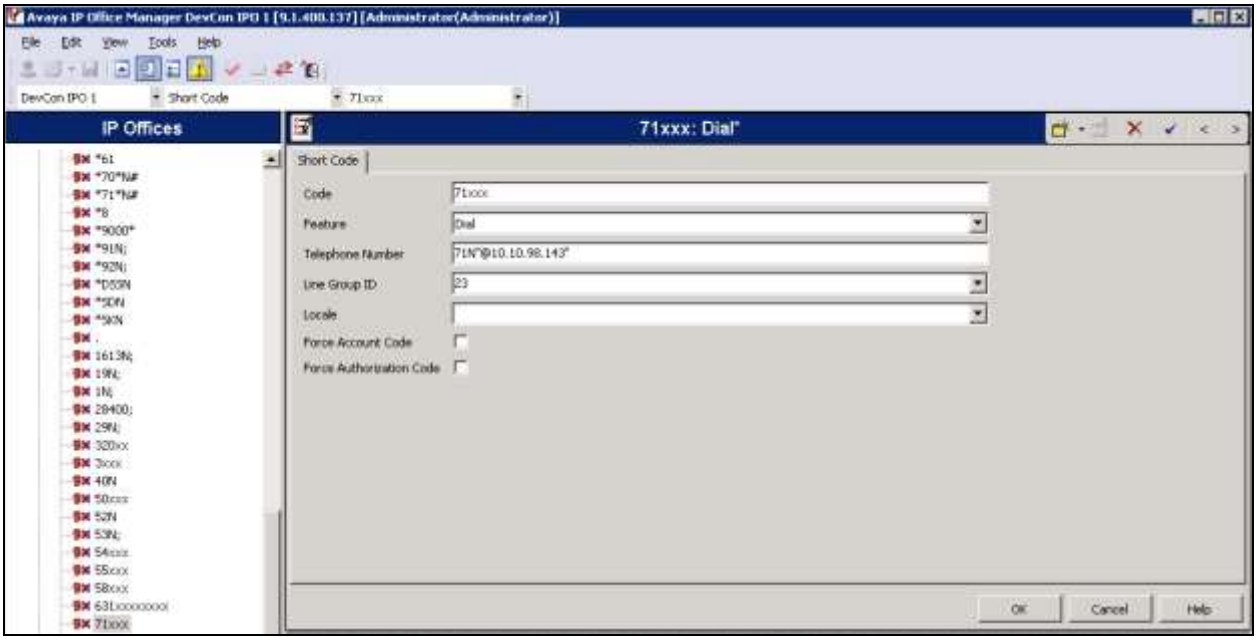


5.7. Administer Short Code

5.7.1. Short Code for Call to RightFax Server

From the configuration tree in the left pane, right-click on **Short Code** and select **New** from the pop-up list to add a new short code for fax calls to RightFax (not shown). In the compliance testing, users on IP Office are designated with fax numbers 71xxx, and faxes are routed over the SIP trunks to RightFax.

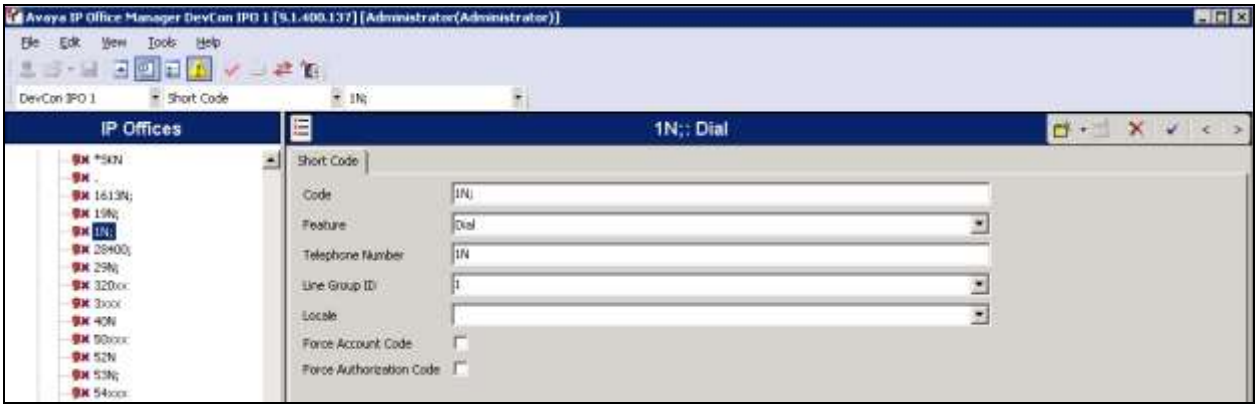
For **Code**, enter "71xxx". For **Feature**, select "Dial" from the drop-down list. For **Telephone Number**, enter "71N"@10.10.98.143" where "71N" corresponds to the short code and "10.10.98.143" is the IP address of RightFax. For **Line Group ID**, enter the outgoing group number from **Section 5.4**, which in this case is "23". Click **OK**.



5.7.2. Short Code for Call to PSTN

Repeat the procedure for another new short code for fax calls from RightFax to PSTN.

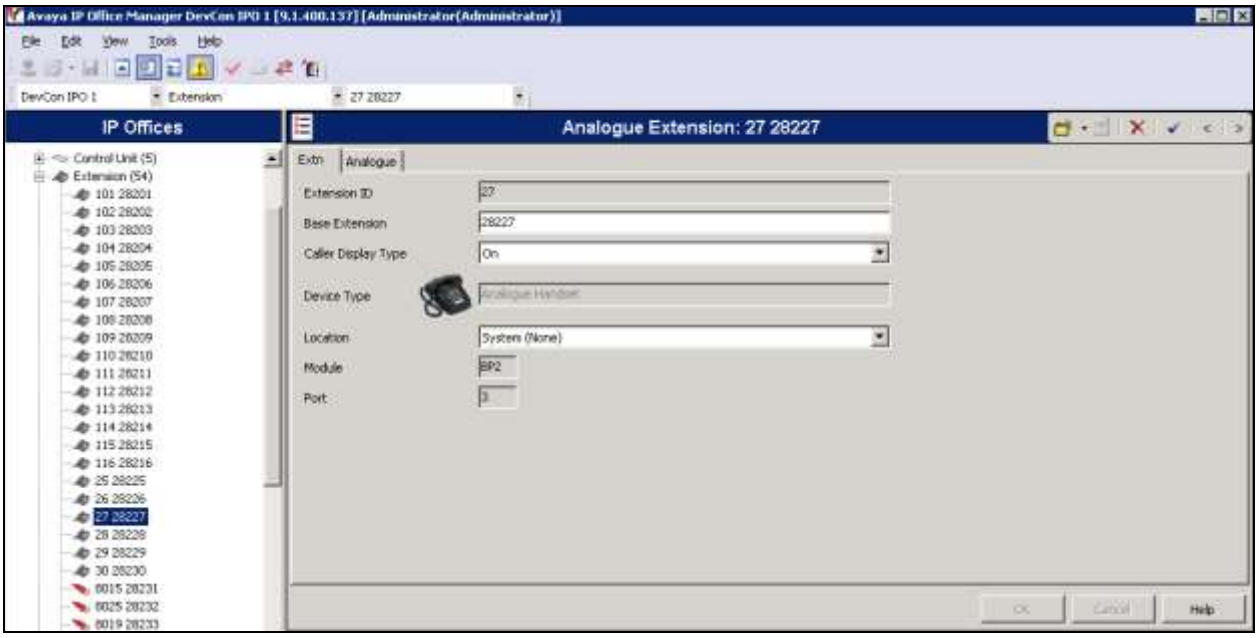
Right-click on **Short Code** and select **New** from the pop-up list. For **Code**, enter "1N;". For **Feature**, select "Dial" from the drop-down list. For **Telephone Number**, enter "1N". For **Line Group ID**, enter the outgoing group number assigned to the PRI trunk which is "1" as configured in **Section 5.5**. Click **OK**.



