



Avaya Solution & Interoperability Test Lab

Application Notes for Configuring GFI FaxMaker™ Version 16 with Avaya IP Office Release 9.0 - Issue 1.0

Abstract

These Application Notes contains interoperability instructions for configuring GFI FaxMaker™ with Avaya IP Office. Compliance testing was conducted to verify the interoperability. Testing was performed using Avaya IP Office 500 V2 R9.0, but it also applies to Avaya IP Office Server Edition R9.0 (single site configuration only).

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

GFI FaxMaker™ fax server software solution for small to medium sized businesses. GFI FaxMaker™ software is a SIP-based fax solution and uses TE-SYSTEM XCAPi Voice over IP to transmit fax over the internet using SIP protocol. It allows users to send and receive faxes directly from their email client. It also allow user to save each fax digitally for easier filing and finding. GFI FaxMaker™ is configured to communicate with Avaya IP Office using SIP.

2. General Test Approach and Test Results

The general test approach was to verify interoperability between Avaya IP Office and GFI FaxMaker.

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 the following test scenarios:

- SIP Options message between Avaya IPO and FaxMaker server.
- Basic T.38 fax calls between FaxMaker server and an analog fax machine attached in Avaya IPO with various page lengths, resolution and at various fax data speeds.
- Basic T.38 fax calls between FaxMaker server and a fax machine in the PSTN via ISDN PRI trunk which is tandemed over SIP trunk with various page lengths, resolution and at various fax data speeds.

The serviceability testing focused on verifying the ability of FaxMaker to recover from adverse conditions, such as disconnecting and reconnecting the Ethernet cable, restarting the FaxMaker server, and disable and enable SIP trunk.

2.2. Test Results

The objectives outlined in **Section 2.1** were verified and all test cases passed.

2.3. Support

For technical support on the GFI FaxMaker product, contact GFI FaxMaker support via the website below.

Phone:

Web: <http://www.gfi.com>

3. Reference Configuration

Figure 1 illustrates the test configuration. The test configuration shows the GFI FaxMaker™ connected to Avaya IP Office via SIP trunk. Avaya IP office also has PRI trunk to another PBX system configured as simulated PSTN. The certificate test was to exercise fax calls between FaxMaker server and Fax machine 1 via SIP trunk and FaxMaker and Fax machine 2 via combination of SIP and PRI trunks.

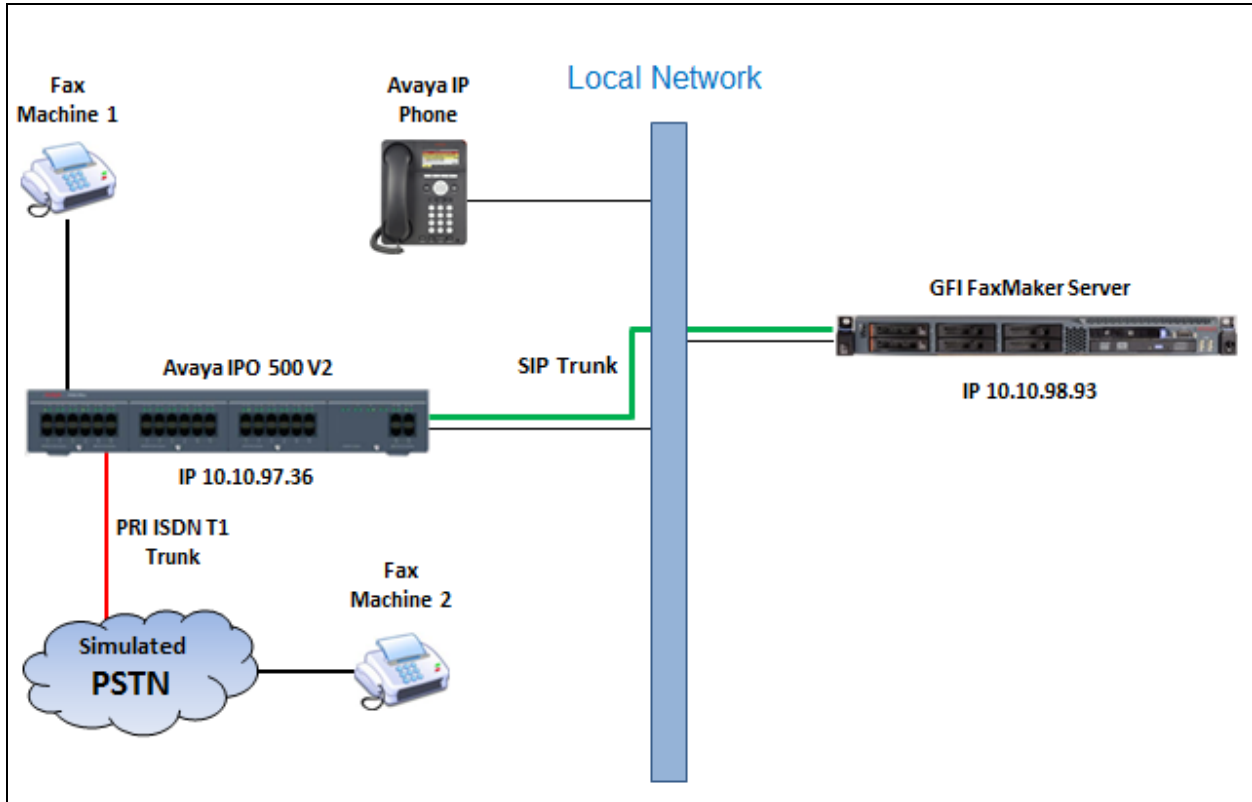


Figure 1: Test Configuration Diagram

4. Equipment and Software Validated

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

Equipment/Software	Release/Version
Avaya IP Office 500 V2	R 9.0.3.0 build 941
GFI FaxMaker running on Microsoft Windows Server 2008 R2	Version 16.0 (Build 20131008)
TE-SYSTEMS XCAPI	Version 3.3.249.0
Fax machine HP Officejet 4500	-

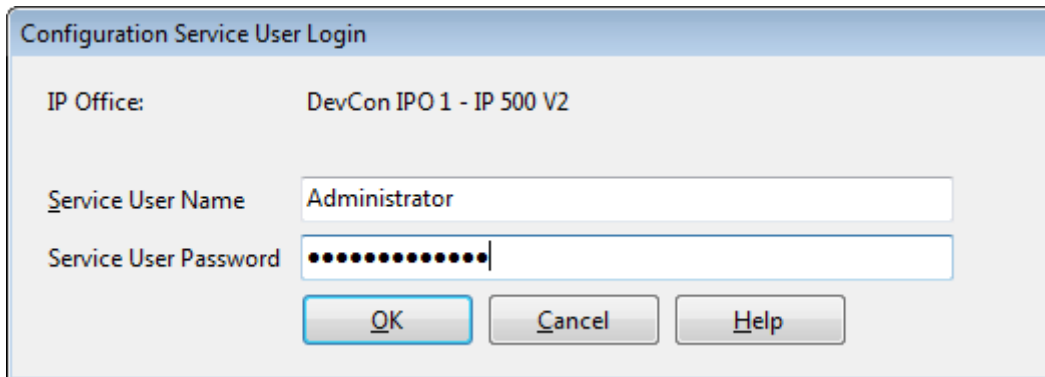
Note: Testing was performed with IP Office 500 V2 R9.0, but it also applies to IP Office Server Edition R9.0 (single site configuration only).

5. Configure Avaya IP Office

The configuration of Avaya IP Office system was performed using the Avaya IP Office Manager application. Once completed the Avaya IP Office Manager Configuration must be saved and uploaded to the IP Office System. This process may sometimes force a system reboot.

5.1. Connect to Avaya IP Office using Manager

From a Windows PC, open Manager. Location of the Manager will vary depending on the Windows Operating System. For Windows XP, navigate to **Start → All Program → IP Office → Manager**. The **Select IP Office** window is displayed (not shown), enter the IP address of IP office in the **Unit/Broadcast Address** box and click on **Refresh** button. The IP Office system is displayed in the window, select the IP Office system and click **OK** to connect. The **Configuration Service User Login** window is displayed, enter the proper password to login.



