



Avaya Solution & Interoperability Test Lab

Application Notes for Sagemcom XMediusFAX with Avaya IP Office 9.0 – Issue 1.0

Abstract

These Application Notes describe the configuration steps required for Sagemcom XMediusFAX to interoperate with Avaya IP Office 9.0. Sagemcom XMediusFAX is a fax server application that uses the SIP trunk interface with T.38 fax from Avaya IP Office to send and receive 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

These Application Notes describe the configuration steps required for Sagemcom XMediusFAX to interoperate with Avaya IP Office 9.0. Sagemcom XMediusFAX is a fax server application that uses the SIP trunk interface with T.38 fax from Avaya IP Office to send and receive fax.

For each user on Avaya IP Office desired to use fax, a fax extension is assigned and configured on Sagemcom XMediusFAX. Incoming fax is routed by Avaya IP Office to Sagemcom XMediusFAX via an available SIP channel. The received incoming fax can be viewed by the fax user via the Sagemcom XMediusFAX web interface. Similarly, outgoing fax can be sent by the fax user via the Sagemcom XMediusFAX web interface.

2. General Test Approach and Test Results

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

The serviceability test cases were performed manually by disconnecting and reconnecting the Ethernet connection to XMediusFAX and rebooting the XMediusFAX 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 XMediusFAX:

- 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.
- DTMF interactions between XMediusFAX and IP Office.
- Sample testing of G.711 pass-through mode
- No adverse impact on the internal and external VoIP calls during fax transmission.

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

2.2. Test Results

All test cases were executed and verified as successful. However, the following observation was made during the compliance testing:

For an outbound PSTN call that required an account code, XMediusFAX generated the account code via DTMF but the DTMF digits were not recognized by IP Office and therefore the call did not go through. Outbound PSTN calls not requiring an account code worked fine.

2.3. Support

Technical support on XMediusFAX can be obtained through the following:

- **Phone:** (888) 766-1668
- **Email:** xmediusfax.support.americas@sagemcom.com
- **Web:** <http://xmediusfax.sagemcom.com/support>

3. Reference Configuration

The configuration used for the compliance testing is shown below. IP Office is connected to XMediusFAX via a SIP trunk and to an Emulated PSTN via an ISDN PRI line. Fax extensions of 29901 and 29902 are configured on the XMediusFAX server which send and receive fax calls to/from a fax machine in the PSTN.

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

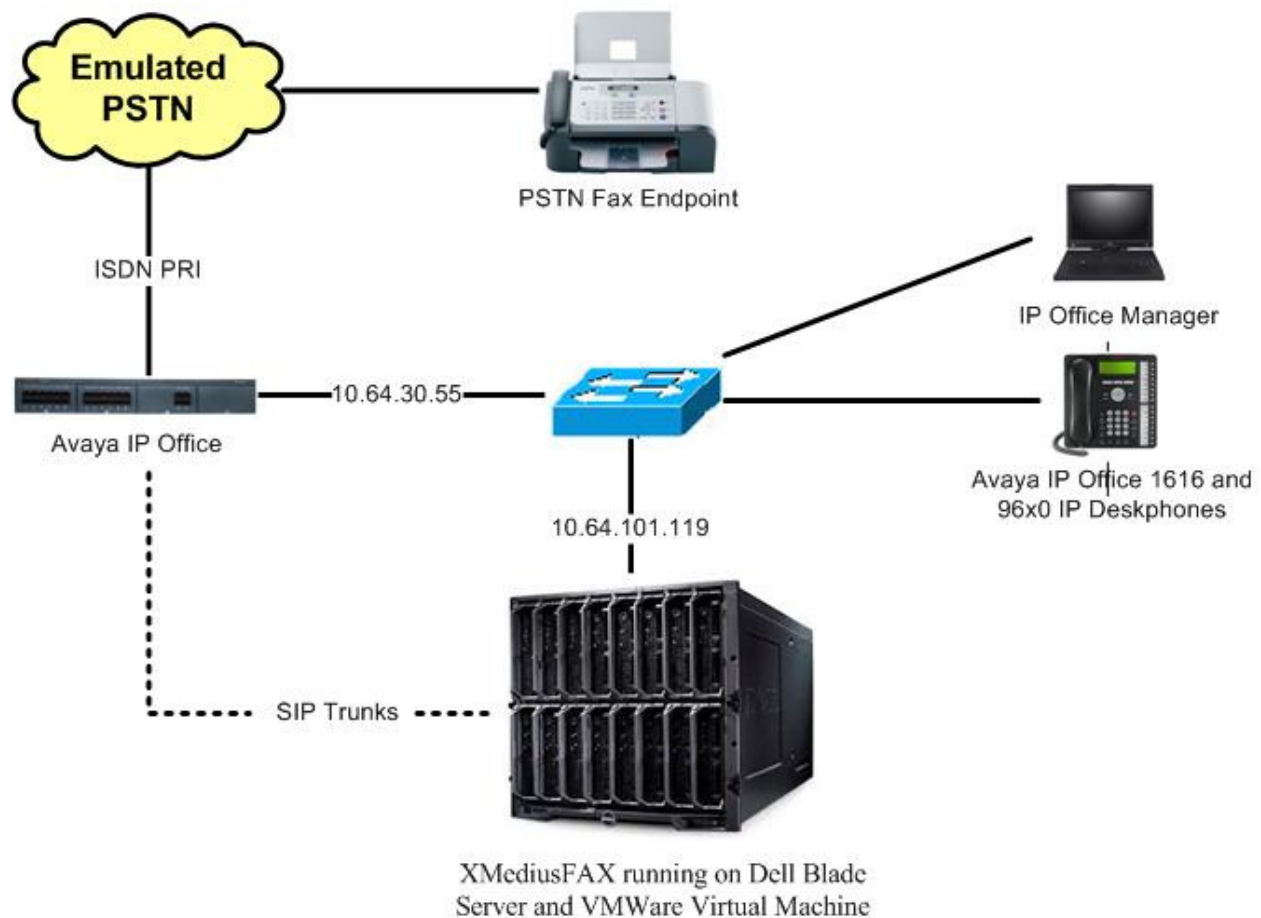


Figure 1: Compliance Testing Configuration

4. Equipment and Software Validated

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

Equipment	Software
Avaya IP Office on IP500 V2	9.0 (Build 829)
Avaya 1616 IP Deskphone (H.323)	R1.3
Avaya 9640 IP Deskphone (H.323)	R3.2
Sagemcom XMediusFAX on Microsoft Windows Server 2008 R2 Enterprise SP1 64-bit, running on a VMWare Virtual Machine	R7.5

Testing was performed with IP Office 500 V2 R9.0, but it also applies to IP Office Server Edition R9.0 (single site configuration only).

5. Configure Avaya IP Office

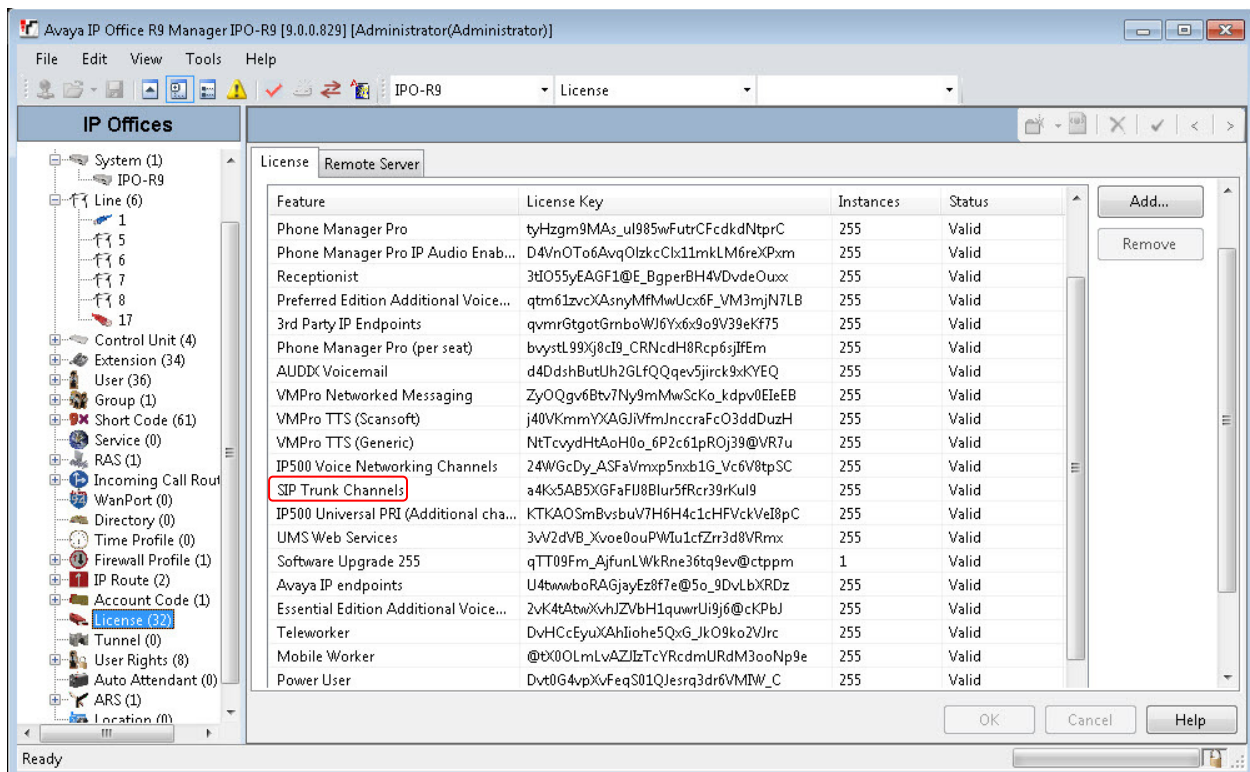
This section provides the procedures for configuring IP Office, assuming it has been installed and licensed. The procedures include the following areas:

- Verify IP Office license
- Obtain LAN IP address
- Enable SIP trunks
- Administer SIP line
- Administer incoming call route
- Administer short code