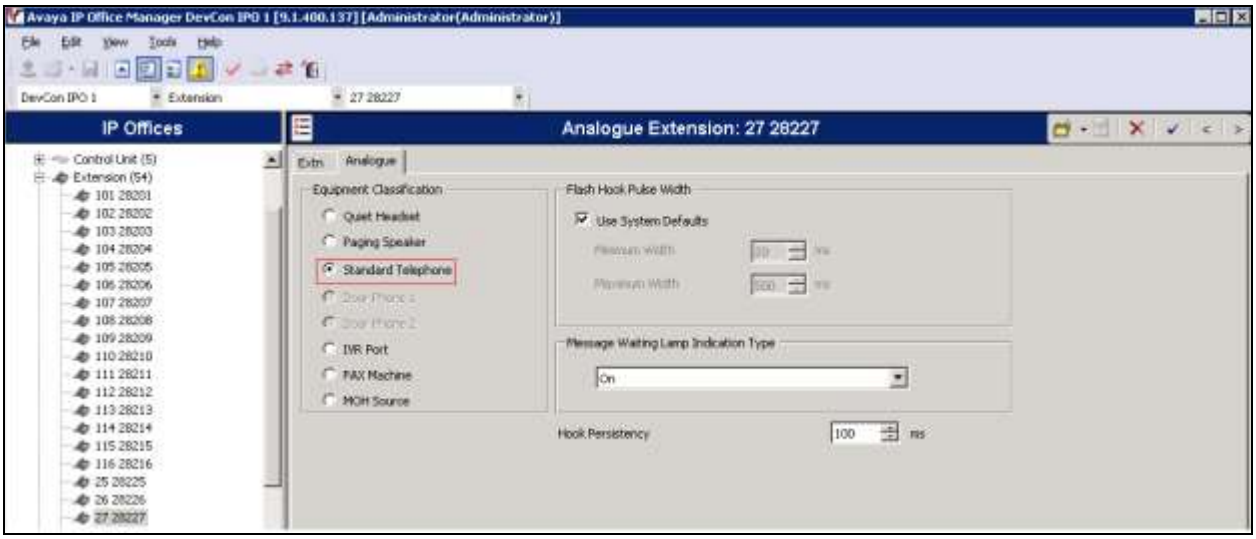
5.8. Administer Analog Extension/User

This section explains the steps to add an analog extension and user. During compliance testing an analog extension/user was added to serve the local fax endpoint on the IP Office.

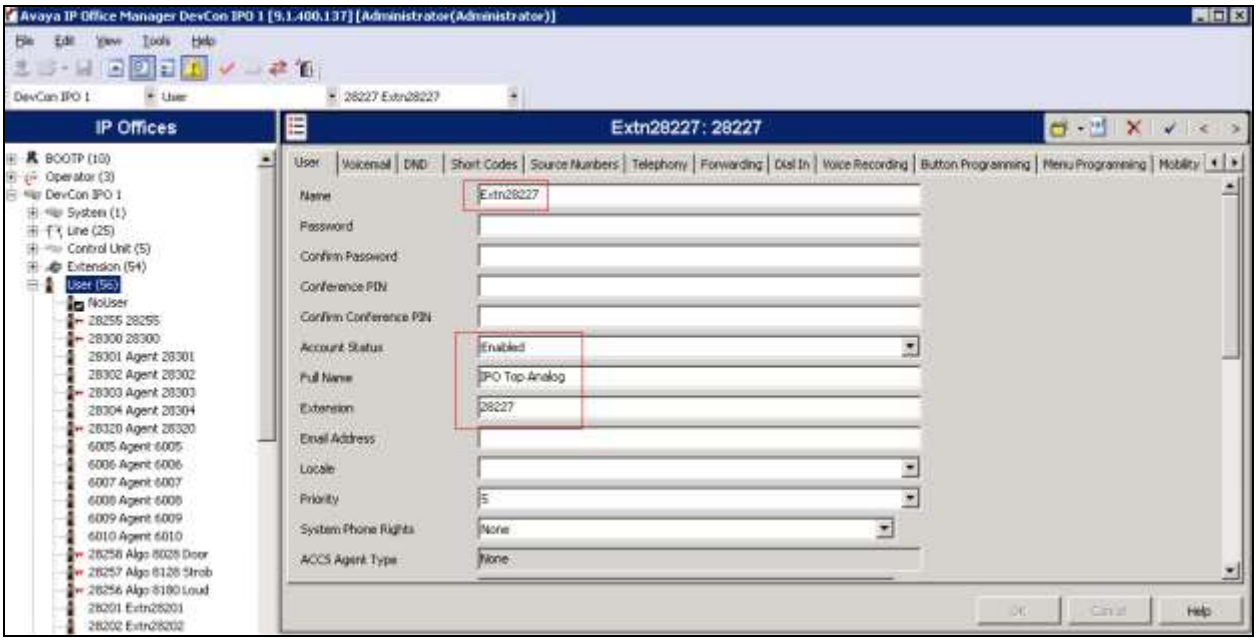
From the screen below, an analog extension can be selected from the available ports under **Extension** on the left hand menu. During compliance testing an **Extension ID** of "27" was selected and from the **Extn** tab, **Base Extension** was configured as "28227". Retain default values for the rest of the fields.



From the **Analogue** tab, select the radio button for "Standard Telephone". Retain default values for rest of the fields and click on **OK**.

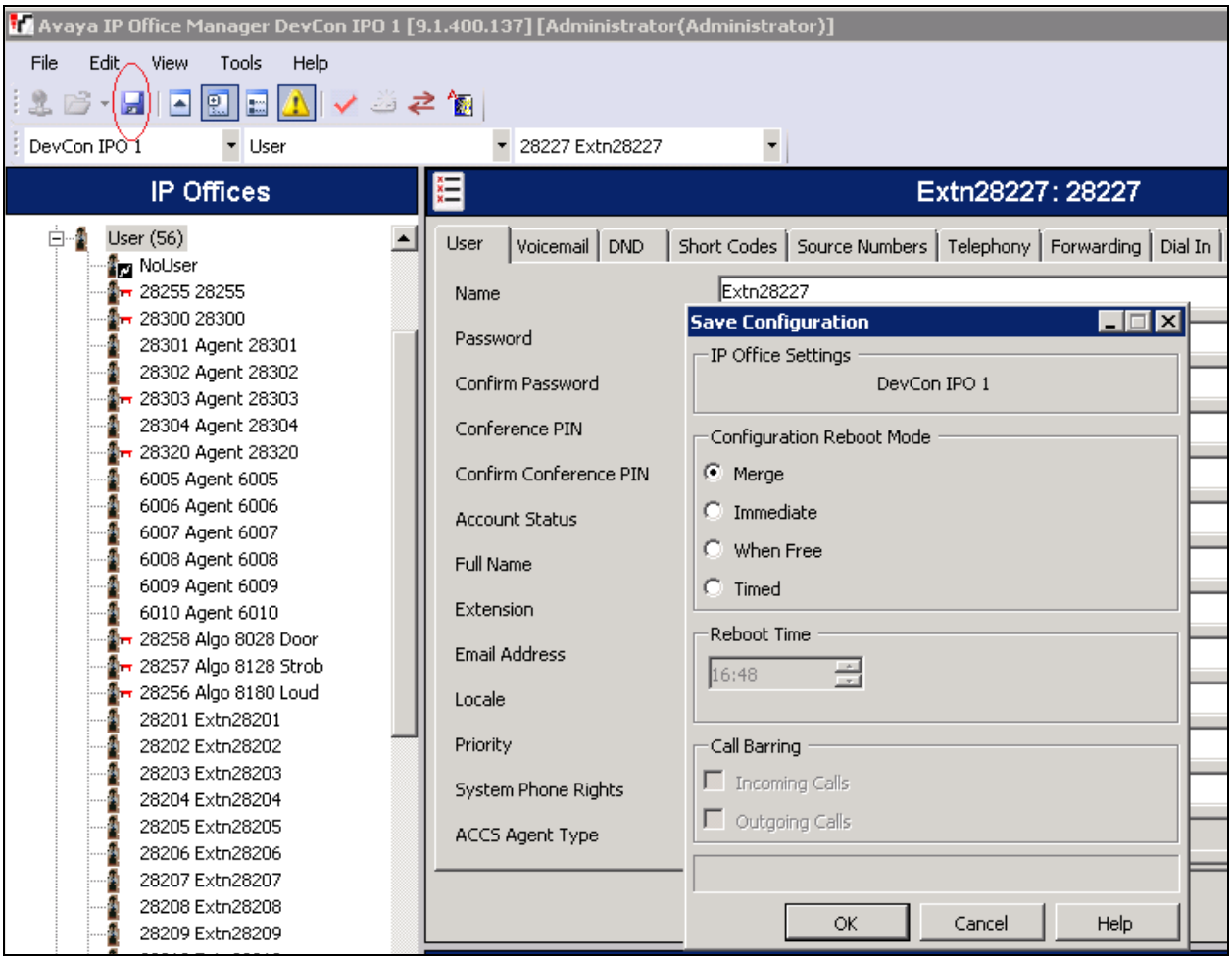


From the configuration tree in the left pane, right-click on **User** and select **New** from the pop-up list to add a new user to the extension added above. Configure the values for **Name**, **Account Status**, **Full Name** and **Extension** as shown in the screen below. The value "28227" in the **Extension** field is the **Base Extension** value configured while adding the extension above. Retain default values for all other fields and click on **OK**.



5.9. Save Configuration

Once all the items are configured, click the Save Configuration File icon. The **Save Configuration** screen is displayed. Click **OK**.