The screenshot shows a dialog box titled "Configuration Service User Login". It contains the following fields and buttons:

- IP Office:** DevCon IPO 1 - IP 500 V2
- Service User Name:** Administrator
- Service User Password:** A password field with 12 dots and a cursor.
- Buttons:** OK, Cancel, and Help.

5.2. Verify License Capacity

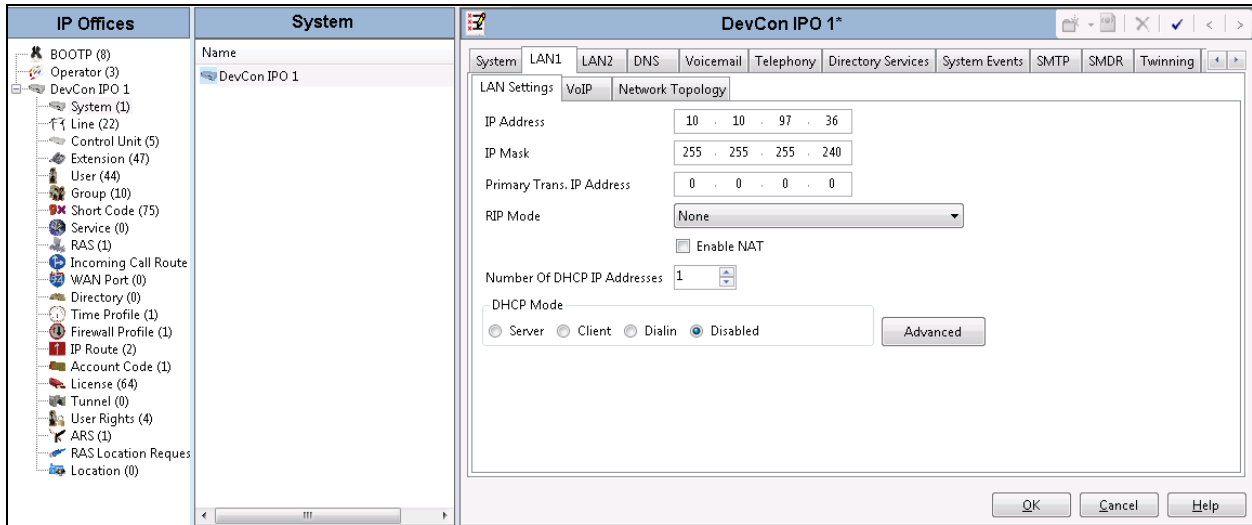
Navigate to **License** → **SIP Trunk Channels** in the Navigation Pane. In the **Details Pane**, verify that the License Status is **Valid** and that the number of **Instances** is sufficient to support the number of SIP trunk channels provisioned for FaxMaker.

The screenshot displays the Avaya IP Office software interface. On the left is the 'IP Offices' navigation pane with a tree view of system components. The main area shows the 'License' details for the 'Remote Server'. The license mode is 'License Normal' and the PLDS Host ID is '111302787498'. A table lists various features and their license details:

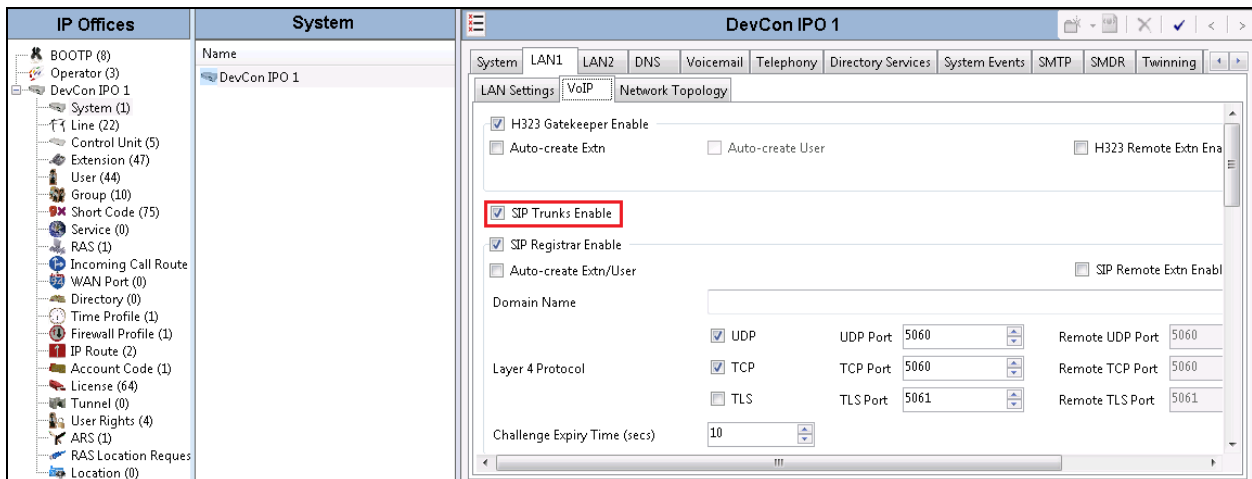
Feature	License Key	Instances	Status
VMPPro TTS (Generic)	Q...	255	Valid
IPSec Tunnelling	e...	255	Valid
Proactive Reporting	tI...	255	Valid
Report Viewer	TH...	255	Valid
Mobility Features	eC...	255	Obsolete
IP500 Voice Networking Channels	N...	255	Valid
IP500 Voice Networking Channels	13...	4	Valid
VCM Channel Migration	By...	255	Valid
SIP Trunk Channels	la...	255	Valid
IP500 Universal PRI (Additional cha...	yr...	255	Valid
RAS LRQ Support (Rapid Response)	kk...	255	Valid
IP Office Dealer Support - Standar...	iK...	255	Valid
IP Office Dealer Support - Professi...	8U...	255	Valid
IP Office Distributor Support - Stan...	7T...	255	Valid
IP Office Distributor Support - Prof...	PI...	255	Valid
UMS Web Services	gh...	255	Valid
CCR SUP	Ge...	255	Valid
Customer Service Agent	iX...	255	Valid
CCR Designer	Ge...	255	Valid
CCR CCC UPG	gT...	255	Valid
1600 Series Phones	_a...	255	Valid
Third Party API	jq...	255	Valid
one-X Portal for IP Office	d4...	255	Valid
Avaya IP endpoints	br...	255	Valid
Customer Service Supervisor	gT...	255	Valid
Essential Edition Additional Voice...	TH...	255	Valid

5.3. LAN Setting

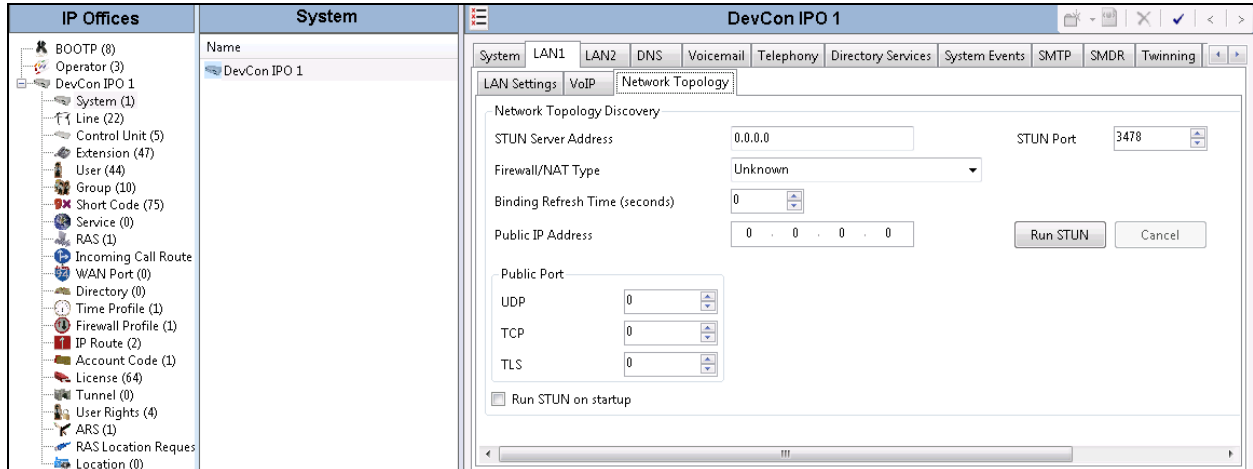
In the sample configuration, the **LAN1** port was used to connect IP Office to the local network. To access the **LAN1** settings, first navigate to **System** → **DevCon IPO1** in the left Navigation Pane where **DevCon IPO1** is the name of the IP Office. Navigate to the **LAN1** → **LAN Settings** tab in the Details Pane. The **IP Address** and **IP Mask** fields are the private interface of IP Office; **Primary Trans. IP Address** is the next hop, usually the default gateway address. All other parameters should be set according to customer requirements. On completion, click the **OK** button (not shown).