5.1. Verify IP Office License

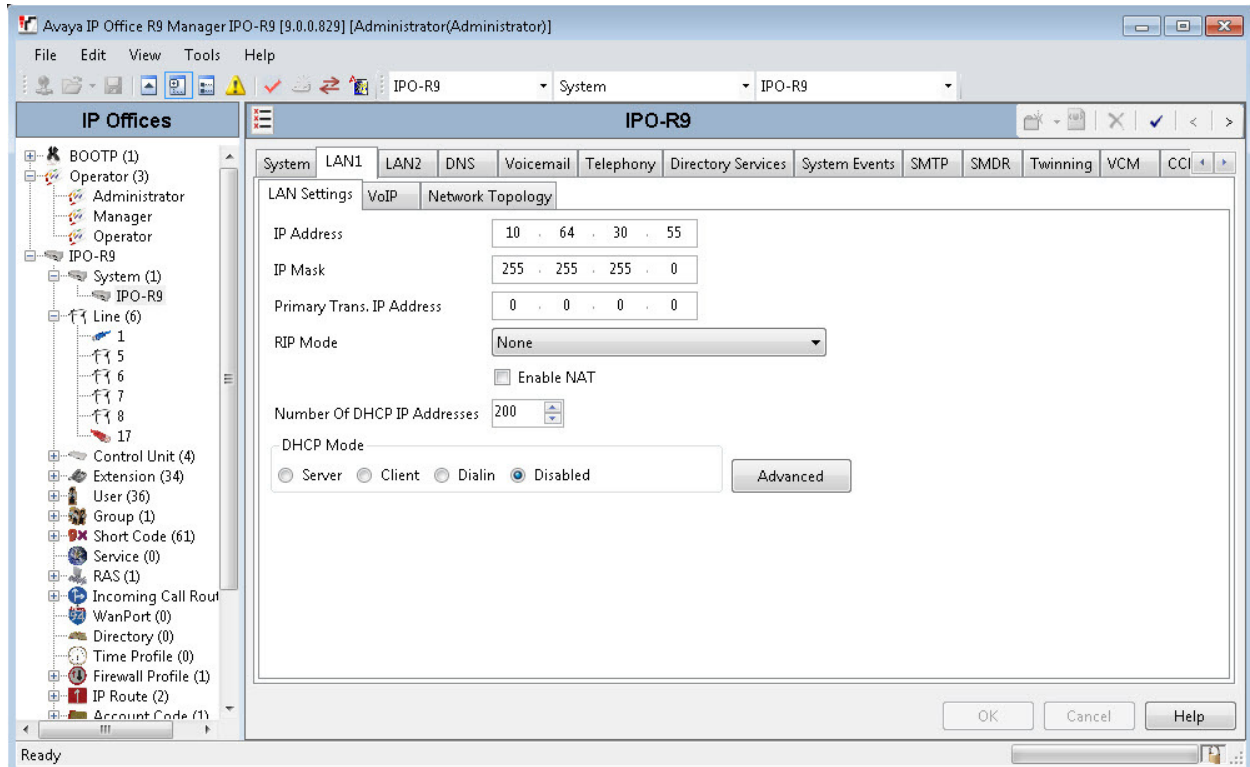
From a PC running the IP Office Manager application, select **Start → All Programs → IP Office → Manager** to launch the Manager application. Select the proper IP Office system, and log in using the appropriate credentials.

The **Avaya IP Office R9 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.



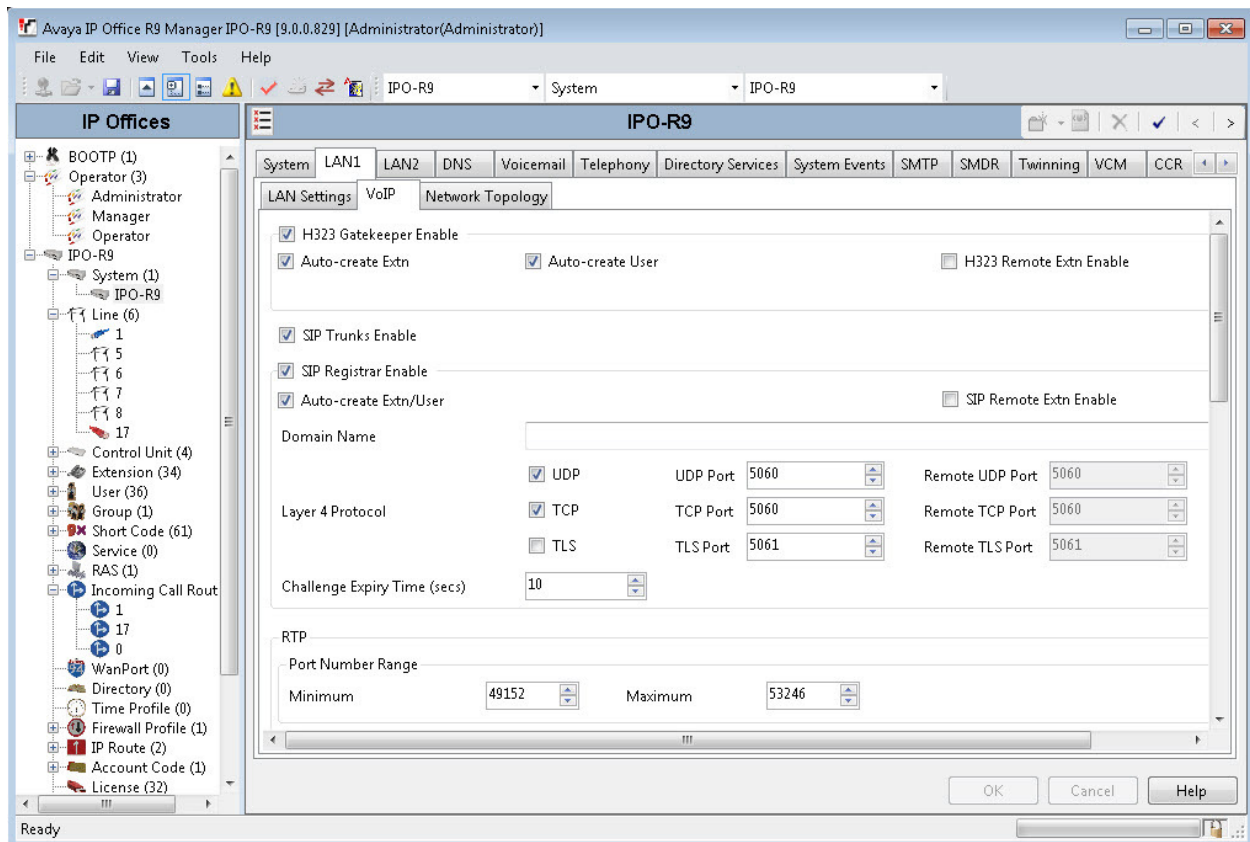
5.2. Obtain LAN IP Address

From the configuration tree in the left pane, select **IPO-R9** → **System** to display the **IPO-R9** screen in the right pane, where **IPO-R9** 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 XMediusFAX in **Section 6.2**. Note that IP Office can support SIP trunks on the LAN1 and/or LAN2 interfaces, and the compliance testing used the LAN1 interface.