6. Configure OpenText RightFax

This section describes the configuration of OpenText RightFax and the embedded RightFax Original Equipment Manufacturer (OEM) or Brooktrout SR140 virtual fax board software from Dialogic (hereafter referred to as "SR140"). It assumes that the application and all required software components, including Brooktrout SR140 and the database software (Microsoft SQL Server 2012), have been installed and properly licensed. For instructions on installing RightFax, refer to **Section 9**.

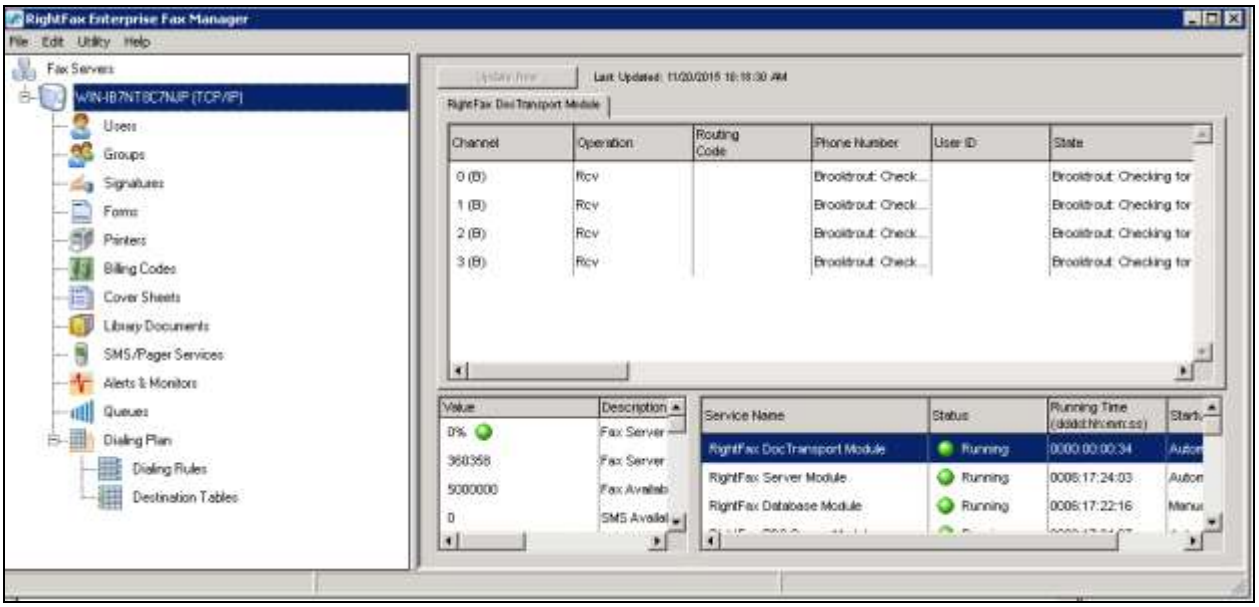
Note that the configurations documented in this section pertain to interoperability between RightFax and the Avaya SIP infrastructure. The standard configurations pertaining to RightFax itself (e.g., administering fax channels) are not covered. For instructions on administering and operating RightFax, refer to **Section 9**.

The configuration procedures covered in this section include the following:

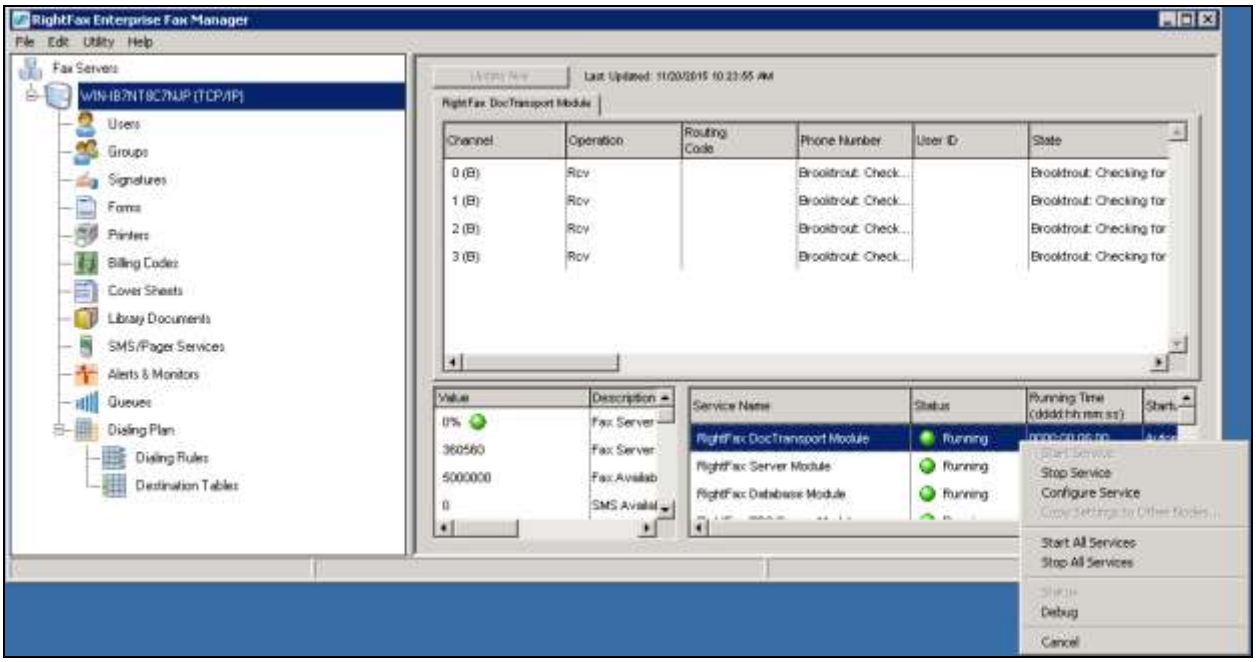
- Launch RightFax Enterprise Fax Manager and Brooktrout Configuration Tool
- Configure IP stack
- Configure BTCall parameters
- Configure Call Control parameters
- Configure SIP IP parameters
- Configure T.38 parameters
- Configure RTP parameters
- Administer RightFax users

6.1. RightFax Enterprise Fax Manager and Brooktrout Configuration Tool

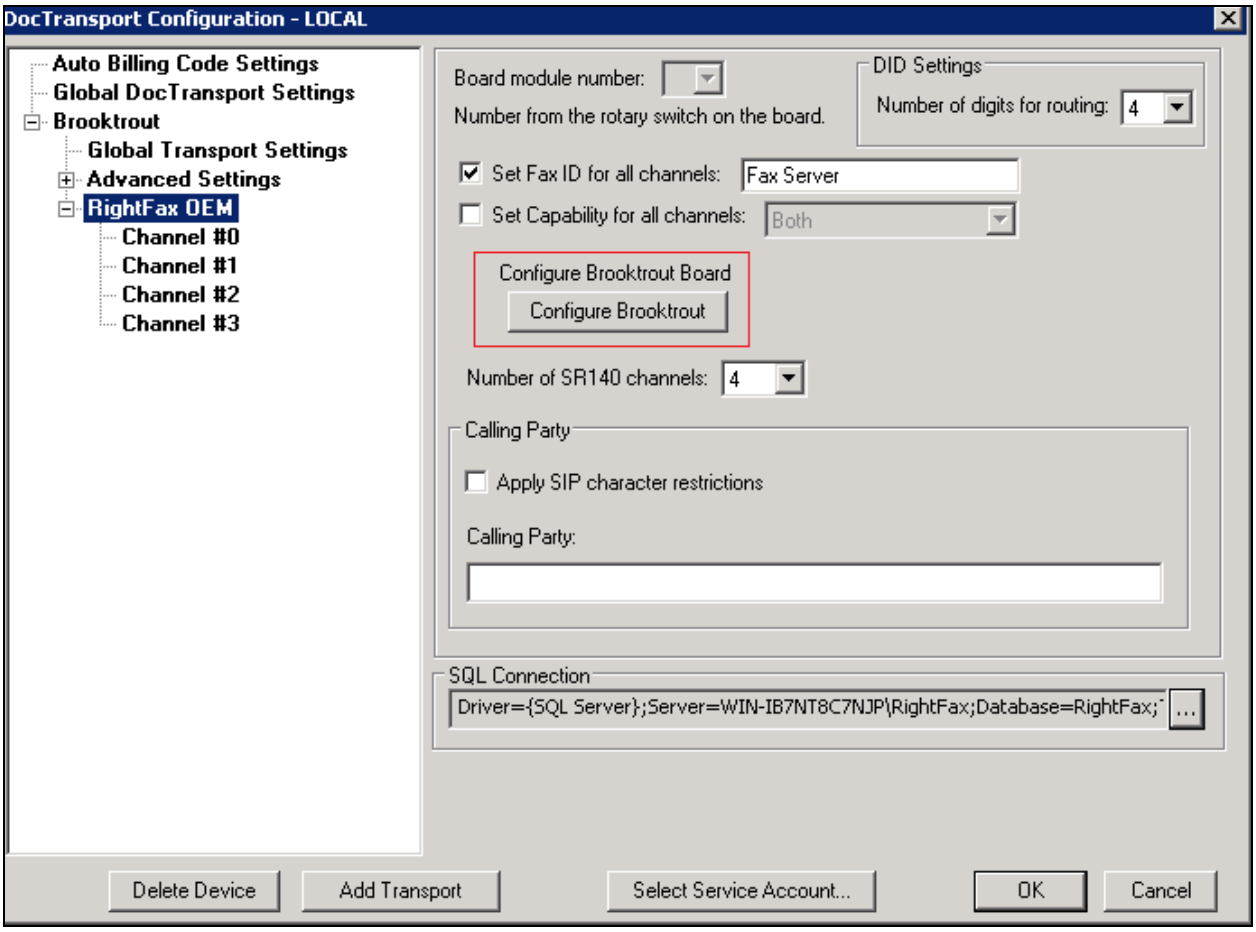
The RightFax configuration is performed using the RightFax Enterprise Fax Manager. Launch the **RightFax Enterprise Fax Manager** from the Windows Start menu. At the main window, highlight the host name of the fax server (created during the installation process) from the navigation menu in the left pane:



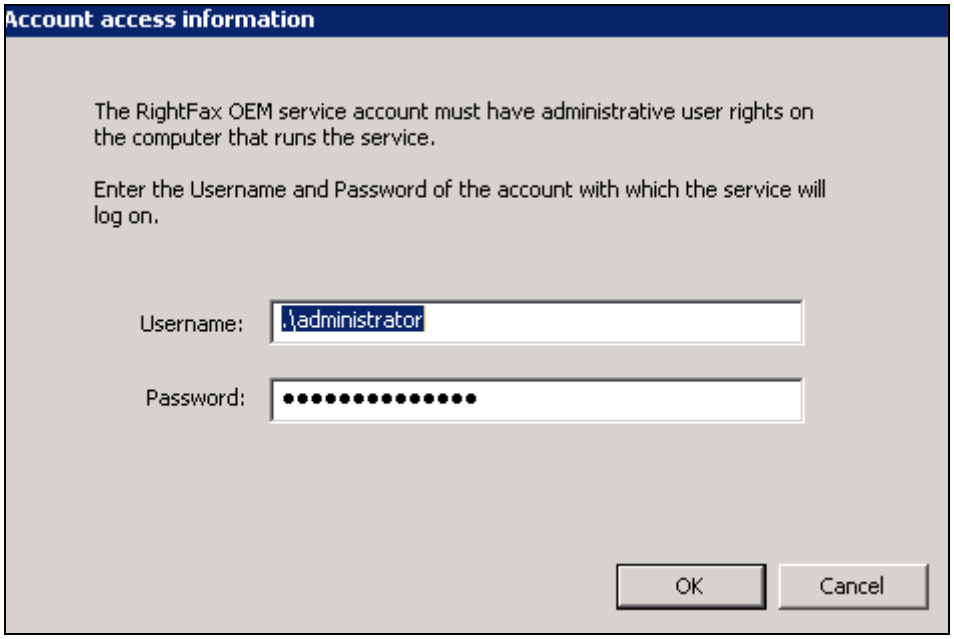
The Brooktrout SR140 was configured during installation. To view or modify the settings, the **RightFax DocTransport Module** must be stopped. Stop All Services of this module by right clicking on the module and then clicking on **Stop All Services** (shown below). After all the service modules indicate the stopped status, right click the **RightFax DocTransport Module** again to select **Configure Service**.



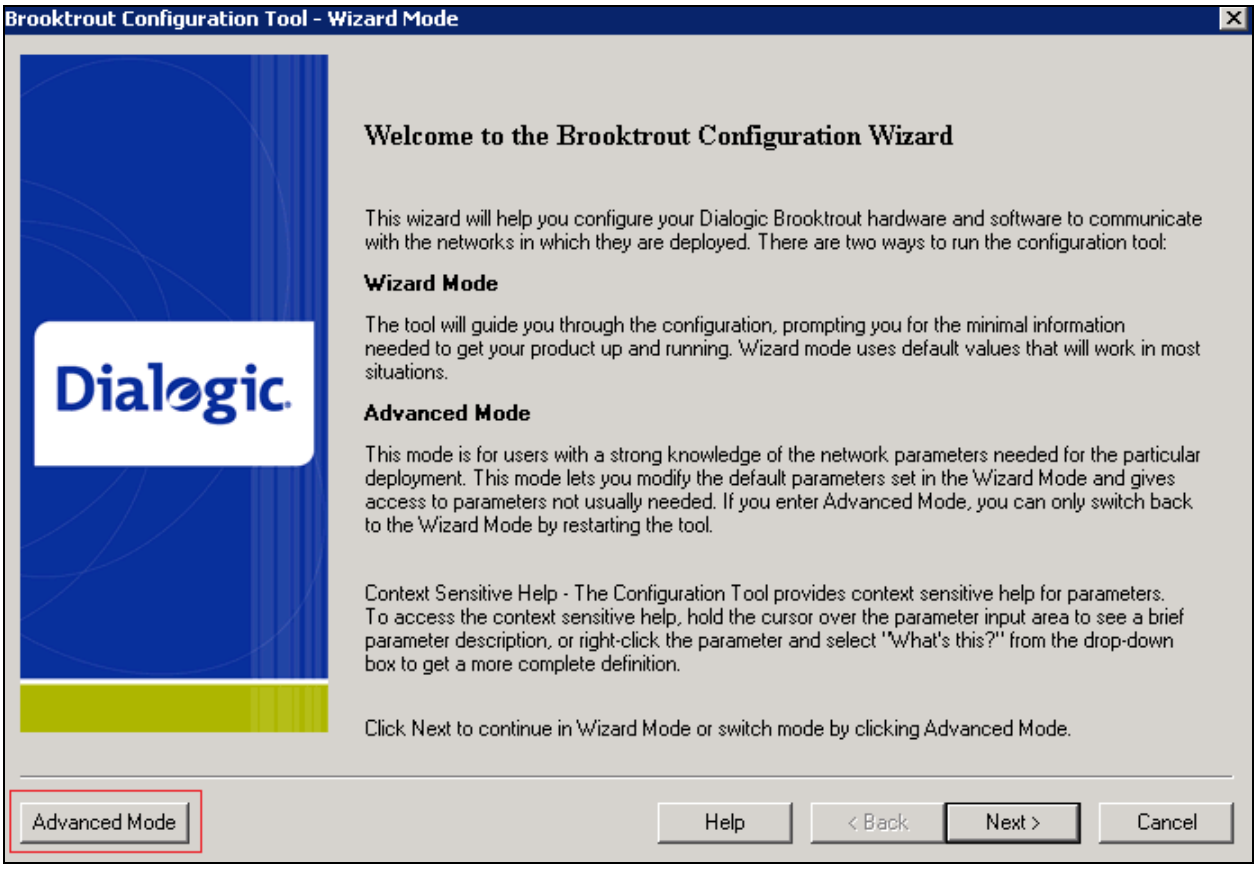
From the screen of the **DocTransport Configuration-LOCAL** shown below, click on **RightFax OEM** (left side of screen), then click on the **Configure Brooktrout** button.



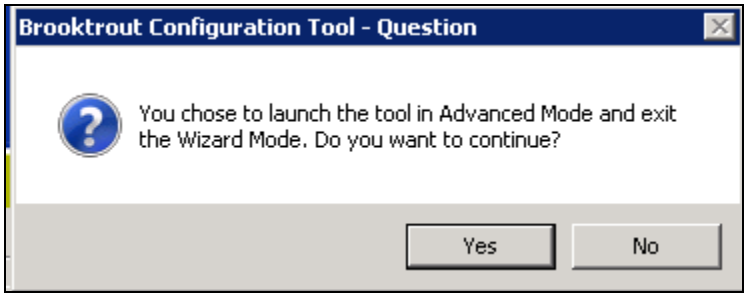
In the **Account access information** screen shown below, enter the correct credentials for the RightFax Service account used for the RightFax DocTransport Module. This account must have administrative user rights on the computer that runs the service.



The **Brooktrout Configuration Tool – Wizard Mode** window is seen. Click the **Advanced Mode** button as shown in the screen below.

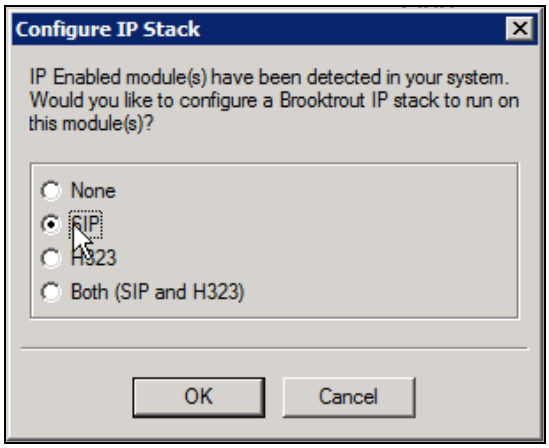


Click on the **Yes** button when prompted to launch the Configuration Tool in Advanced mode.