On the **VoIP** tab in the Details Pane, check the **SIP Trunks Enable** box to enable the configuration of SIP trunks. All other parameters should be set according to customer requirements. On completion, click the **OK** button (not shown).

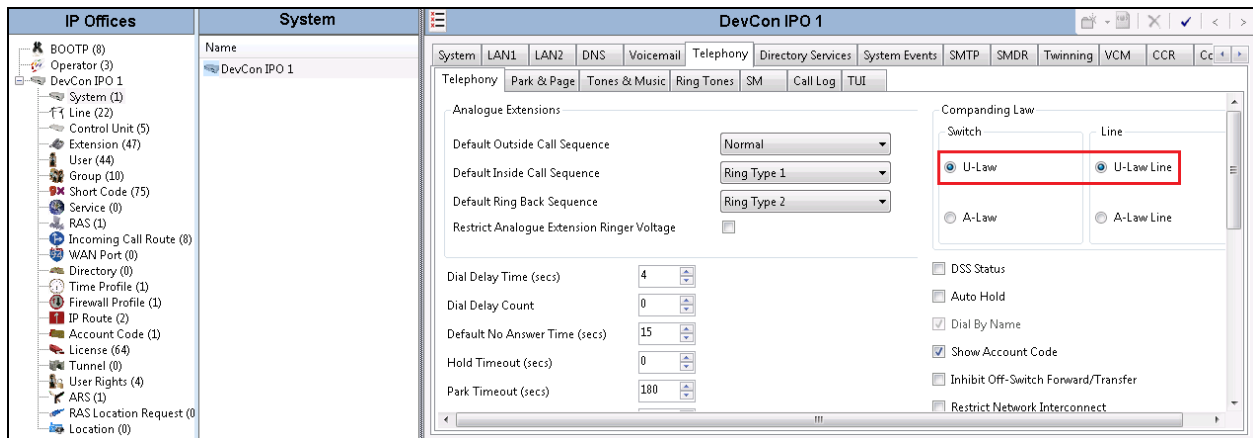


On the **Network Topology** tab in the Details Pane, leave the **STUN Server Address** field as 0.0.0.0 and enter the **Public IP Address** as 0.0.0.0 for IP Office since the STUN server was not used for this test. It is important that the **Binding Refresh Time** is set to the correct value. IP Office sends SIP OPTIONS messages periodically to determine if the SIP connection is active.



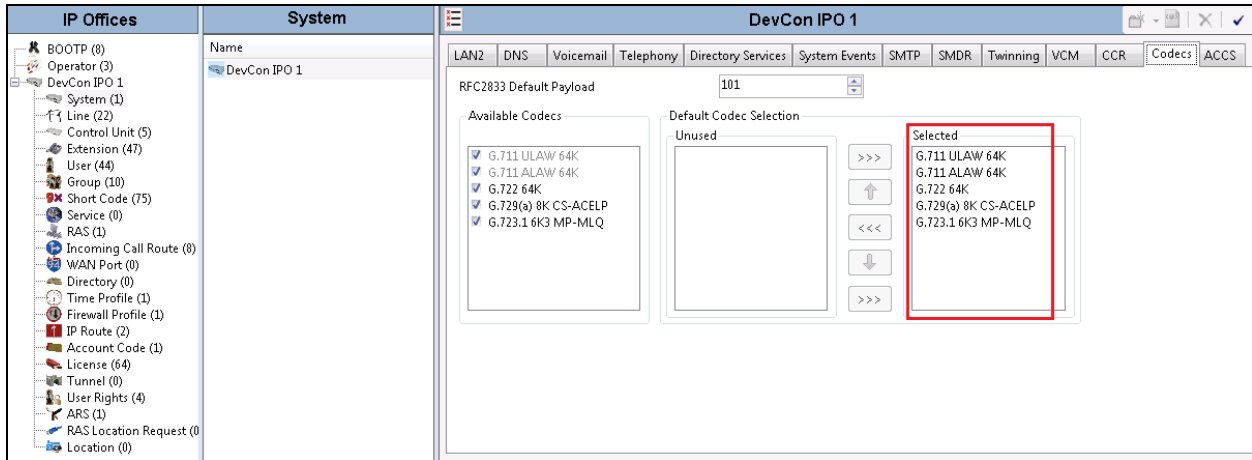
5.4. System Telephony Settings

Navigate to the **Telephony** → **Telephony** tab on the Details Pane. Choose the **Companding Law** typical for the enterprise location. For North America, ULAW is used. On the completion, click the **OK** button (not shown).



5.5. System Codec Settings

Navigate to the Codecs tab. The Available Codecs box indicates all audio codecs available on the system. Highlight codecs in the **Unused** box that are to be used by the service and click on the right arrows to move them to the **Selected** box. Highlight codecs in the **Selected** box that are not to be used and click on the left arrows to move them to the **Unused** box. Highlight codecs in the **Selected** box and use the up and down arrows to change the priority. On completion, click the **OK** button (not shown).



5.6. Administer SIP Line

To create a SIP line, begin by navigating to **Line** in the left Navigation Pane, then right-click in the Group Pane and select **New** → **SIP Line** (not shown). On the **SIP Line** tab in the Details Pane, configure the parameters as shown below:

- **ITSP Domain Name** field should remain blank as no domain name was used.
- Ensure the **In Service** box is checked.
- Check the **Check OOS** box. With this option selected, IP Office will use the SIP OPTIONS method to periodically check the SIP Line.
- Check the **Caller ID From header**.
- Default values may be used for all other parameters.

The screenshot displays the configuration window for a SIP Line, titled "SIP Line - Line 20". The left pane shows a tree view of the system configuration, with "Line (22)" expanded. The main pane is divided into several sections:

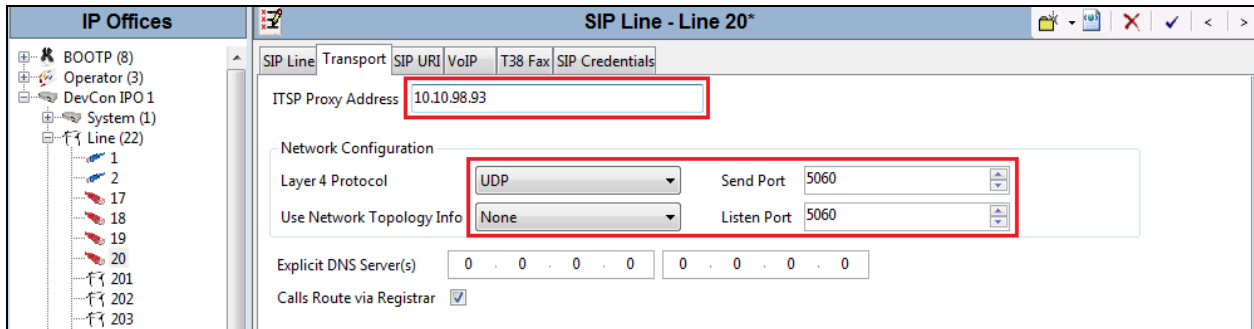
- Line Number:** 20 (highlighted with a red box).
- ITSP Domain Name:** (empty field, highlighted with a red box).
- In Service:** (highlighted with a red box).
- URI Type:** SIP (highlighted with a red box).
- Check OOS:** (highlighted with a red box).
- Caller ID from From header:** (highlighted with a red box).