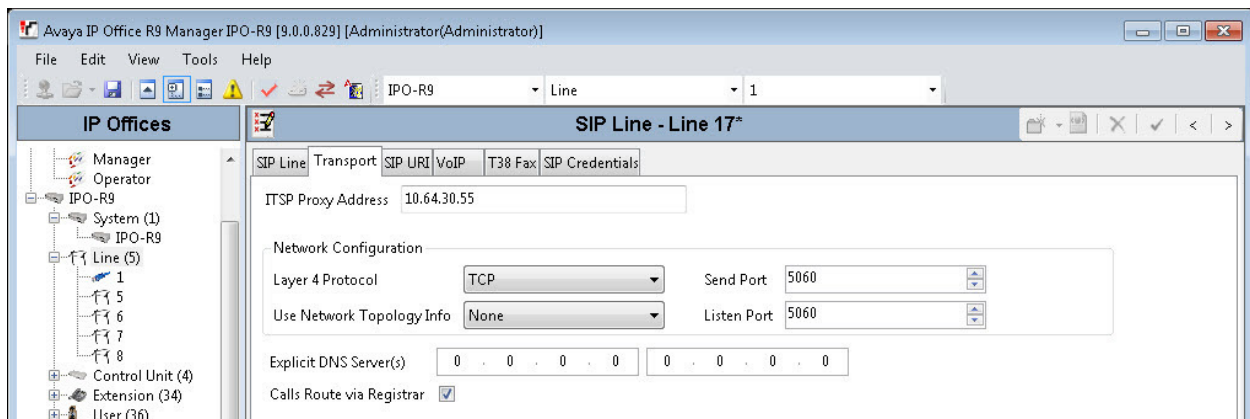
5.3. Enable SIP Trunks

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

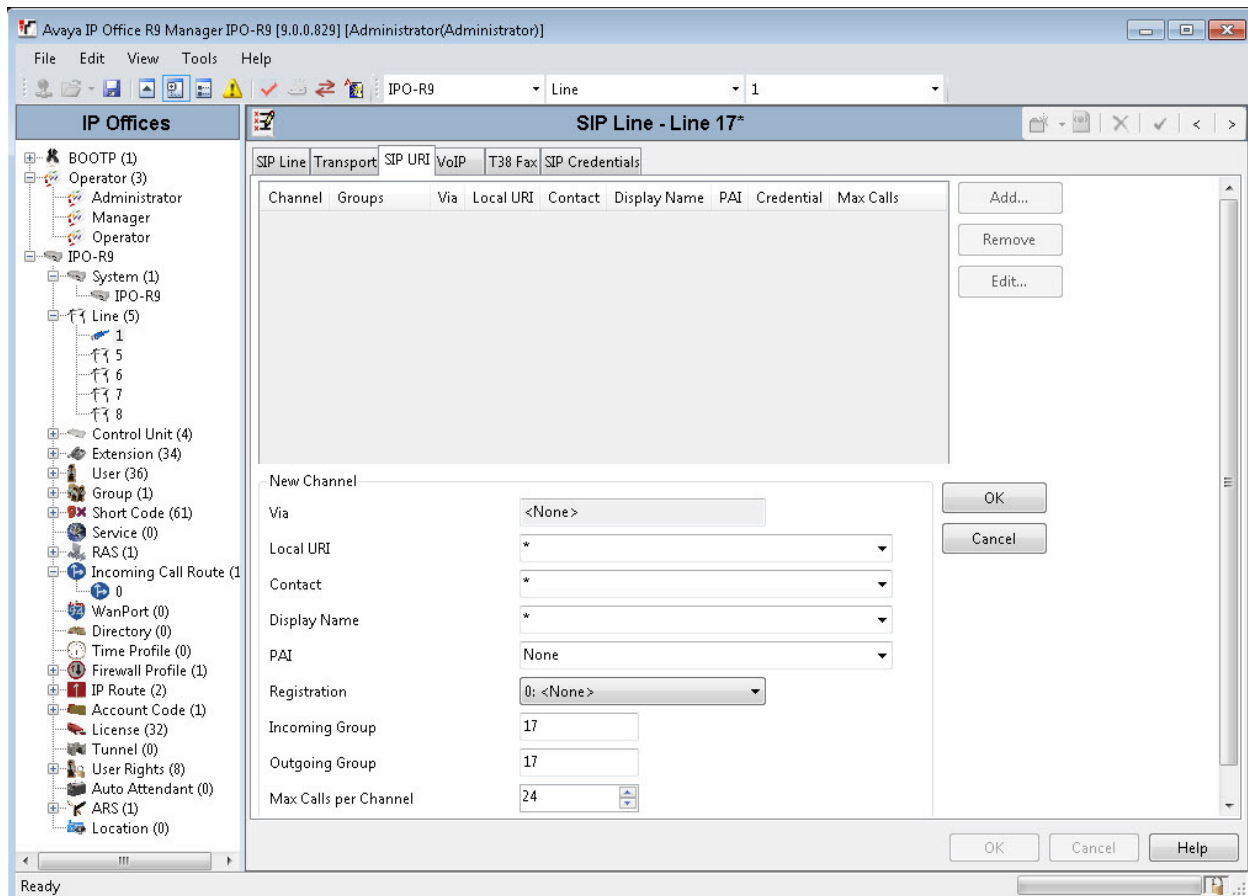


5.4. Administer SIP Line

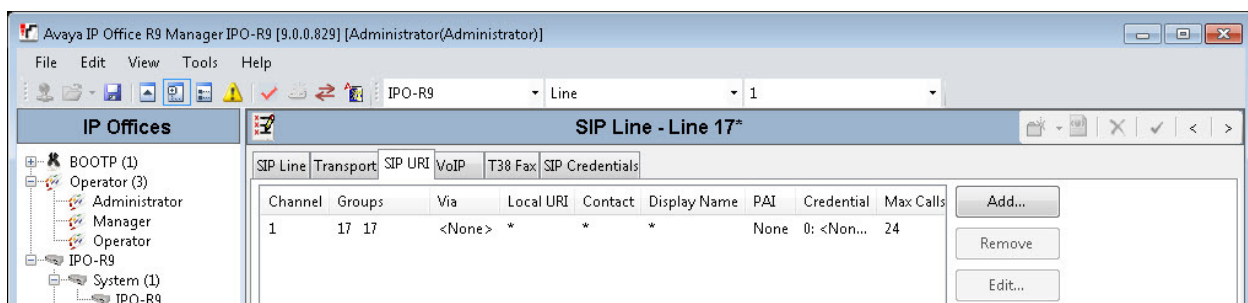
From the configuration tree in the left pane, right-click on **Line**, and select **New → SIP Line** from the pop-up list to add a new SIP line. Select the **Transport** tab in the right pane. For **ITSP Proxy Address**, enter the IP address of XMediusFAX. Set the **Layer 4 Protocol** field to **TCP**.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



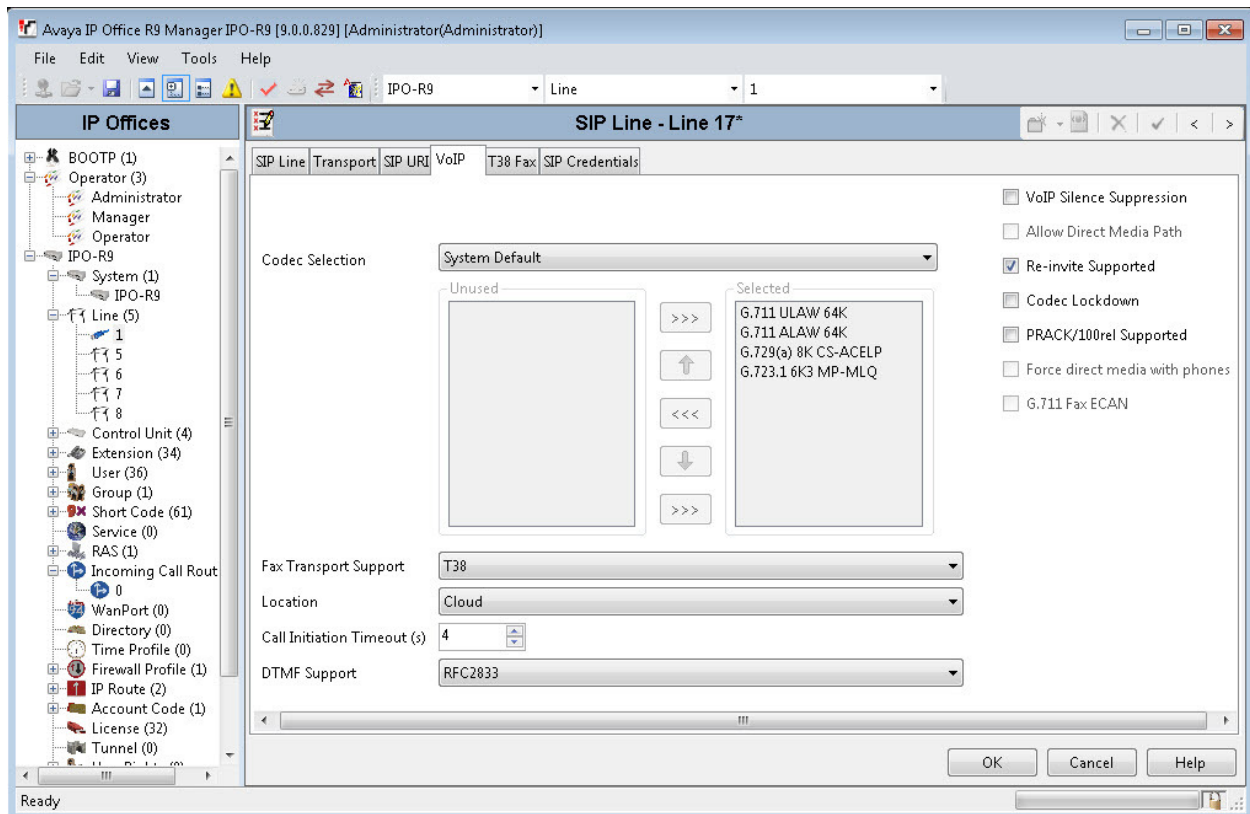
Select the **SIP URI** tab, and click **Add** to display the **New Channel** section. Enter the wildcard character “*” for **Local URI**, **Contact**, and **Display Name**. Enter an unused group number such as “17” for **Incoming Group** and **Outgoing Group**. Set **Max Calls per Channel** to the maximum number of simultaneous faxes allowed by the XMediusFAX license, in this case “24”. Retain the default values in the remaining fields. Click **OK**.



The screen is updated, as shown below.

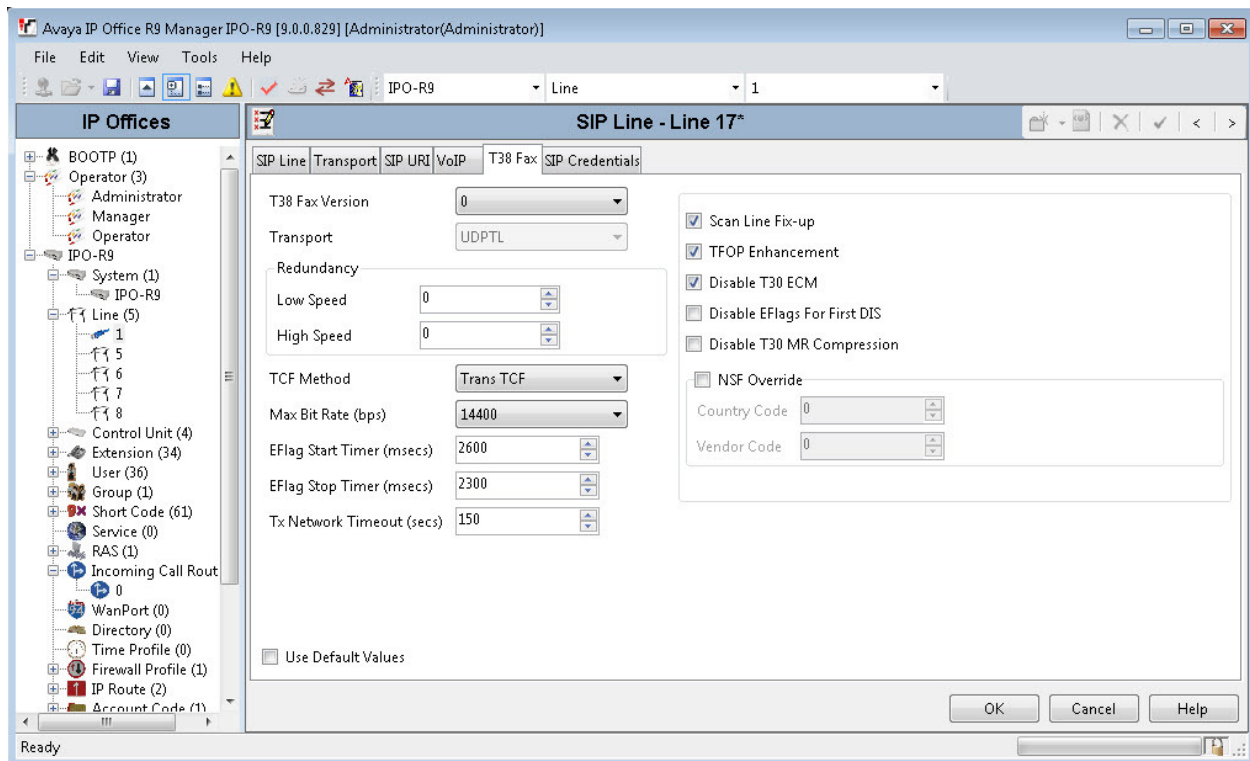


Select the **VoIP** tab. Check **Re-invite Supported**. For **Fax Transport Support**, select “T38” from the drop-down list. Retain the default values in the remaining fields.