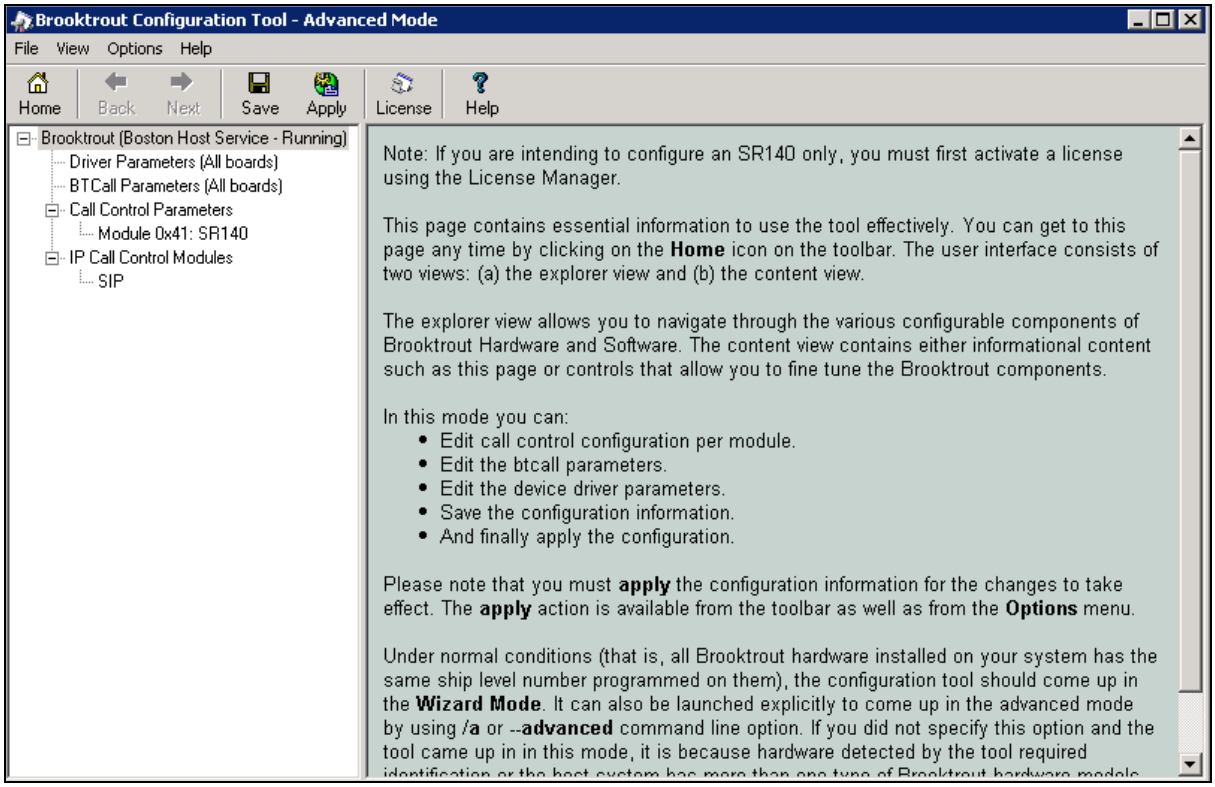


6.2. Configure IP Stack

A **Configure IP Stack** window is displayed on first invocation of the Brooktrout configuration tool:



Select **SIP** from the radio button and then click on **OK** as shown in the screen above. The **Brooktrout Configuration Tool – Advanced Mode** window is displayed as shown below.

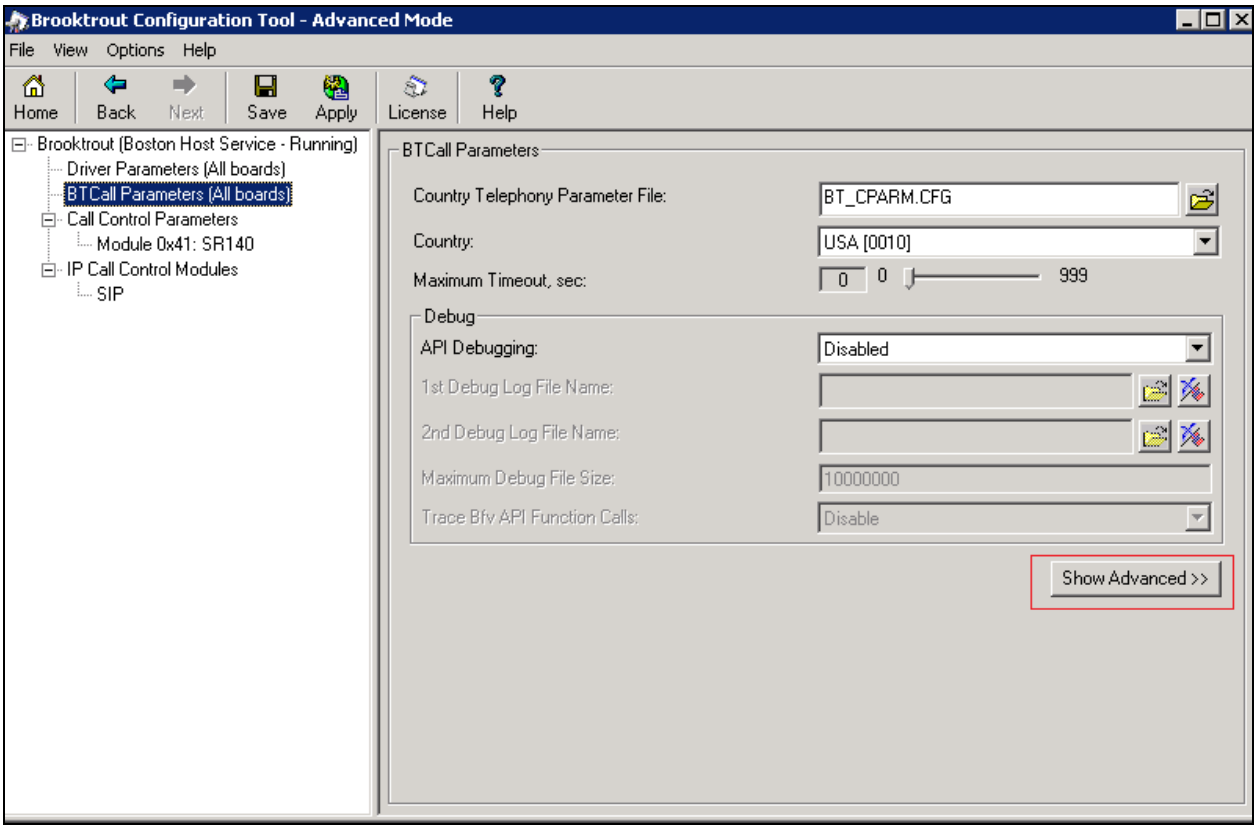


Note that IP Stack can be viewed/reconfigured from the Brooktrout Configuration Tool menu **Options → Configure IP Stack** (not shown).

6.3. Configure BTCall Parameters

Note: *During the compliance testing, the following settings were retained at the default settings. In practice, these settings may not be required for full functionality.*