Other visible fields include Prefix, National Prefix (0), Country Code, International Prefix (00), Send Caller ID (None), Association Method (By Source IP address), Call Routing Method (Request URI), Originator number for forwarded and twinning calls, Name Priority (System Default), Send From In Clear, User-Agent and Server Headers, Service Busy Response (486 - Busy Here), Action on CAC Location Limit (Allow Voicemail), REFER Support (Incoming/Outgoing: Auto), Method for Session Refresh (Auto), Session Timer (seconds) (On Demand), and Media Connection Preservation (Disabled).

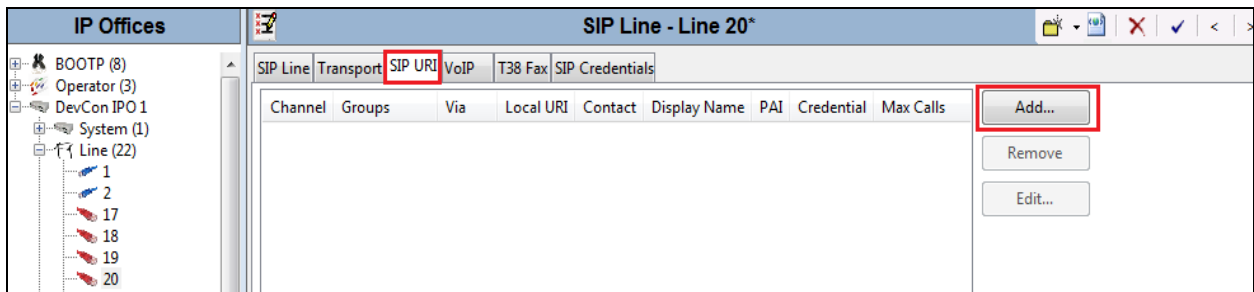
Select the **Transport** tab and set the following:

- Set **ITSP Proxy Address** to the IP address of the FaxMaker server.
- Set **Layer 4 Protocol** to **UDP**.
- Set **Send Port** and **Listen Port** to **5060**.
- Set **Use Network Topology Info** to **None**.

On completion, click the **OK** button (not shown).



After the SIP line parameters are defined, each SIP URI that IP Office will accept on this line must be created. To create a SIP URI entry, first select the **SIP URI** tab. Click the **Add** button and the **New Channel** area will appear at the bottom of the pane.



Following SIP URI was created and used in the compliance test. The **Local URI**, **Contact**, and **Display Name** fields set to **Use Internal Data**. Enter **20** which is SIP Line number created above in the **Incoming Group** and **Outgoing Group** fields and **10** in the **Max Calls per Channel** field. Click **OK** button to add the new SIP URI.

SIP Line - Line 20

SIP Line | Transport | SIP URI | VoIP | T38 Fax | SIP Credentials

New Channel

Via: <None>

Local URI: Use Internal Data

Contact: Use Internal Data

Display Name: Use Internal Data

PAI: None

Registration: 0: <None>

Incoming Group: 20

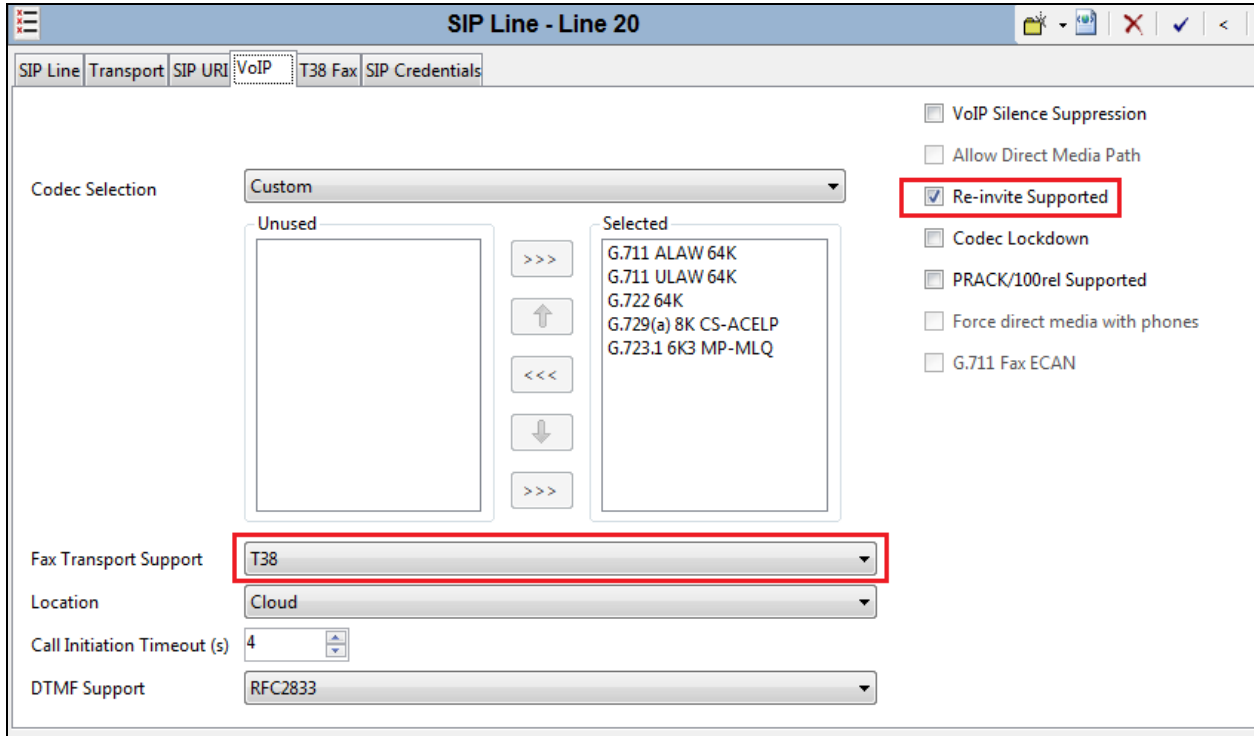
Outgoing Group: 20

Max Calls per Channel: 10

OK

Cancel

Under VoIP tab, in **Fax Transport Support** field, select **T38**. Check the **Re-invite Supported**. At the bottom of the window, click **OK**, to save the configuration.



Select the **T.38 Fax** tab to set the T.38 parameters for the line. Un-check the **Use Default Values** box and select **1** from the **T38 Fax Version** drop down menu. Set the **Max Bit Rate (bps)** to 14400. All other field may retain their default values. On completion, click the **OK** button (not shown).