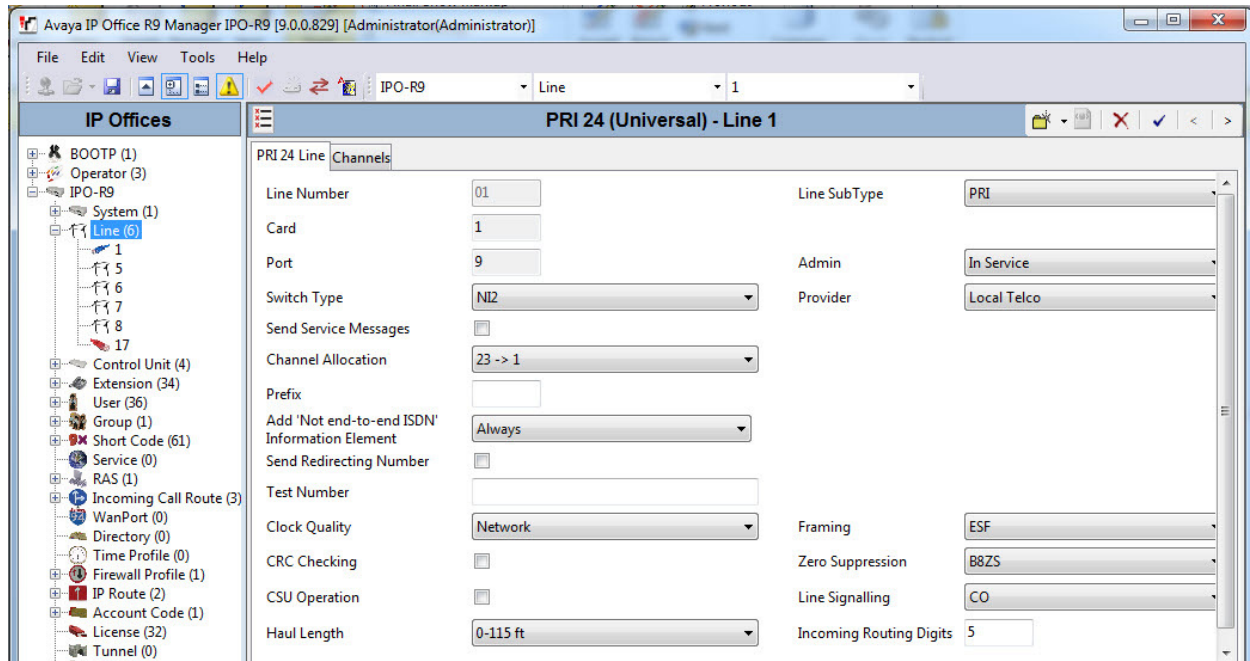
Select the **T38 Fax** tab. Uncheck **Use Default Values** toward the bottom of the screen to access all fields.

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



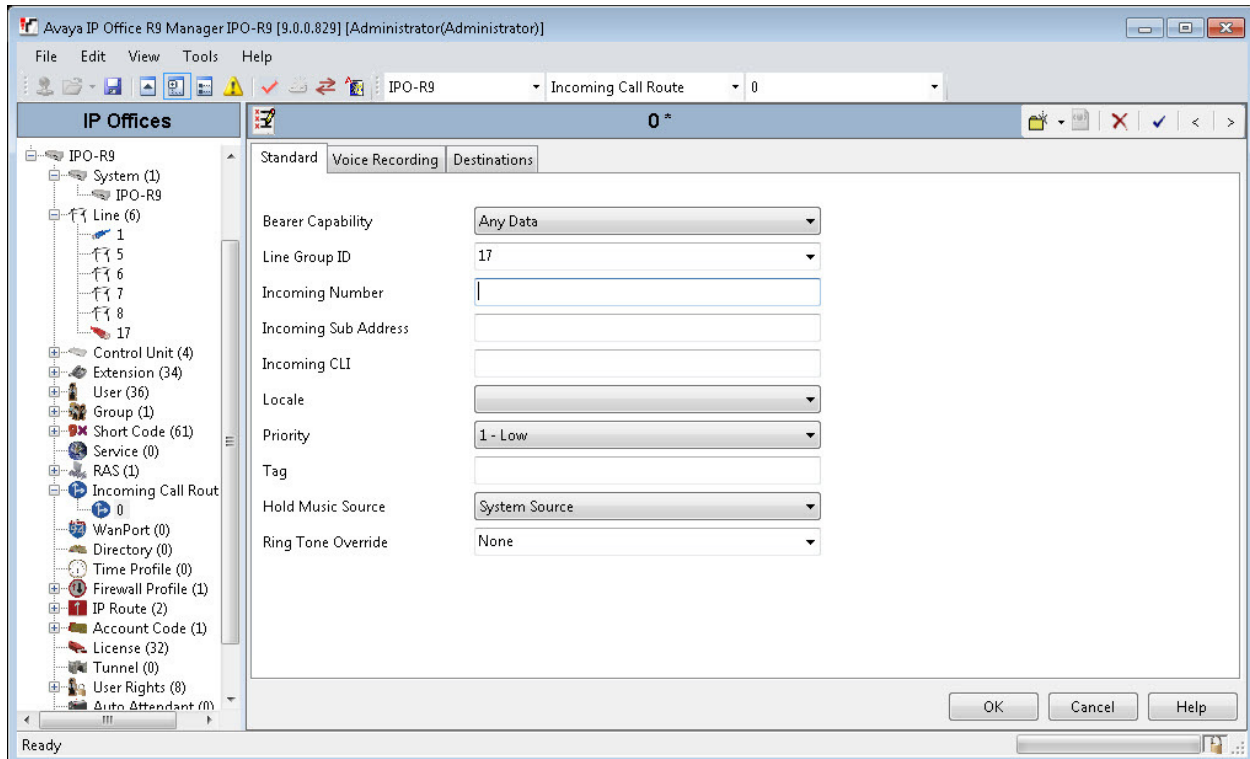
5.5. ISDN PRI Line Configuration

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 information purpose.

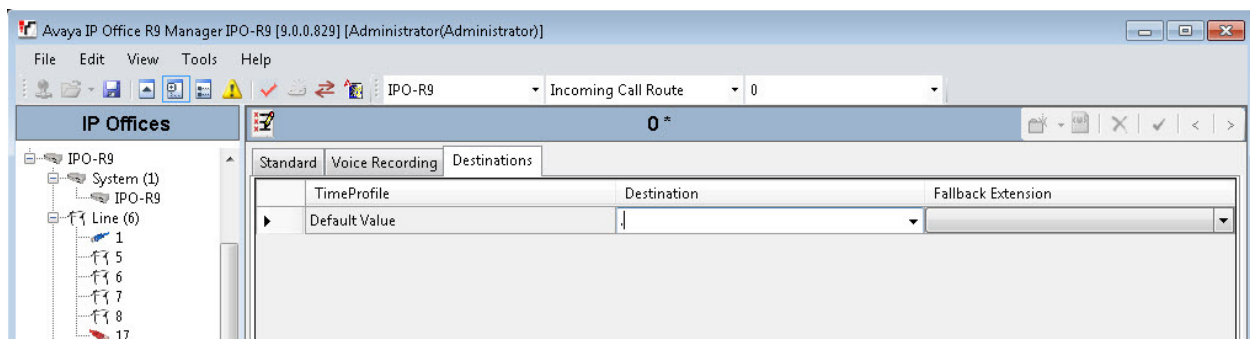


5.6. Administer Incoming Call Route

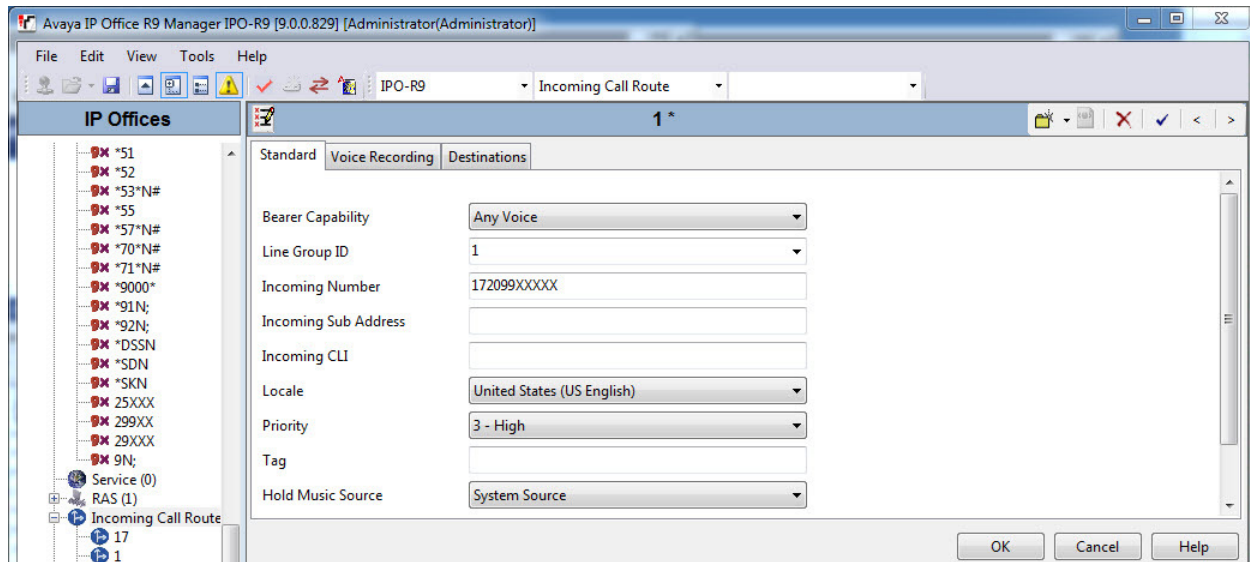
From the configuration tree in the left pane, right-click on **Incoming Call Route**, and select **New** from the pop-up list to add a new route. For **Line Group Id**, select the incoming group number from **Section Error! Reference source not found.**, in this case “17”. Click **OK**.