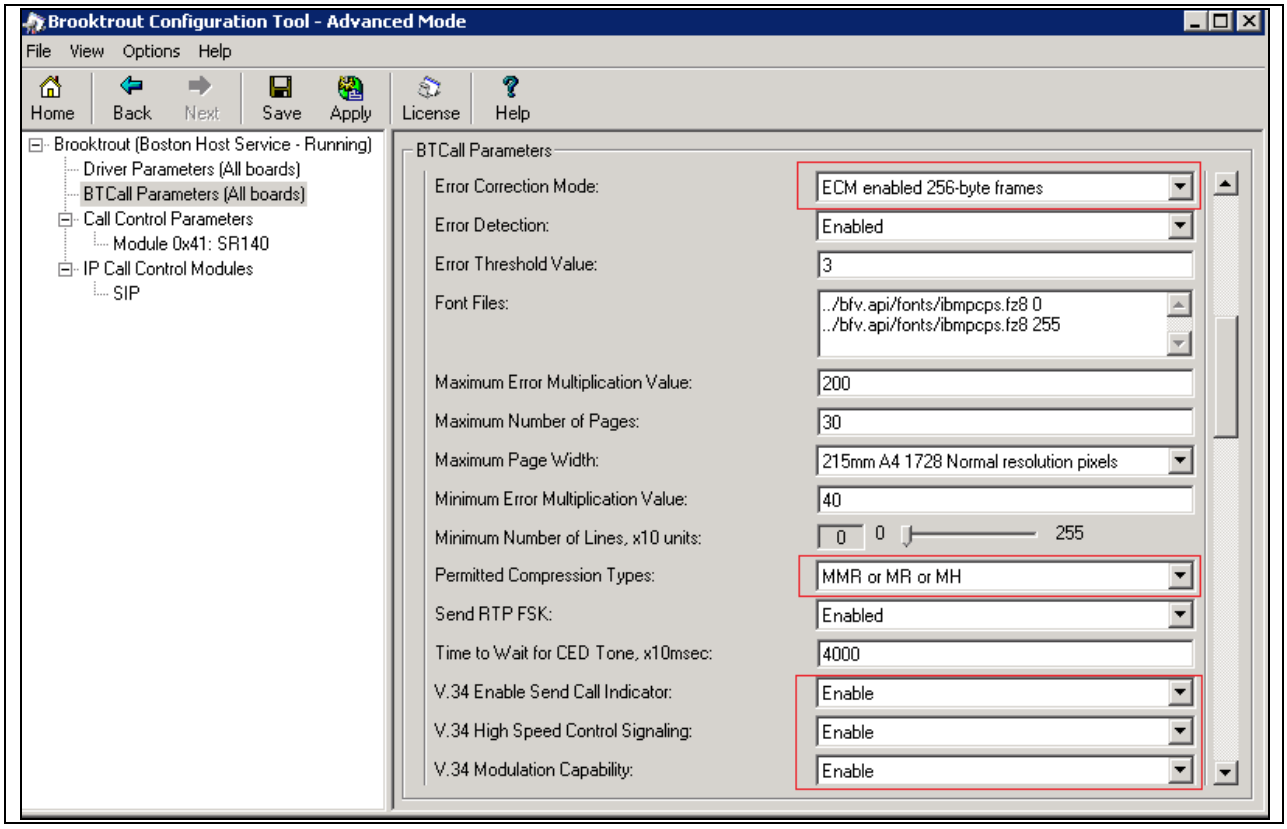
Navigate to **Brooktrout (Boston Host Service-Running) → BTCall Parameters (All boards)** in the left navigation menu. Click the **Show Advanced** button as shown in the screen below.



Under the **BTCall Parameters** section, configure the fields as follows:

- **Error Correction Mode**: *ECM enabled 256-byte frames*
- **Permitted Compression Types**: *MMR or MR or MH*
- **V.34 Enable Send Call Indicator:** *Enable*
- **V.34 High Speed Control Signaling:** *Enable*
- **V.34 Modulation Capability:** *Enable*

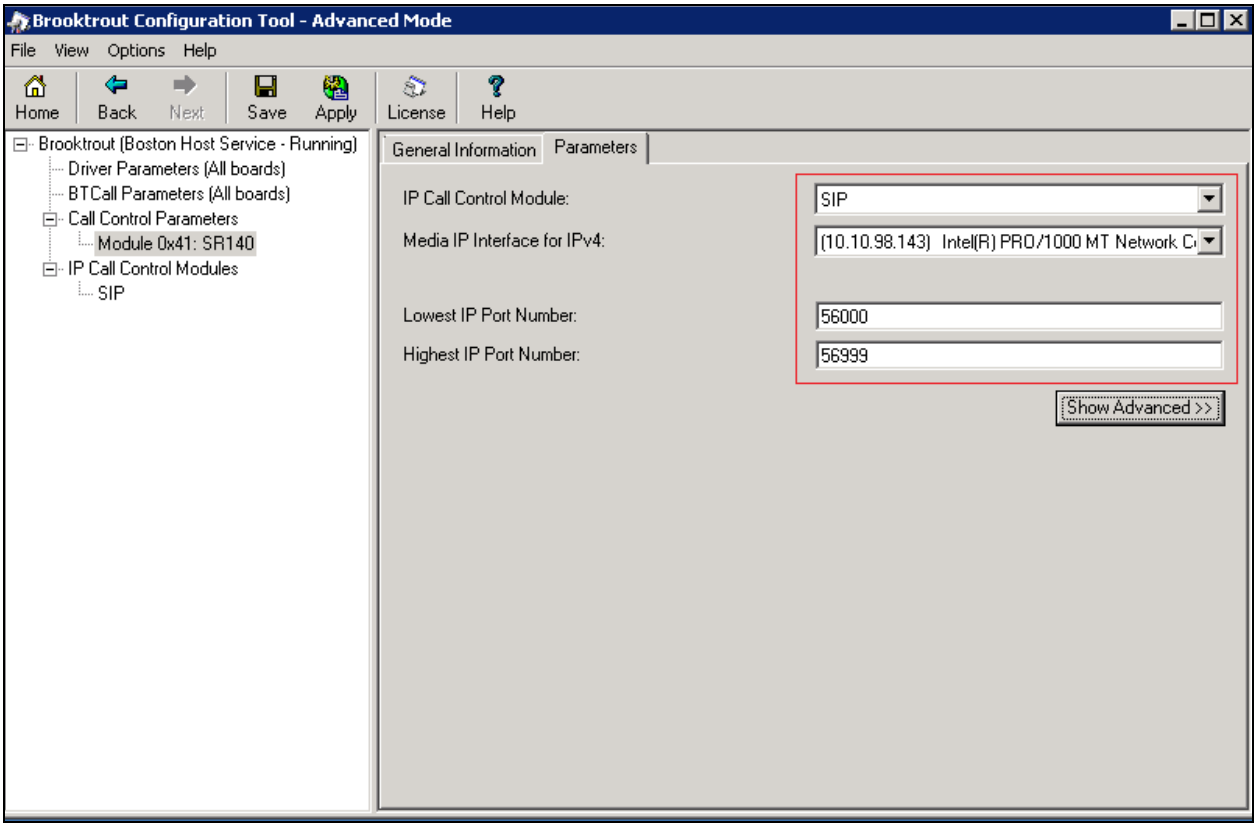
Retain default values for other fields.



6.4. Configure Call Control Parameters

Navigate to **Brooktrout (Boston Host Service-Running) → Call Control Parameters → Module 0x41: SR140** in the left navigation menu. Ensure the following configuration parameters in the **Parameters** tab are correct for the user's environment:

- **IP Call Control Module:** Select *SIP* from the drop down menu.
- **Media IP Interface for IPv4:** If the server contains multiple network interface cards (NICs), ensure you have selected an interface that is able to communicate with IP Office.
- **Lowest/Highest IP Port Numbers:** Ensure your RTP range matches the port range configured on the Avaya SIP infrastructure. By default, the port range for SR140 is *56000* to *56999*. A maximum range of 1000 ports may be specified. When you change the Lowest IP Port Number value, the Highest IP Port Number value will adjust automatically.