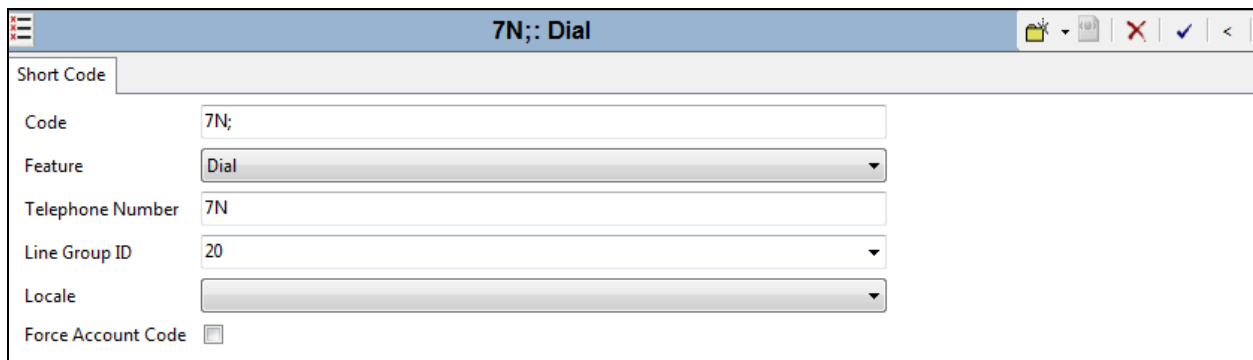
The screenshot shows the configuration window for 'SIP Line - Line 20'. The 'T38 Fax' tab is selected. The 'T38 Fax Version' dropdown is set to '1'. The 'Transport' dropdown is set to 'UDPTL'. The 'Redundancy' section has 'Low Speed' and 'High Speed' both set to '0'. The 'TCF Method' dropdown is set to 'Trans TCF'. The 'Max Bit Rate (bps)' dropdown is set to '14400'. The 'EFlag Start Timer (msecs)' is set to '2600', 'EFlag Stop Timer (msecs)' is set to '2300', and 'Tx Network Timeout (secs)' is set to '150'. On the right, several checkboxes are checked: 'Scan Line Fix-up', 'TFOP Enhancement', and 'Disable T30 ECM'. Other checkboxes like 'Disable EFlags For First DIS' and 'Disable T30 MR Compression' are unchecked. The 'NSF Override' checkbox is also unchecked. Below the 'NSF Override' section, 'Country Code' and 'Vendor Code' are both set to '0'. At the bottom left, the 'Use Default Values' checkbox is unchecked.

5.7. Configure Short Codes

Define a short code to route outbound calls to the FaxMaker sever. To create a short code, right-click **Short Code** in the left Navigation Pane and select **New** (not shown), on the **Short Code** tab in the Details Pane, configure the parameters as shown below.

- In the **Code** field, enter the dial string **7N;** which will trigger this short code, followed by a semi-colon.
- Set **Feature** to **Dial**. This is the action that the short code will perform.
- Set **Telephone Number** to **7N**.
- Set the **Line Group ID** to **20** which is the outgoing line group number defined on the **SIP URI** tab on the **SIP Line 20**.

On completion, click the **OK** button (not shown).



Short Code	
Code	7N;
Feature	Dial
Telephone Number	7N
Line Group ID	20
Locale	
Force Account Code	<input type="checkbox"/>

5.8. Configure Incoming Call Routes

An incoming call route maps an inbound number on a specific line to an internal extension. To create an incoming call route, right-click on **Incoming Call Routes** in the Navigation Pane and select **New** (not shown), on the **Standard** tab of the Details Pane, enter the parameters as shown below:


- Set the **Bearer Capacity** to **Any**.
- Set the **Line Group ID** to **20** which is the incoming line group of the SIP line as defined in **Section 5.6**.
- Default values can be used for all other fields

The screenshot shows the configuration interface for an Incoming Call Route. The left pane shows a tree view of 'IP Offices' with 'Incoming Call Route (8)' selected. The right pane shows the configuration for route '20' on the 'Standard' tab. The 'Bearer Capacity' dropdown is set to 'Any' and the 'Line Group ID' dropdown is set to '20'. Both dropdowns are highlighted with a red box.

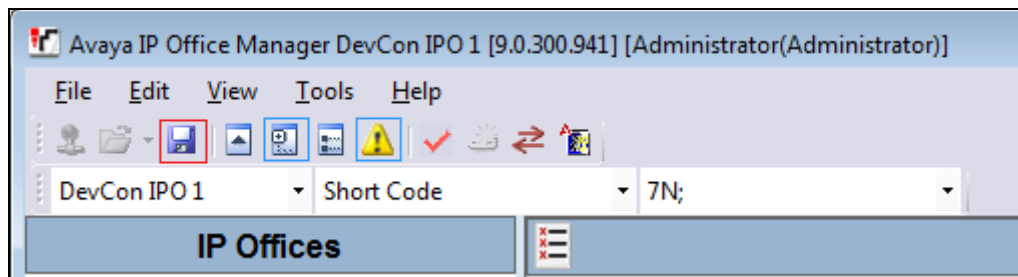
On the **Destinations** tab, enter a dot “.” in the **Destination** field. This will allow to route incoming call based on the dialed number. On completion, click the **OK** button (not shown).

The screenshot shows the configuration interface for an Incoming Call Route on the 'Destinations' tab. The left pane shows the tree view with 'Incoming Call Route (8)' selected. The right pane shows a table with columns 'TimeProfile', 'Destination', and 'Fallback Extension'. The 'Default Value' row has a period '.' in the 'Destination' field, which is highlighted with a red box.

5.9. Saving IP Office Configuration

Once the configuration changes have been completed, select the save icon  to push the changes to the IP Office system.

Note: Changes will not take effect until this step is completed. This may cause a reboot of Avaya IP Office causing service disruption.

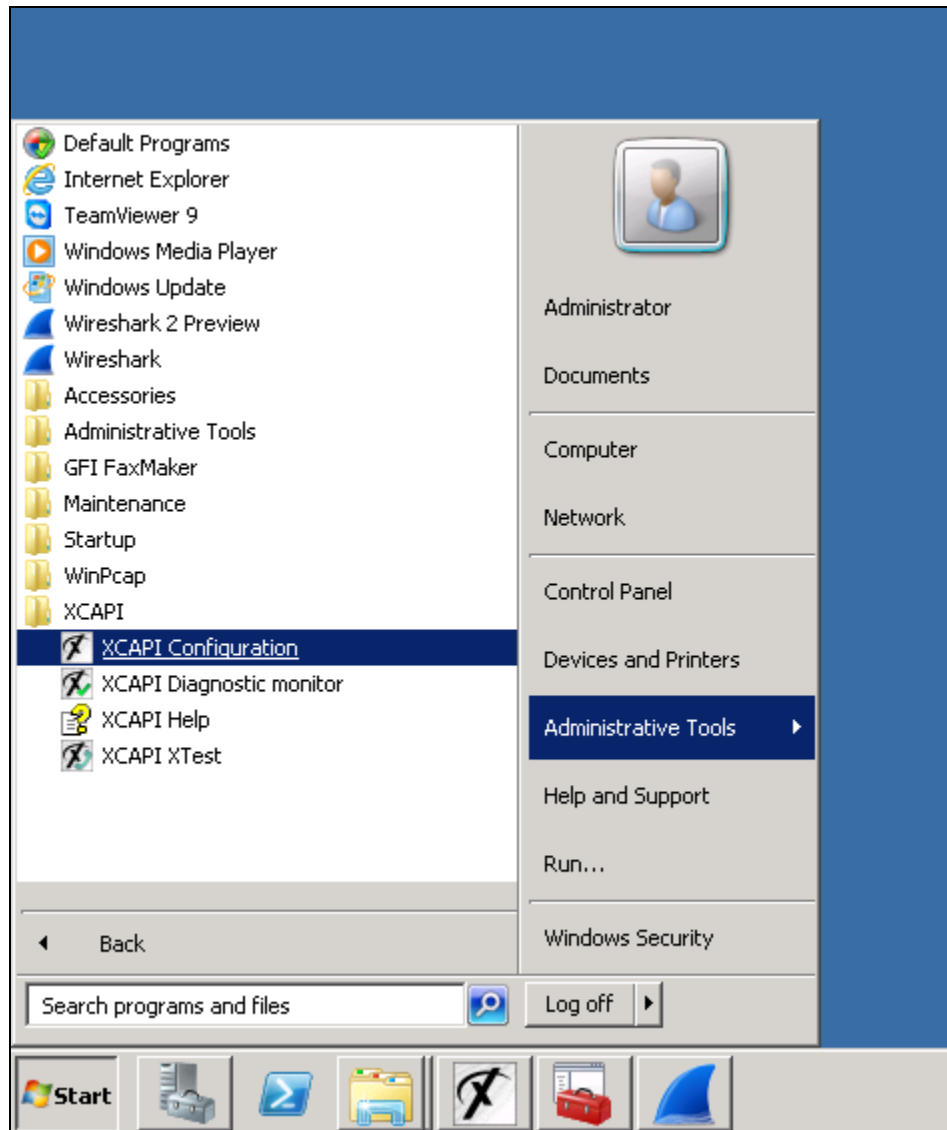


6. Configure GFI FaxMaker

During compliance testing, GFI FaxMaker™ used XCAPi by TE-SYSTEMS for receiving and sending faxes. This section contains configuration steps for XCAPi and GFI FaxMaker.