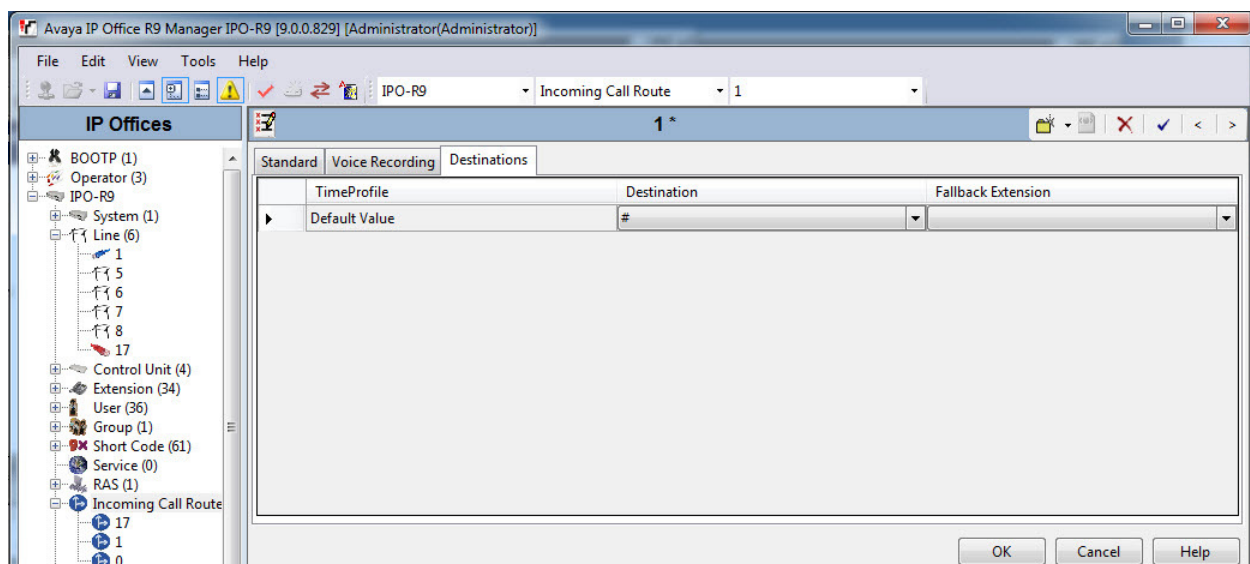
Select the **Destinations** tab. For **Destination**, enter “.” to match any dialed number from XMediusFAX.



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. For **Line Group Id**, select the incoming group number from **Section Error! Reference source not found.**, in this case “1”. For Incoming Number, enter “172099XXXXX” to match any call where the called party number has 172099 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 17209929901, the destination will be 29901.

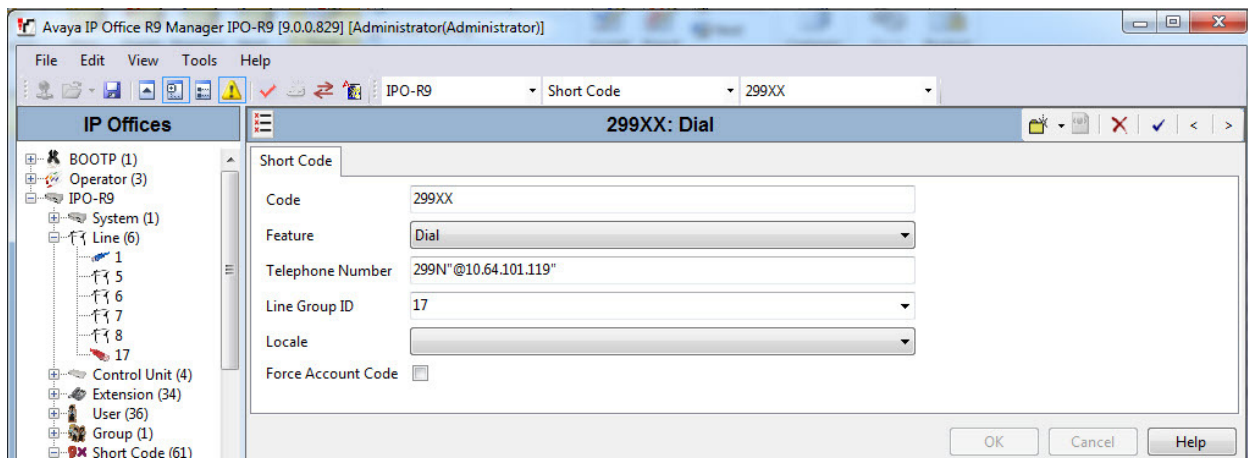


5.7. Administer Short Code

5.7.1. Short Code for Call to XMediusFax 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 XMediusFAX. In the compliance testing, users on IP Office are designated with fax numbers 299XX, and faxes are routed over the SIP trunks to XMediusFAX.

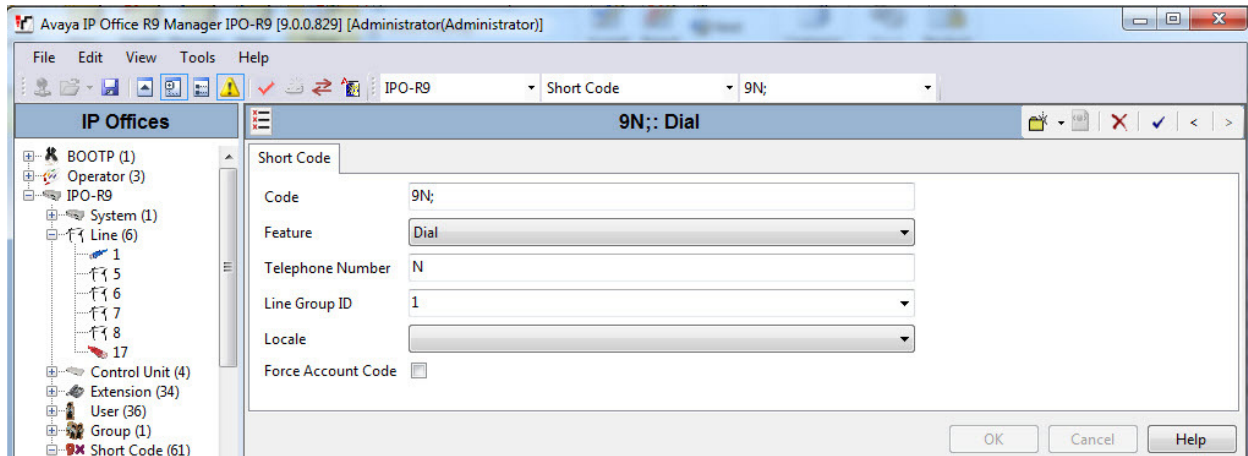
For **Code**, enter “299xx”. For **Feature**, select “Dial” from the drop-down list. For **Telephone Number**, enter “299N”@10.64.101.119” where “299N” corresponds to the short code and “10.64.101.119” is the IP address of XMediusFAX. For **Line Group ID**, enter the outgoing group number from **Section Error! Reference source not found.** Click **OK**.



5.7.2. Short Code for Call to PSTN

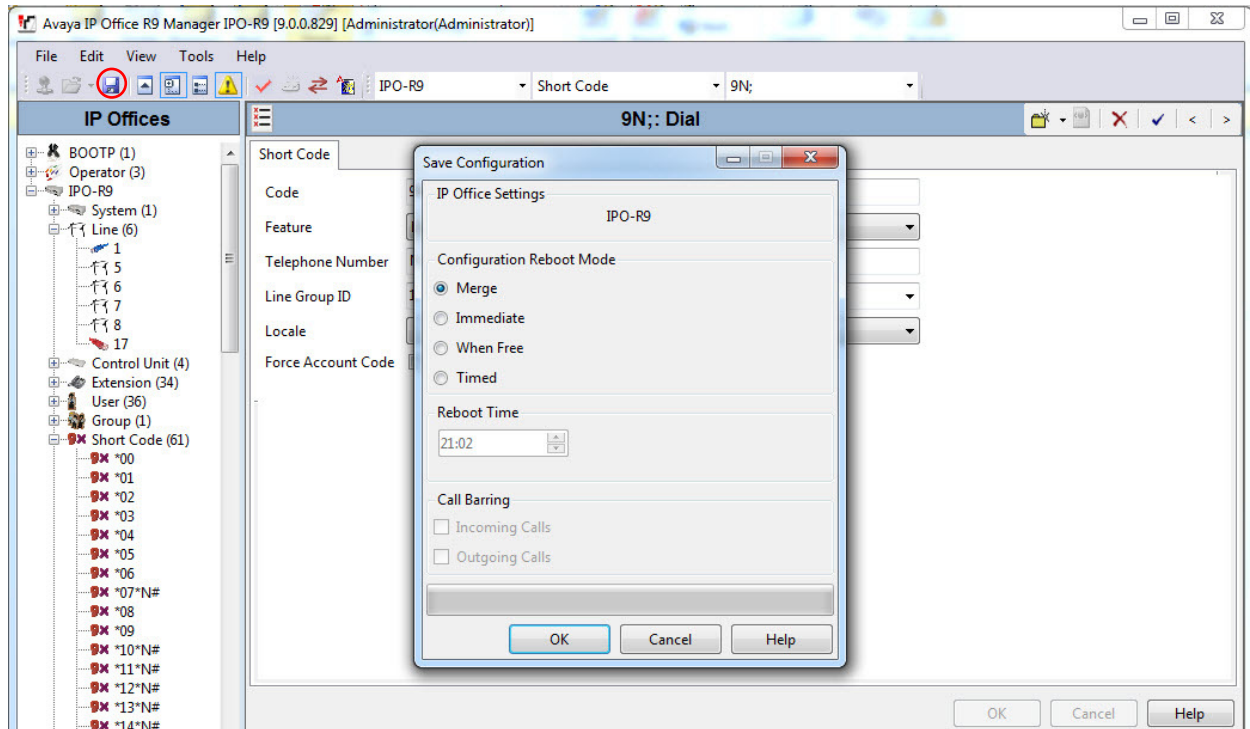
Repeat the procedure for another new short code for fax calls from XMediusFAX to PSTN.

Right-click on **Short Code** and select **New** from the pop-up list. For **Code**, enter “9N;”. For **Feature**, select “Dial” from the drop-down list. For **Telephone Number**, enter “N”. For **Line Group ID**, enter the outgoing group number assigned to the PRI trunk which is “1”. Click **OK**.



5.8. Save Configuration

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



The **Service User Login** screen is displayed (not shown). Enter the appropriate credentials and click **OK**.

6. Configure Sagemcom XMediusFAX

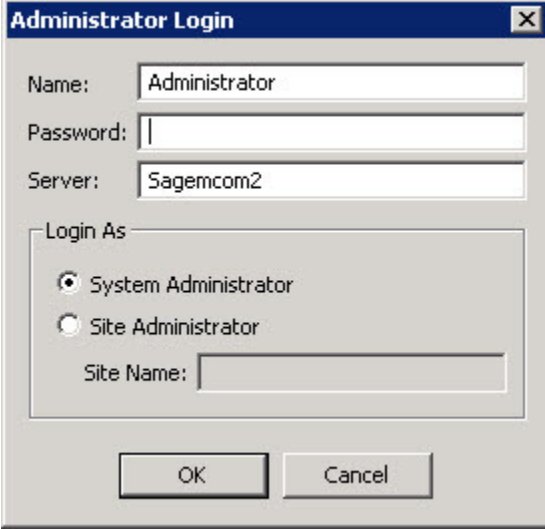
This section provides the procedures for configuring XMediusFAX. The procedures include the following areas:

- Launch application
- Administer driver
- Administer fax users
- Administer incoming routing table
- Restart service

Note that as part of the XMediusFAX installation, the IP Office IP address was entered, and a site name and the Basic user profile were created.