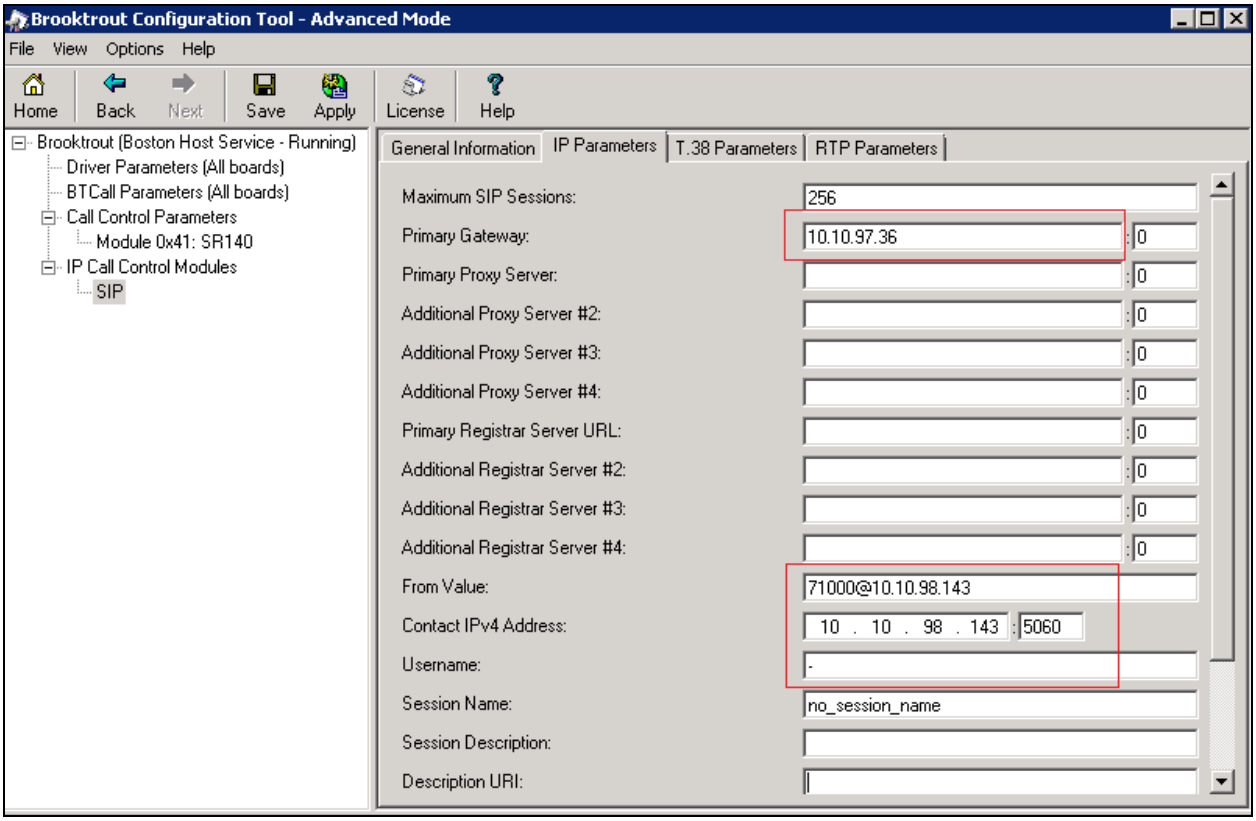


6.5. Configure SIP IP Parameters

Navigate to **Brooktrout (Boston Host Service-Running) → IP Call Control Modules → SIP** in the left navigation menu. Select the **IP Parameters** tab in the right pane. Configure the fields as follows:

- **Primary Gateway** – The IP address of the IP Office to communicate with.
- **From Value** – If required by the Avaya environment, set this to an appropriate *UserInfo@ServerIP***.** During compliance testing this value was configured as *71000@10.10.98.143*.
- **Contact IPv4 Address** – Enter the IP address assigned to RightFax and the port number *5060*.
- **Username** – Required. Default value is a dash (‘-‘) character.

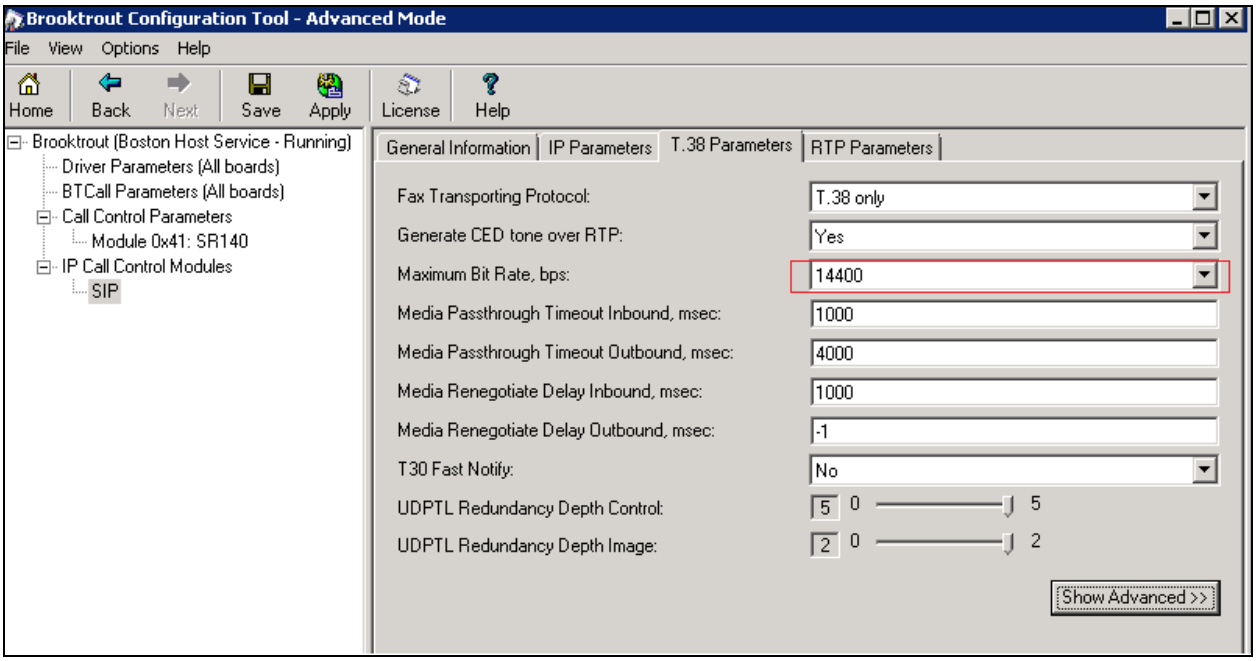
Retain default values for all other fields.



6.6. Configure T.38 Parameters

Select the **T.38 Parameters** tab and configure the fields as shown in the screen below.

- **Maximum Bit Rate, bps**: Select a value from the drop down menu. During compliance testing various values were selected.

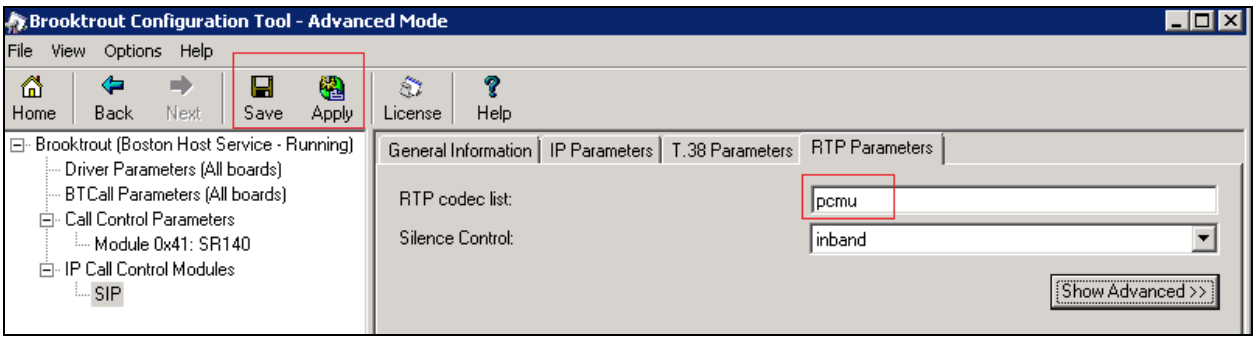


Note: *During the compliance testing, the above settings were configured at the default settings. In practice, these settings may not be required for full functionality.*

6.7. Configure RTP Parameters

Select the **RTP Parameters** tab and configure the **RTP codec list** value to use only a single codec, either *pcmu* or *pcma* to match the codec used in the user's region.

After verifying all the above parameters are properly configured, click on **Apply** and then the **Save** button from the top menu.



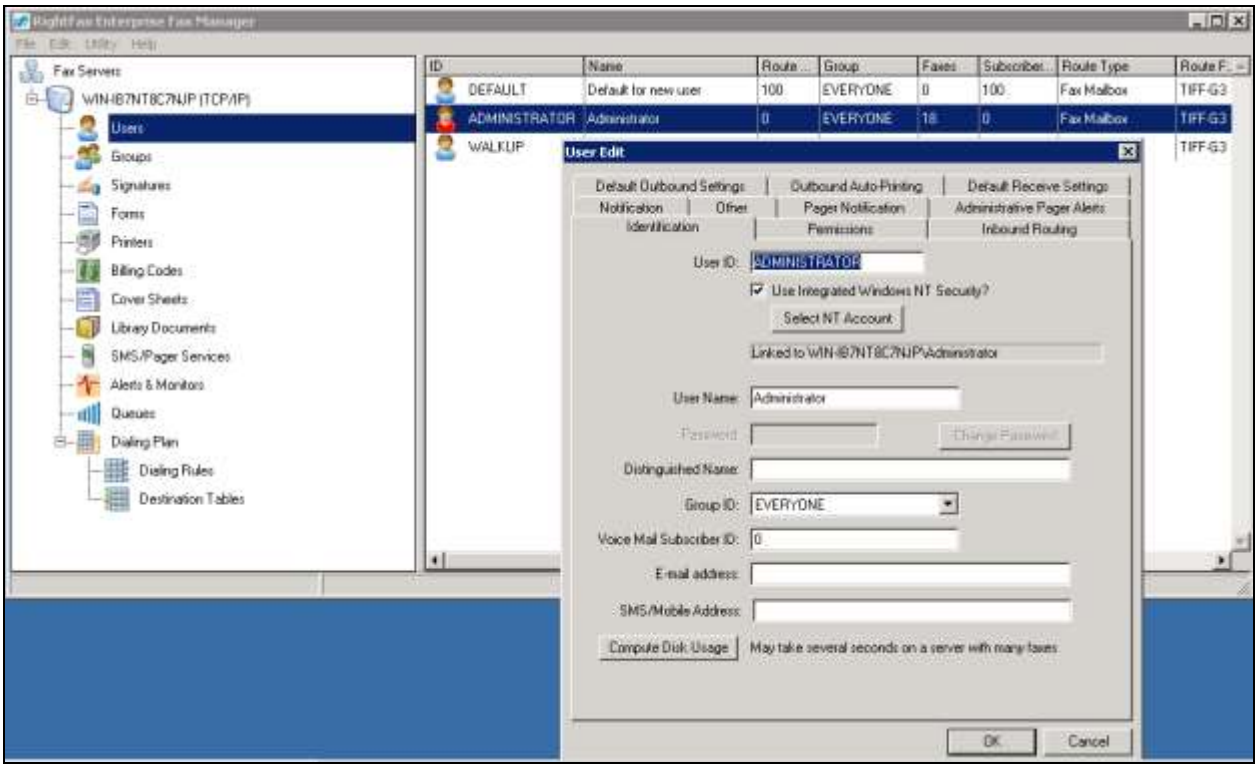
Exit the **Brooktrout Configuration Tool – AdvancedMode** window.