6.1. Configure XCAPi

Open XCAPi configuration on the server where GFI FaxMaker™ is installed, **Start → All Programs → XCAPi → XCAPi Configuration**.



Under **Controller**, to add a new controller, click on **Click here to add a controller**. The screen below shows the controller for Avaya IP Office already added.

The screenshot shows the XCAPI Configuration application window. The title bar reads "XCAPI Configuration". The menu bar includes "File", "View", and "Help". The main content area is divided into three sections: "Licences", "Controller", and "Trace".

Licences

- GFI Software - 2 channels + Fax - 45 days trial**
Connections: 2 (H.323: 2, SIP: 2), T.38: 2, and Softfax: 2 (Expires: 8/4/2014)
[Click here to manage licences](#)

Controller

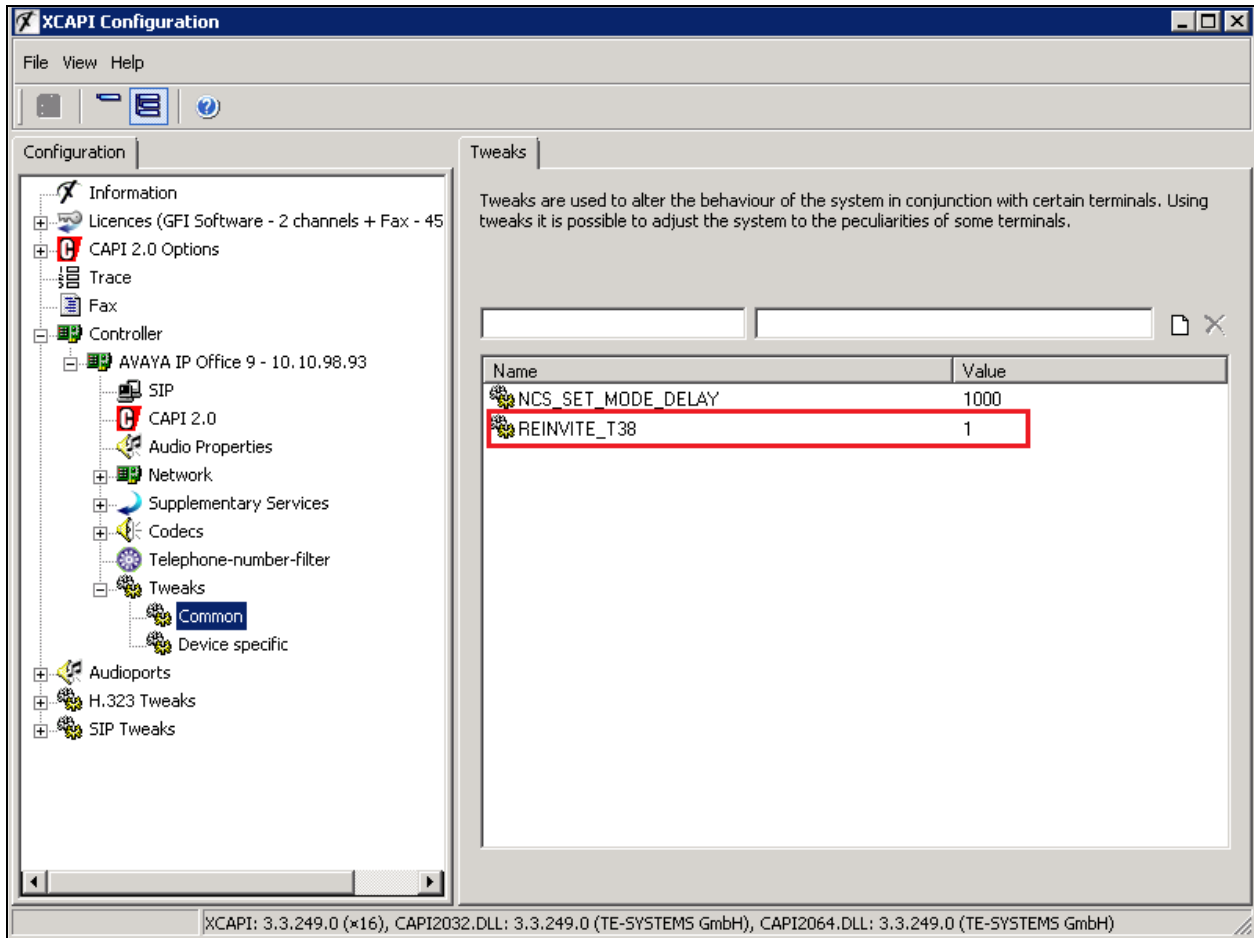
- AVAYA IP Office 9 [10.10.98.93]**
2 lines using ITU G.711 A-Law [64 kbit] (8000 Hz), ITU G.711 μ-Law [64 kbit] (8000 Hz), ETSI GSM 6.10, ITU G.729, T.38 - UDP, an at domain "10.10.97.36"
= Disable ✕ Remove ▲ Move up ▼ Move down
[Click here to add a controller](#)

Trace

- Disabled**
Currently not collecting diagnostic information.
[Click here to analyze the trace now](#)
[Click here to start the trace](#)

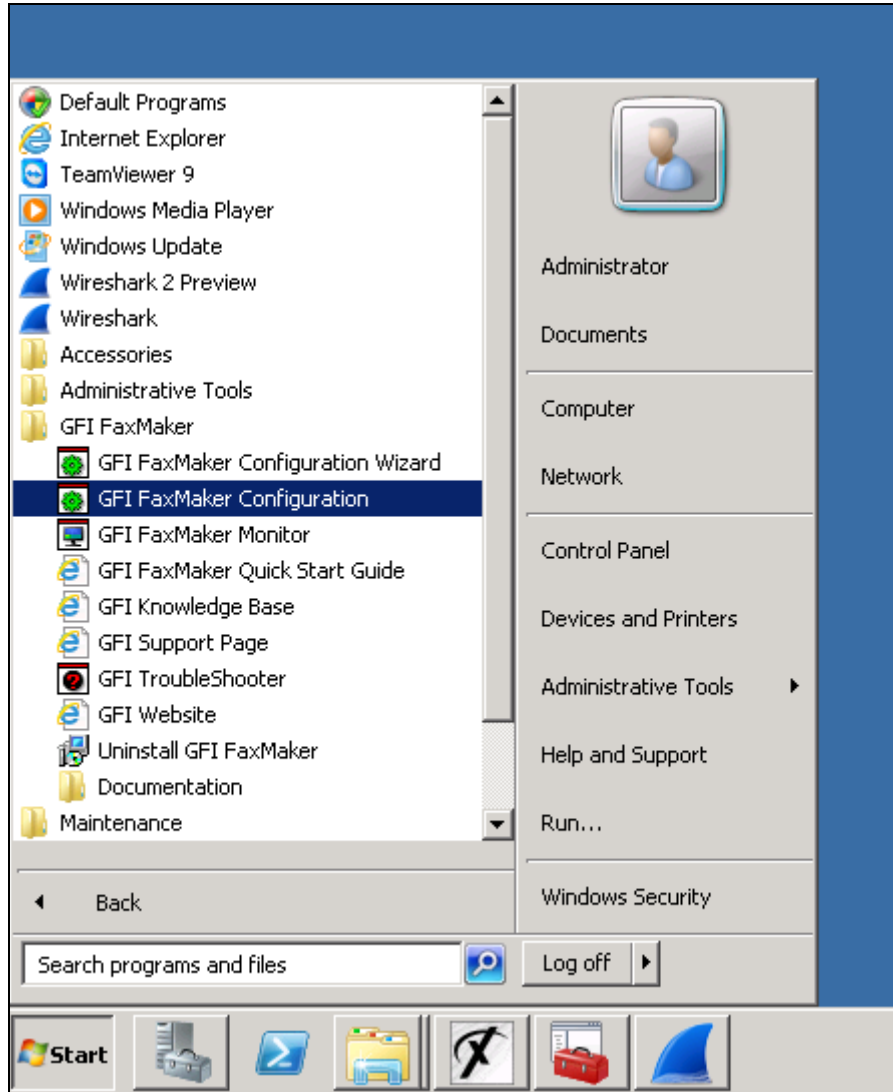
At the bottom of the window, the status bar displays: XCAPI: 3.3.249.0 (x16), CAPI2032.DLL: 3.3.249.0 (TE-SYSTEMS GmbH), CAPI2064.DLL: 3.3.249.0 (TE-SYSTEMS GmbH)