6.1. Launch Application

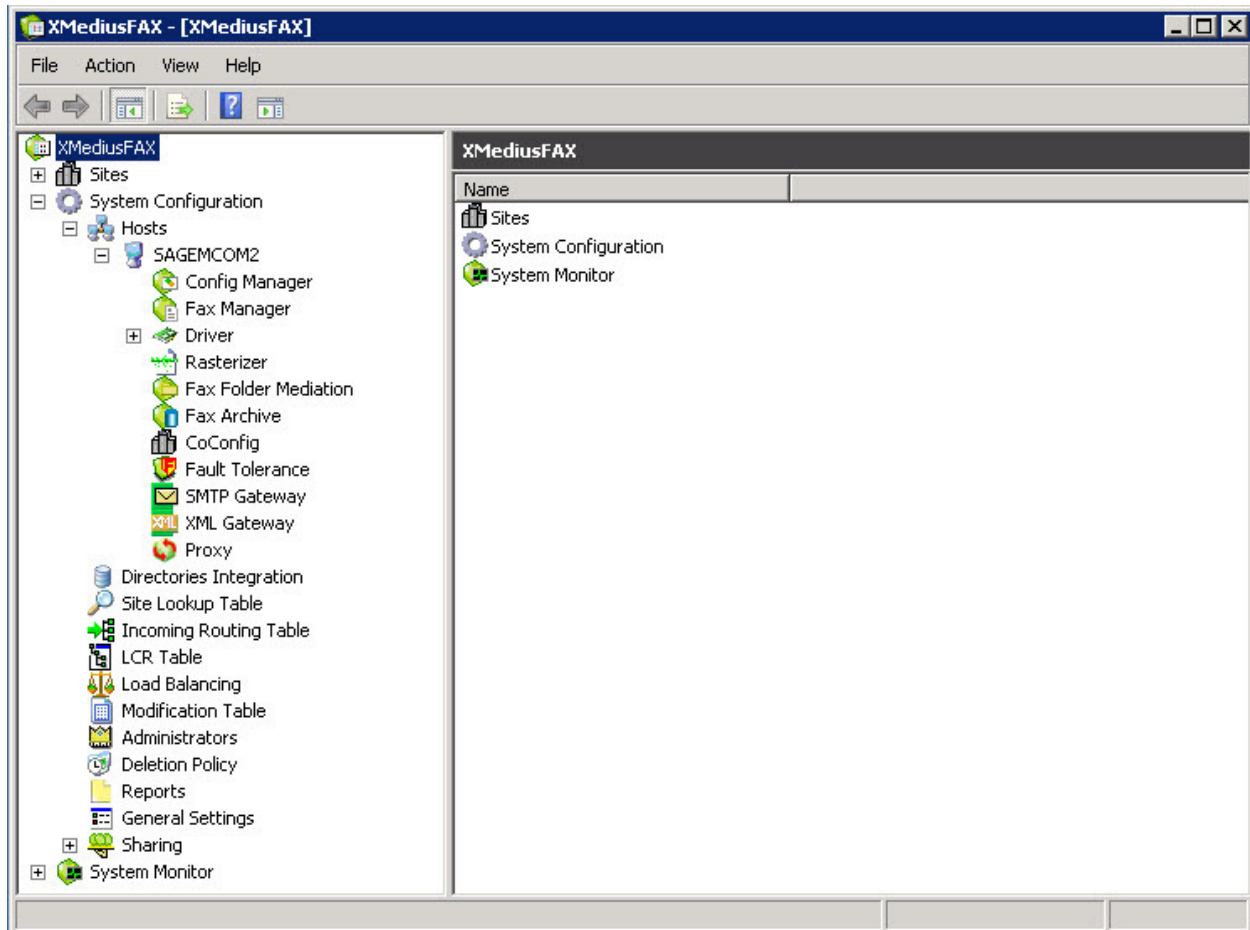
From the XMediusFAX server, select **Start → XMediusFAX → XMediusFAX** to launch the application. The **Administrator Login** screen below is displayed. Log in using the appropriate credentials.



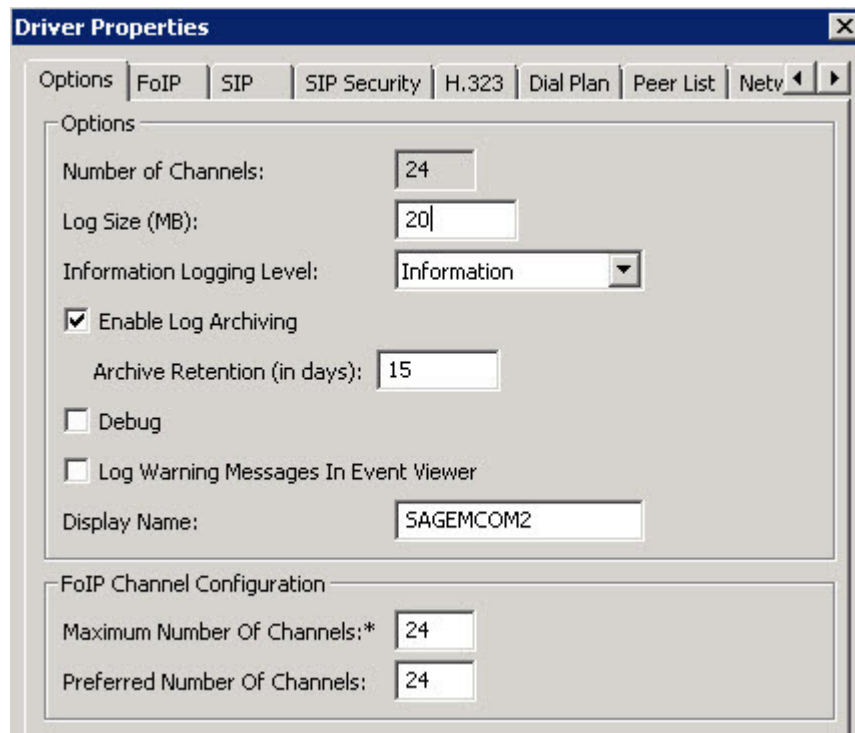
The image shows a Windows-style dialog box titled "Administrator Login". It contains three text input fields: "Name:" with "Administrator" entered, "Password:" which is empty, and "Server:" with "Sagemcom2" entered. Below these is a section titled "Login As" containing two radio buttons: "System Administrator" (which is selected) and "Site Administrator". Below the radio buttons is a "Site Name:" text input field which is empty. At the bottom of the dialog are "OK" and "Cancel" buttons.

6.2. Administer Driver

The XMediusFAX screen below is displayed next. Navigate to **XMediusFAX → System Configuration → Hosts → SAGEMCOM2 → Driver**, where **SAGEMCOM2** is the host name of the XMediusFAX server. Right click on **Driver**, and select **Properties**.



The **Driver Properties** screen is displayed. For **Maximum Number of Channels** and **Preferred Number Of Channels**, enter the maximum number of simultaneous faxes allowed by the XMediusFAX license, in this case “24”. Retain the default values in the remaining fields.



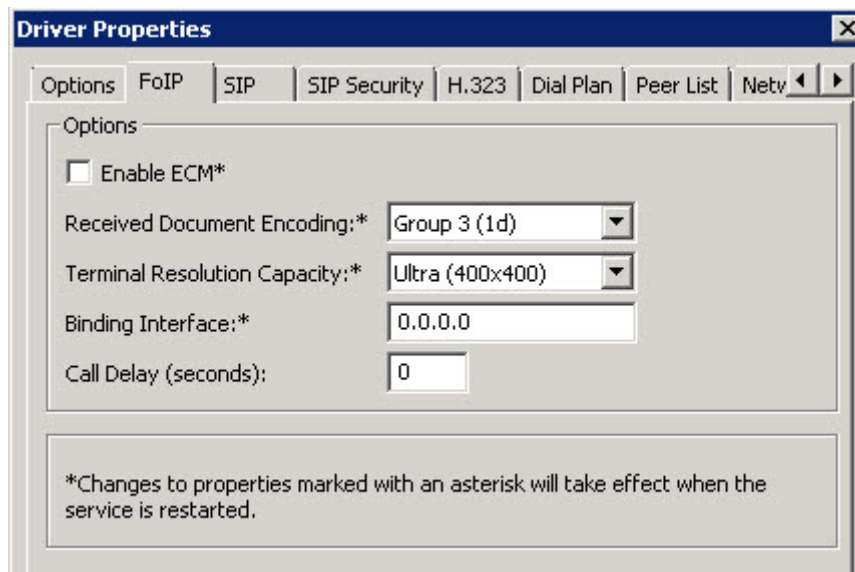
The screenshot shows the 'Driver Properties' dialog box with the 'Options' tab selected. The 'Options' section contains the following fields and values:

- Number of Channels: 24
- Log Size (MB): 20
- Information Logging Level: Information (dropdown)
- ☒ Enable Log Archiving
- Archive Retention (in days): 15
- ☐ Debug
- ☐ Log Warning Messages In Event Viewer
- Display Name: SAGEMCOM2

The 'FoIP Channel Configuration' section contains the following fields and values:

- Maximum Number Of Channels: 24
- Preferred Number Of Channels: 24

Select the **FoIP** tab. For **Terminal Resolution Capacity**, select “Ultra (400x400)” from the dropdown list.