From the **DocTransport Configuration - LOCAL** screen as shown in **Section 6.1**, click the **OK** button to complete the configuration.

Restart all RightFax service modules by right clicking the **RightFax DocTransport Module** name in the lower right pane of the **RightFax Enterprise Fax Manager** window and select **Start All Services** (refer to the screen shot shown in **Section 6.1**).

6.8. Administer RightFax Users

A user is created on the RightFax server for each incoming fax number. The user represents the fax recipient. To view the list of users, in the **RightFax Enterprise Fax Manager** window, navigate to **Users** in the left navigation menu under the host name of the fax server. The example below shows a list of three users. To view the details of a user, double-click on the user entry in the right pane. During compliance testing the **ADMINISTRATOR** user was used. This section is mentioned here for reference only and therefore no details of configuring a user will be discussed in these application notes.



7. Verification Steps

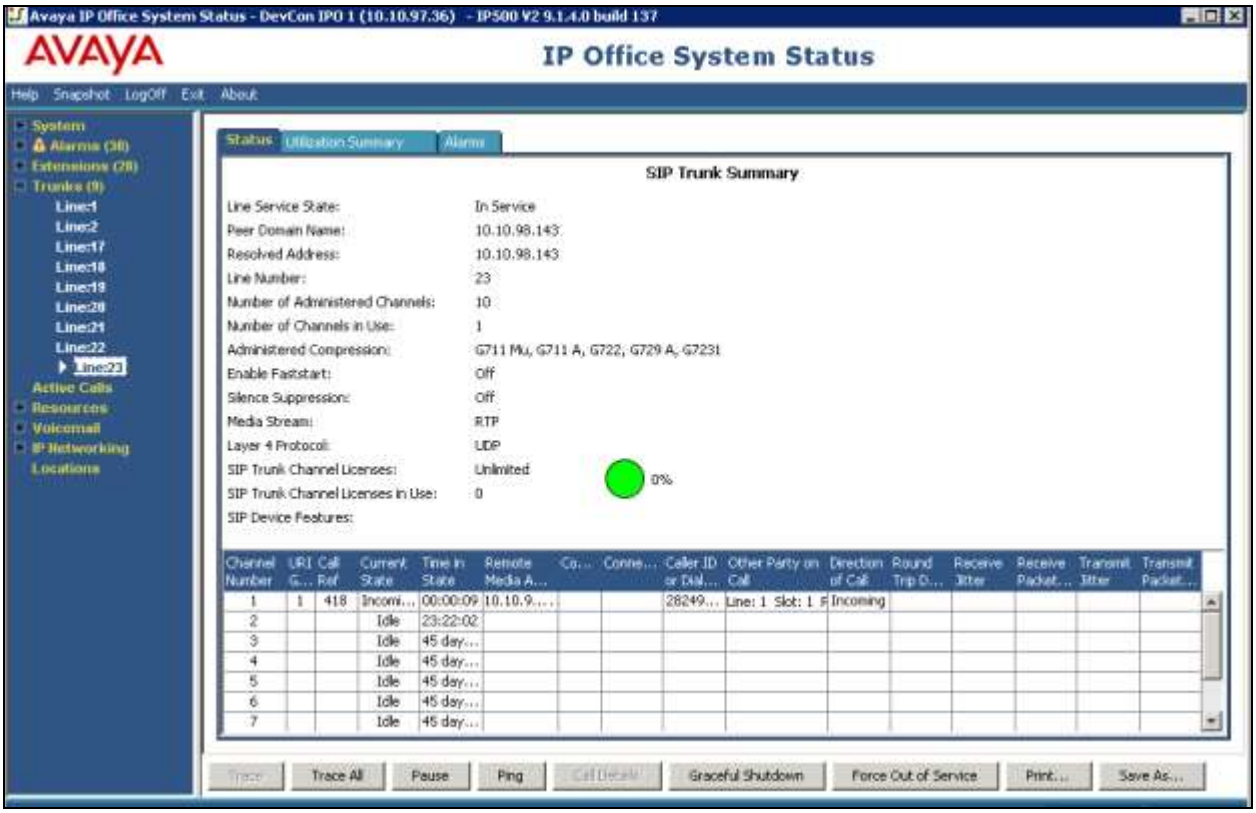
This section provides the tests that can be performed to verify proper configuration of IP Office and RightFax. Prior to verification, start sending a fax from the PSTN to a fax user on IP Office.

7.1. Verify Avaya IP Office

From the **Avaya IP Office R9.1 Manager** screen shown in **Section 5.1**, select **File → Advanced → System Status** to launch the System Status application, and log in using the appropriate credentials.

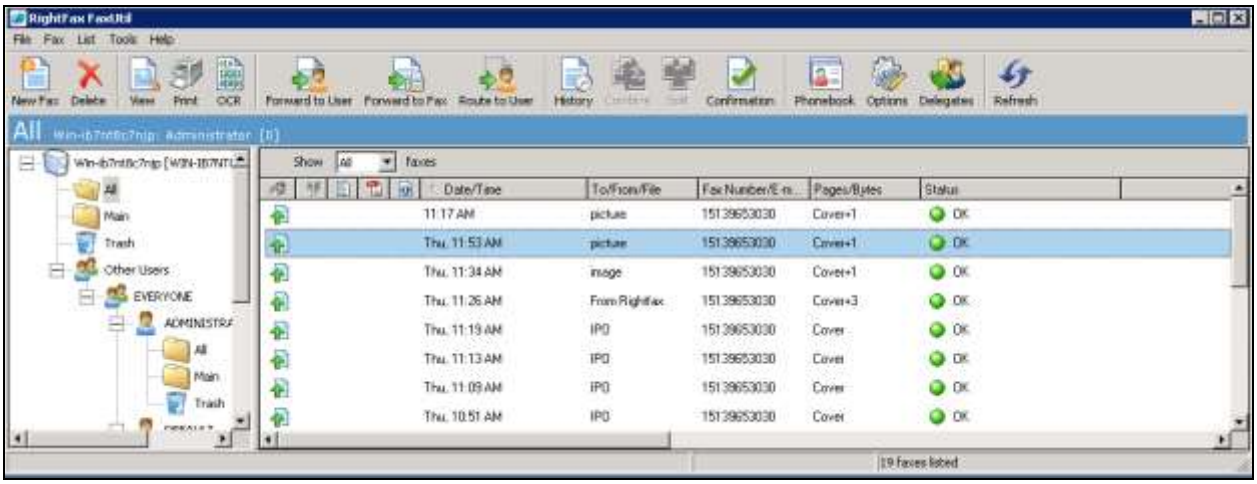
The **Avaya IP Office System Status** screen is displayed. Expand **Trunks** in the left pane and select the SIP line from **Section 5.4**, in this case "*23*".

Verify that the **SIP Trunk Summary** screen shows an active channel with **Current State** of the fax. Also verify that the **Other Party on Call** contains the proper information for the trunk with the PSTN, as shown below. In the compliance testing, line "*1*" is the existing PRI trunk to the PSTN.



7.2. Verify OpenText RightFax

From the **RightFax FaxUtil** window, a user can verify the status of incoming or outgoing faxes as shown below.



8. Conclusion

These Application Notes describe the configuration steps required for OpenText RightFax to successfully interoperate with Avaya IP Office 9.1. All feature and serviceability test cases were completed with an observation noted in **Section 2.2**.

9. Additional References

This section references the product documentation relevant to these Application Notes.

The following Avaya product documentation can be found at http://support.avaya.com.

1. *Avaya IP Office 9.1 Administering Avaya IP Office Platform with Manager*, Release 9.1
2. *Avaya IP Office™ Platform Documentation Catalog Release 9.1*, Document number 16-604278.
3. *Avaya IP Office™ Platform 9.1. Deploying Avaya IP Office™ Platform IP500 V2*, Document number 15-601042.

RightFax product documents may be found at https://knowledge.opentext.com. (Valid login required).
OpenText RightFax 10.6 Administrator Guide
OpenText RightFax 10.6 Installation Guide

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.