There is the **REINVITE_T38=1** was added under **Tweaks** → **Common** as shown below to maintain keep-alive request during fax transmission, especially for long duration fax call when transmitting many fax pages.

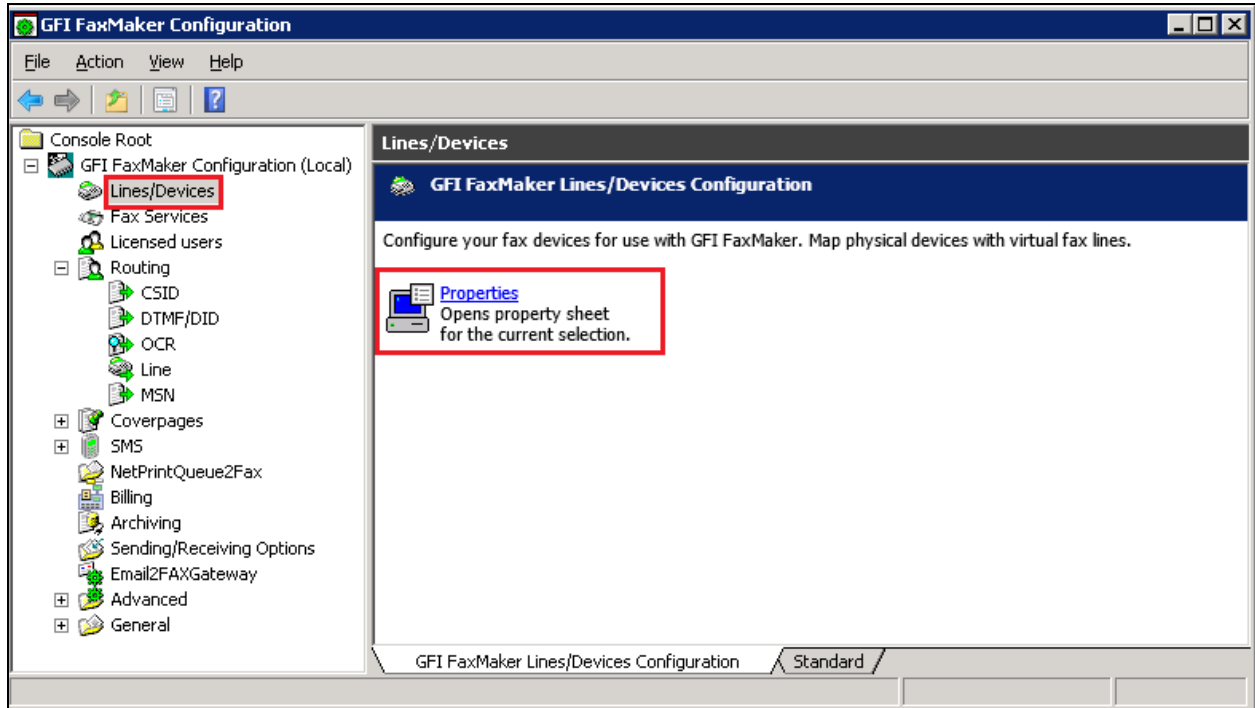


6.2. Configure GFI FaxMaker

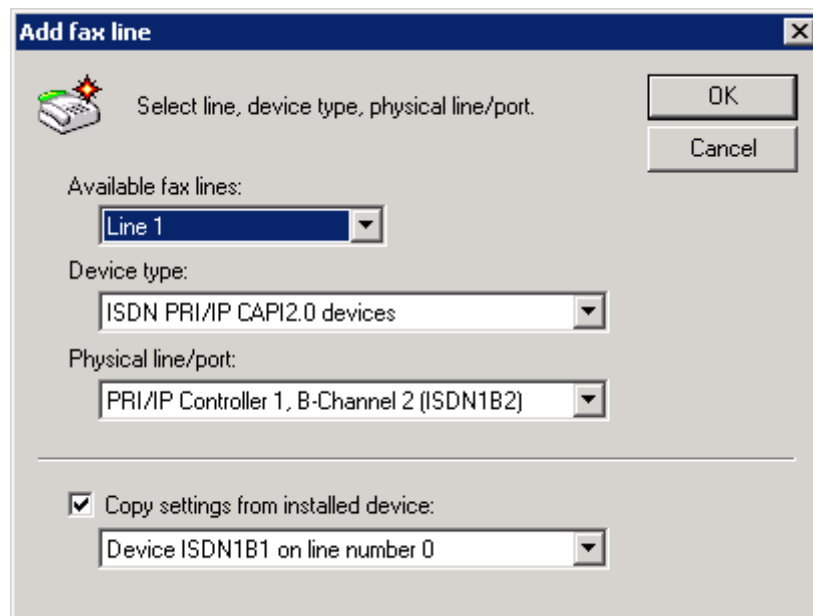
Open GFI FaxMaker Configuration on the server where it is installed, by navigating **Start → All Programs → GFI FaxMaker → GFI FaxMaker Configuration**.



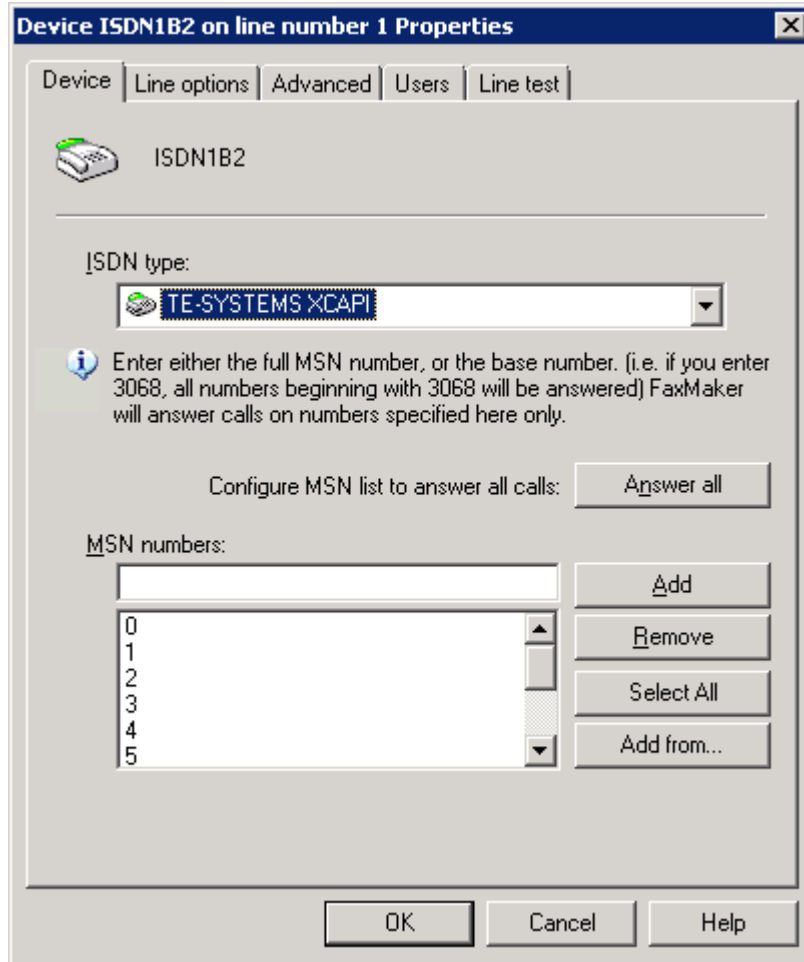
On the left pane, navigate to **Lines/Devices** as shown in the screen capture and click on **Properties**.