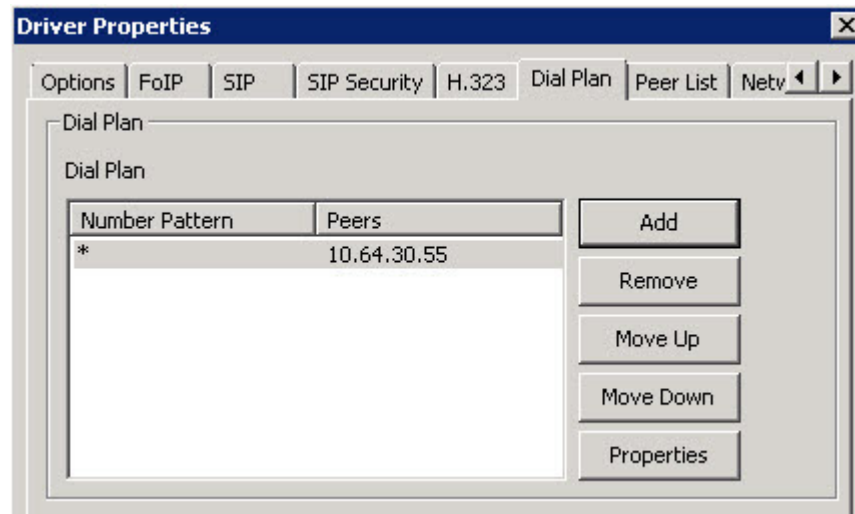


The screenshot shows the 'Driver Properties' dialog box with the 'FoIP' tab selected. The 'Options' section contains the following fields and values:

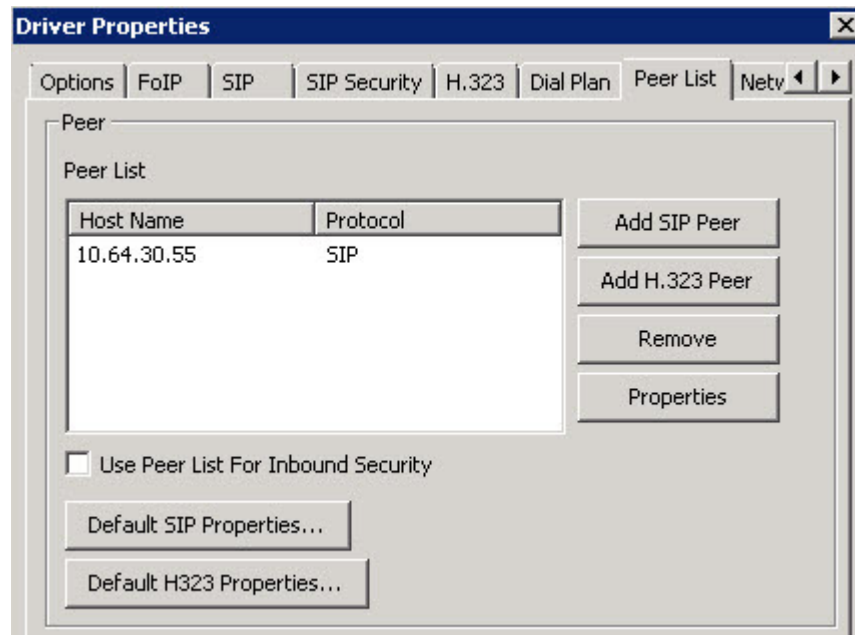
- ☐ Enable ECM*
- Received Document Encoding: Group 3 (1d) (dropdown)
- Terminal Resolution Capacity: Ultra (400x400) (dropdown)
- Binding Interface: 0.0.0.0
- Call Delay (seconds): 0

A note at the bottom states: "*Changes to properties marked with an asterisk will take effect when the service is restarted."

Select the **Dial Plan** tab, and configure as desired. In the compliance testing, the default setting was used to route any dialed number to IP Office. Note that the default setting was automatically created using the IP Office IP LAN1 address that was entered as part of installation (see **Section 5.2**).



Select the **Peer List** tab. Select the default entry as shown, and click **Properties**.



The **Peer Properties** screen is displayed. For **Transport** and **Port**, select the values that match the IP Office side configuration specified in **Section 5.4** (“TCP” and “5060”). Retain the default values in the remaining fields. Click **OK**.

Peer Properties

General | T.38 | G.711 | Codecs

Options

Host Name: 10.64.30.55

Transport: TCP

Port: 5060

Media Type: T.38 Fax Relay

Delay Before Call Completion (seconds): 1

Voice Call Timeout (seconds): 40

"user" parameter in SIP URI: phone

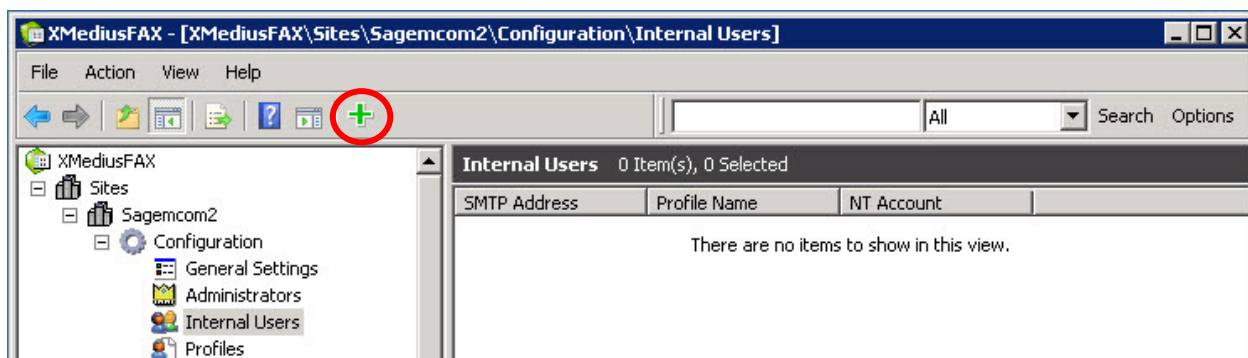
☐ V.34 Enabled

☐ Use Proxy

Host Name:

6.3. Administer Fax Users

From the **XMediusFAX** screen, select **XMediusFAX** → **Sites** → **Sagemcom2** → **Configuration** → **Internal Users** from the left pane, where **Sagemcom2** is the site name created as part of installation. Click on the **Add Record** icon.



The **User Properties** screen is displayed. Enter desired values for **SMTP Address**, **Password**, and **Confirmed Password**. Retain the default values in the remaining fields. Click **OK**.

User Properties

User | Personal Information

User

SMTP Address: user1

Profile Name: Basic

NT Account:

Password: *

Confirm Password: *

Time Zone

Time Zone: United States (Denver)

Repeat this procedure to add another fax user. In the compliance testing, two fax users were created as shown below.

SMTP Address	Profile Name	NT Account
user1	Basic	
user2	Basic	

6.4. Administer Incoming Routing Table

From the **XMediusFAX** screen, select **XMediusFAX → Sites → Sagemcom2 → Configuration → Incoming Routing Table** from the left pane. Click on the **Add Record** icon.

Type	Destinations	DNIS/DID Filter
Directories Lookup		

The **Routing Table Entry Properties** screen is displayed. Check the **Match DNIS/DID** checkbox and enter a value that matches the pattern configured in **Section 5.7.1** (e.g. 29901) in the corresponding **Pattern** field. In the **Type** field, select “User” from the dropdown list and click **Search**. The users configured in **Section 6.3** are displayed in the **Search Results** box. Select “user1” and click **Add to List**. The user then appears in the **Destination** box. Click **OK**.

Routing Table Entry Properties

Routing

☒ Match DNIS/DID Pattern: 29901

☐ Match ANI Pattern:

☐ Match CSID Pattern:

☐ Match DTMF Pattern:

Routing Destinations

Type: User

Filter:

Search Add User

Search Results

user1
user2

Add to List

Destination

Type	User	Display Name
User	user1	

Remove

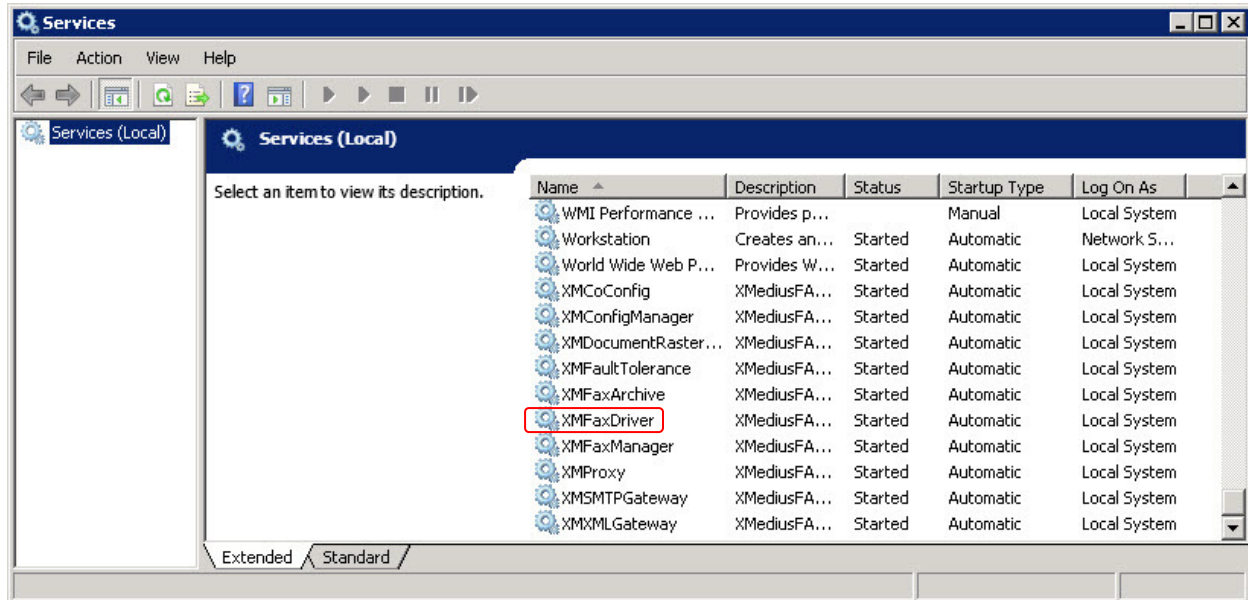
☒ If this routing entry matches, continue processing the routing table

OK Cancel

Repeat the procedure for “user2” with fax extension “29902”.

6.5. Restart Service

From the XMediusFAX server, select **Start → Control Panel → Administrative Tools → Services** to display the **Services** screen. Restart the **XMFaxDriver** service shown below.



7. Verification Steps

This section provides the tests that can be performed to verify proper configuration of IP Office and XMediusFAX. 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 R9.0 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 **IP Office System Status** screen is displayed. Expand **Trunks** in the left pane and select the SIP line from **Section Error! Reference source not found.**, in this case “17”.

Verify that the **SIP Trunk Summary** screen shows an active channel with **Current State** of “Connected”. 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.

The screenshot displays the Avaya IP Office System Status application. The left-hand navigation pane shows a tree structure with 'Trunks (8)' expanded, and 'Line: 17' selected. The main content area is titled 'SIP Trunk Summary' and shows the following details:

- Peer Domain Name: sip://10.64.101.119
- Resolved Address: 10.64.101.119
- Line Number: 17
- Number of Administered Channels: 24
- Number of Channels in Use: 1
- Administered Compression: G711 Mu, G711 A, G729 A, G7231
- Silence Suppression: Off
- Layer 4 Protocol: TCP
- SIP Trunk Channel Licenses: Unlimited
- SIP Trunk Channel Licenses in Use: 1
- SIP Device Features: 0%

Below the summary is a table with the following columns: Channel Number, URI, Call Ref, Current State, Time in State, Remote Media Address, Codec, Connection Type, Caller ID or Dialed Digits, Other Party on Call, Direction of Call, Round Trip Delay, Receive Jitter, Receive Packet Lo..., Transmit Jitter, and Transmit Packet Lo... The table contains six rows of data, with the first row (Channel 1) showing a 'Connected' state.