On the **Properties** window, click on **Add** (not shown), then on the **Add fax line** window, select an available fax line, **ISDN PRI/IP CAPI 2.0 devices** for **Device type** and **PRI/IP Controller 1, B-Channel 2 (ISDN1B2)** for **Physical line/port**. Click **OK**.



On the **Device ISDN** window, select **TE-SYSTEMS XCAPI** for **ISDN type** in the **Device** tab.



In the **Line options** tab, enter 14400 bps for **Max. speed**, check the boxes **Receive incoming faxes** and **Send outgoing faxes**. Click **OK** to complete.

To add more lines, repeat these steps in this section. If no more lines need to be added, click **OK** on the **Add fax line** window. Restart of the FaxMaker services is required to save these changes.

Note: Setting the transmission speed below 14400bps will cause failures on multi-page faxes.

The screenshot shows a dialog box titled "Device ISDN1B2 on line number 1 Properties" with a close button (X) in the top right corner. The "Line options" tab is selected, showing the following settings:

- Max. resolution: Normal (200x100dpi) (dropdown menu)
- Max. speed: 14400 bps (dropdown menu)
- Local fax ID: 70000 (text field)
- Receive incoming faxes
- Send outgoing faxes
- Dial prefix & suffix: (two empty text fields)
- Do not dial prefix if fax number is:
 - less than:
 - equal to:
 - more than:
- # of digits: 4 (spin box)
- Fax header: (empty text field)
- Number of retries: 3 (spin box)
- Retry delay: 30 (spin box)
- Disable use of ECM if available

At the bottom of the dialog box are three buttons: "OK", "Cancel", and "Help".

7. Verification Steps

The following steps may be used to verify the configuration:

- Using IP Office Manager, navigate to **File → Advanced → System Status** (Not shown). The Avaya IP Office System Status window is displayed (not shown), enter the proper password to log in. Navigate to **Trunks → SIP Trunk** in the left pane. Select **Line: 20** which is the SIP trunk to the FaxMaker server and verify the status of each trunk used in the configuration, all channels should be Idle.

The screenshot displays the Avaya IP Office System Status window. The left sidebar shows a tree view with 'Trunks (6)' expanded to 'Line: 20'. The main content area shows the 'SIP Trunk Summary' for Line 20. The summary includes the following details:

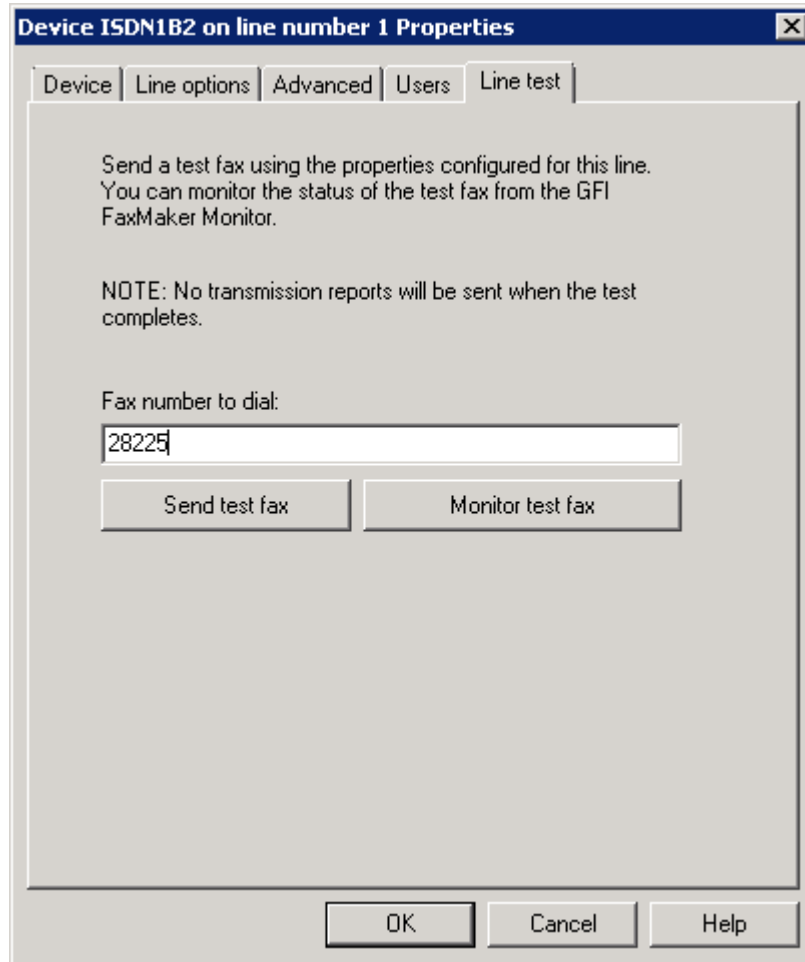
- Peer Domain Name: sip://10.10.98.93
- Resolved Address: 10.10.98.93
- Line Number: 20
- Number of Administered Channels: 20
- Number of Channels in Use: 0
- Administered Compression: G711 A, G711 Mu, G722, G729 A, G7231
- Silence Suppression: Off
- Layer 4 Protocol: UDP
- SIP Trunk Channel Licenses: Unlimited
- SIP Trunk Channel Licenses in Use: 0
- SIP Device Features: (empty)

Below the summary is a table showing the status of individual channels:

Chan...	U..	Call	Curr...	Time in	R...	Co...	Conn...	Caller	Other Party	Direc...	Round	Recei...	Rece...	Tran...	Tran...
Ref			State		ID o...			on Call		Trip ...					
1			Idle	1 day 20:...											
2			Idle	1 day 22:...											
3			Idle	2 days 01:...											
4			Idle	2 days 01...											

At the bottom of the window, there are buttons for 'Trace', 'Trace All', 'Pause', 'Ping', 'Call Details', 'Print...', and 'Save As...'. The status bar at the bottom right shows the time as 3:39:34 PM and the system as Online.

- On the FaxMaker server configuration window, navigate to **Lines/Devices → Properties** (not shown). Open Properties for Line 1 (added in **Section 6.2**). On the **Device ISDN** window, click on **Line test** tab, enter a fax number of IPO system in the **Fax number to dial** field to send a test fax.



8. Conclusion

GFI FaxMaker™ passed compliance testing. These Application Notes describe the procedures required to configure GFI FaxMaker™ to interoperate with Avaya IP Office to support the network shown in **Figure 1** and notes described in **Section 2.2**.

9. Additional References

- [1] This IP Office 9.0 Installation, Document number 15-601042 Issue 28, 16 April 2014
- [2] IP Office 9.0 Manager 9.0, Document number 15-601011 Issue 9.01, 16 Apr 2014
- [3] IP Office 9.0 Administering Voicemail Pro, Document number 15-601063 Issue 9.0 Release 1.0, April 2014
- [4] IP Office Embedded Voicemail User Guide (IP Office Mode), Document number 15-604067 Issue 9.0, 16 April 2014

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

Additional IP Office documentation can be found at:

<http://marketingtools.avaya.com/knowledgebase/>

All GFI documentation can be downloaded from www.gfi.com/fax-server-software/manual.

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