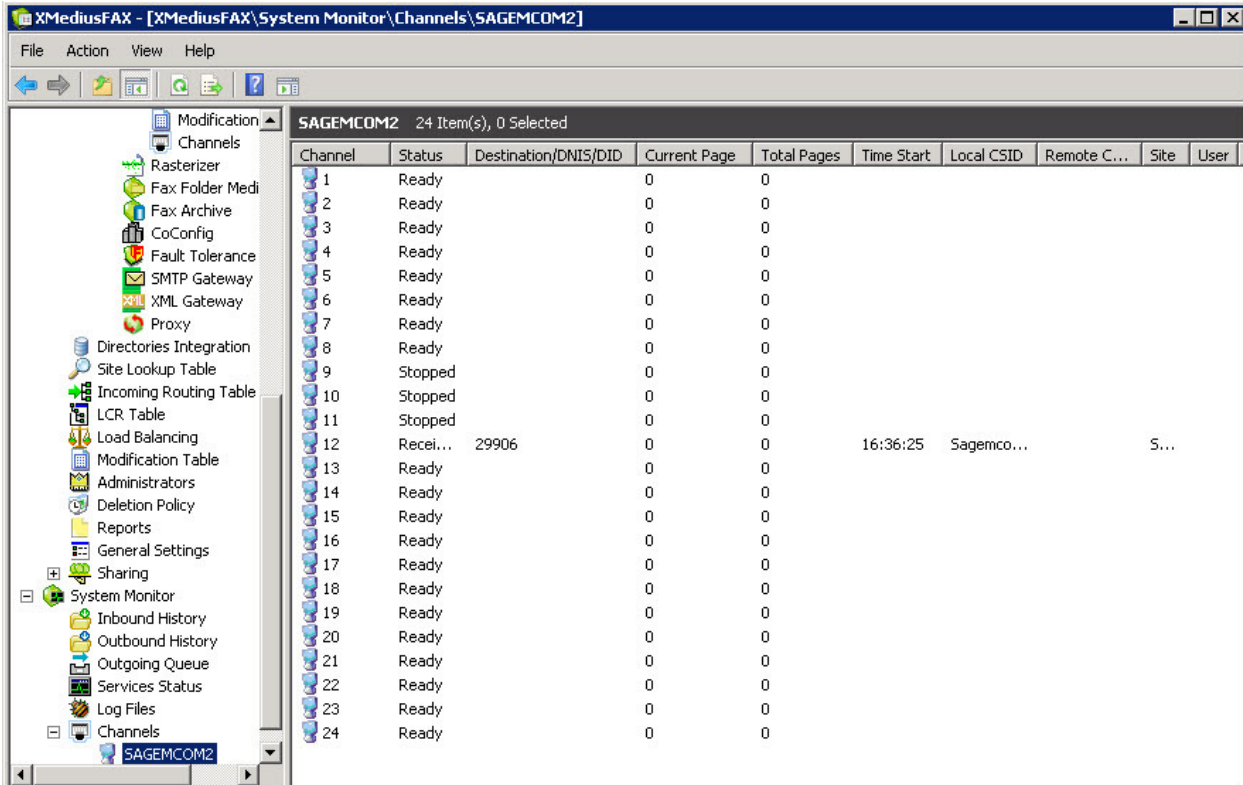
Channel Number	URI	Call Ref	Current State	Time in State	Remote Media Address	Codec	Connection Type	Caller ID or Dialed Digits	Other Party on Call	Direction of Call	Round Trip Delay	Receive Jitter	Receive Packet Lo...	Transmit Jitter	Transmit Packet Lo...
1	0	57	Connected	00:00:46	10.64.101.119	IT38 Fax	VCM		Line: 1 Slot: 1 Port: 1	Outgoing	0ms	0ms	0%		
2			Idle	20 days 0...											
3			Idle	20 days 0...											
4			Idle	20 days 0...											
5			Idle	20 days 0...											
6			Idle	20 days 0...											

At the bottom of the application window, there are buttons for 'Trace', 'Trace All', 'Pause', 'Ping', 'Call Details', 'Print...', and 'Save As...'.

7.2. Verify Sagemcom XMediusFAX

From the XMediusFAX screen, select **XMediusFAX → System Monitor → Channels → SAGEMCOM2**, to display the status of the channels in the right pane.

Verify that there is an active channel with the fax destination shown in **Destination/DNIS/DID**.



The screenshot displays the XMediusFAX System Monitor interface. The left pane shows a tree view with 'Channels' selected. The right pane shows a table of 24 channels for SAGEMCOM2. Channel 12 is highlighted, showing a status of 'Recei...' and a destination of '29906'.

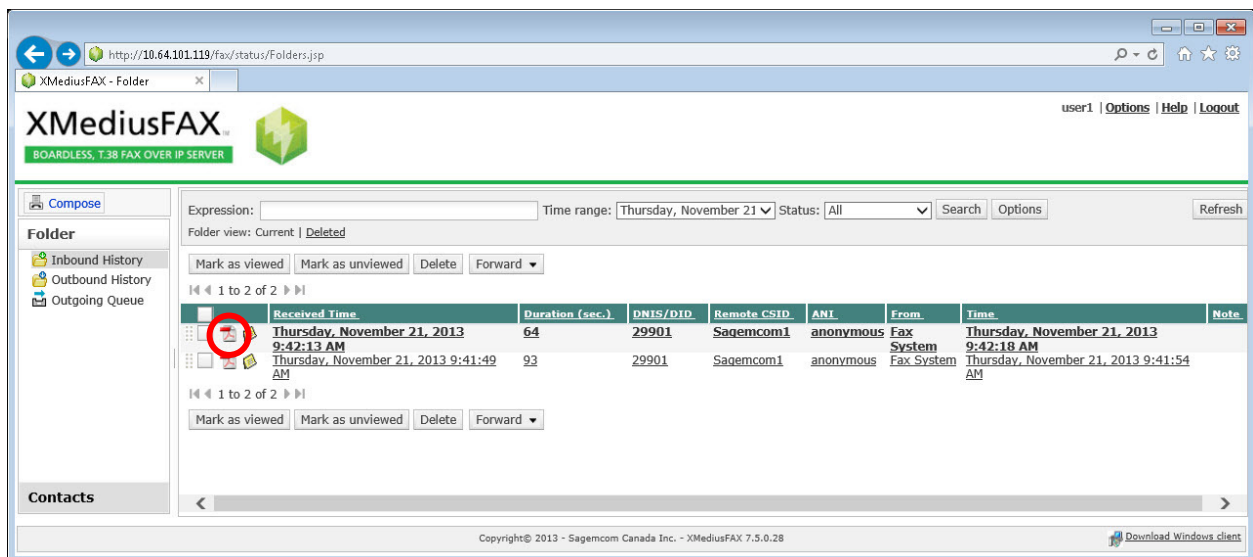
Channel	Status	Destination/DNIS/DID	Current Page	Total Pages	Time Start	Local CSID	Remote C...	Site	User
1	Ready		0	0					
2	Ready		0	0					
3	Ready		0	0					
4	Ready		0	0					
5	Ready		0	0					
6	Ready		0	0					
7	Ready		0	0					
8	Ready		0	0					
9	Stopped		0	0					
10	Stopped		0	0					
11	Stopped		0	0					
12	Recei...	29906	0	0	16:36:25	Sagemco...		S...	
13	Ready		0	0					
14	Ready		0	0					
15	Ready		0	0					
16	Ready		0	0					
17	Ready		0	0					
18	Ready		0	0					
19	Ready		0	0					
20	Ready		0	0					
21	Ready		0	0					
22	Ready		0	0					
23	Ready		0	0					
24	Ready		0	0					

Access the XMediusFAX web interface by using the URL “http://ip-address/fax” in an Internet browser window, where “ip-address” is the IP address of XMediusFAX. Log in using the appropriate fax user credentials from **Section 6.3**.



The image shows the XMediusFAX login interface. At the top left is the XMediusFAX logo with the tagline "BOARDLESS, T.38 FAX OVER IP SERVER". To the right is a green hexagonal icon with a white lightning bolt. Below the logo, there are two input fields: "Email Address :" with the value "user1" and "Password :". Below the password field is a checkbox labeled "Stay signed in". A "Login" button is positioned to the right of the password field. At the bottom of the page, a blue footer bar contains the text "Copyright© 2013 - Sagemcom Canada Inc. - XMediusFAX 7.5.0.28".

The XMediusFAX screen below is displayed. After the incoming fax completes, select **Inbound History** from the left pane. Verify that there is an entry showing the new incoming fax, with proper values in the **DNIS/DID** and **ANI** fields. Click on the **View Fax** icon, and verify that the incoming fax can be viewed.



The image shows the XMediusFAX web interface after logging in. The top navigation bar includes "user1 | Options | Help | Logout". The left sidebar contains a "Folder" section with "Inbound History" selected. The main content area displays a table of fax records. The first record is highlighted with a red circle around its "View Fax" icon. The table has the following columns: Received Time, Duration (sec.), DNIS/DID, Remote CSID, ANI, From, Time, and Note.

Received Time	Duration (sec.)	DNIS/DID	Remote CSID	ANI	From	Time	Note
Thursday, November 21, 2013 9:42:13 AM	64	29901	Sagemcom1	anonymous	Fax System	Thursday, November 21, 2013 9:42:18 AM	
Thursday, November 21, 2013 9:41:49 AM	93	29901	Sagemcom1	anonymous	Fax System	Thursday, November 21, 2013 9:41:54 AM	

At the bottom of the page, a blue footer bar contains the text "Copyright© 2013 - Sagemcom Canada Inc. - XMediusFAX 7.5.0.28" and a "Download Windows client" link.

8. Conclusion

These Application Notes describe the configuration steps required for Sagemcom XMediusFAX to successfully interoperate with Avaya IP Office 9.0. 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.

1. *IP Office Manager 9.0*, Document 15-601011, Issue 9.01, September 2013, available at <http://support.avaya.com>.
2. *XMediusFAX Administrator Guide*, Version Number 7.5.0.28, October 2013, available upon request to Sagemcom technical support.
3. *XMediusFAX User Guide*, Version Number 7.5.0.28, October 2013, available upon request to Sagemcom technical support.

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