



GFI FaxMaker

Innovation Network App Note

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Product: ShoreTel | GFI

System Version: ShoreTel 13.X

## Abstract

By integrating GFI FaxMaker with the ShoreTel System, the customer can have a complete telephony solution for both voice and fax. Faxes can be sent through the ShoreTel System directly from any application or from a user's email client, and can be automatically routed to a user's email inbox.

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*The ShoreTel Technical Support organization will provide Customers with support of ShoreTel's published software interfaces. This does not imply any support for the Member's solution directly. Customers or reseller partners will need to work directly with the Member to obtain support for their solution.*

## Overview

This document is meant to provide information about GFI Software and its product GFI FaxMaker, describing how GFI FaxMaker can integrate with the ShoreTel System to provide a complete telephony solution. This document will tell how to contact GFI Software and it will provide product specifics, interoperability testing results, typical setup configurations, troubleshooting steps and other important product-related information.

This document outlines two options for inbound fax routing: Application 1 – One Main Number for Both Voice and Fax – Fax Redirect (p. 7), and Application 2 – User with a Unique Voice Extension and a Unique Fax Extension. The choice between these two options is based on the customer's requirements but it is important to let GFI and ShoreTel support know which method is used when performing troubleshooting.

## GFI Overview and Contact

GFI Software provides a single source of Web & Mail Security, Archiving, Backup & Fax, Networking & Security and Hosted solutions software for small to medium-sized enterprises. With award-winning technology, an aggressive pricing strategy, and a strong focus on the unique requirements of small to medium-sized enterprises, GFI Software satisfies the needs of SME organizations on a global scale.

GFI Software has offices in USA (North Carolina & California), UK (London & Scotland), Australia, Austria, Romania, and Malta which support hundreds of thousands of installations worldwide and is a channel-focused company with a global network of thousands of partners. GFI Software is also a Microsoft Gold Certified Partner.

For general sales questions, please contact your reseller or contact GFI Software directly at:

GFI Sales

(888) 243-4329

sales@gfi.com

www.gfi.com

## GFI Product Information

# **GFI FaxMaker**<sup>™</sup>

*Network fax server software for Exchange/SMTP/Lotus*

With GFI FaxMaker, less time is spent on sending, collecting and distributing faxes, saving your company noticeable costs. Faxes sent/received are also saved in digital format as an email attachment.

GFI FaxMaker is easy to install, requires little maintenance and integrates with existing messaging clients and customized solutions. It seamlessly integrates with your mail server, allowing users to send and receive faxes using their email client. Your company can also search for and back up all faxes in the same way that emails are stored and retrieved on the network.

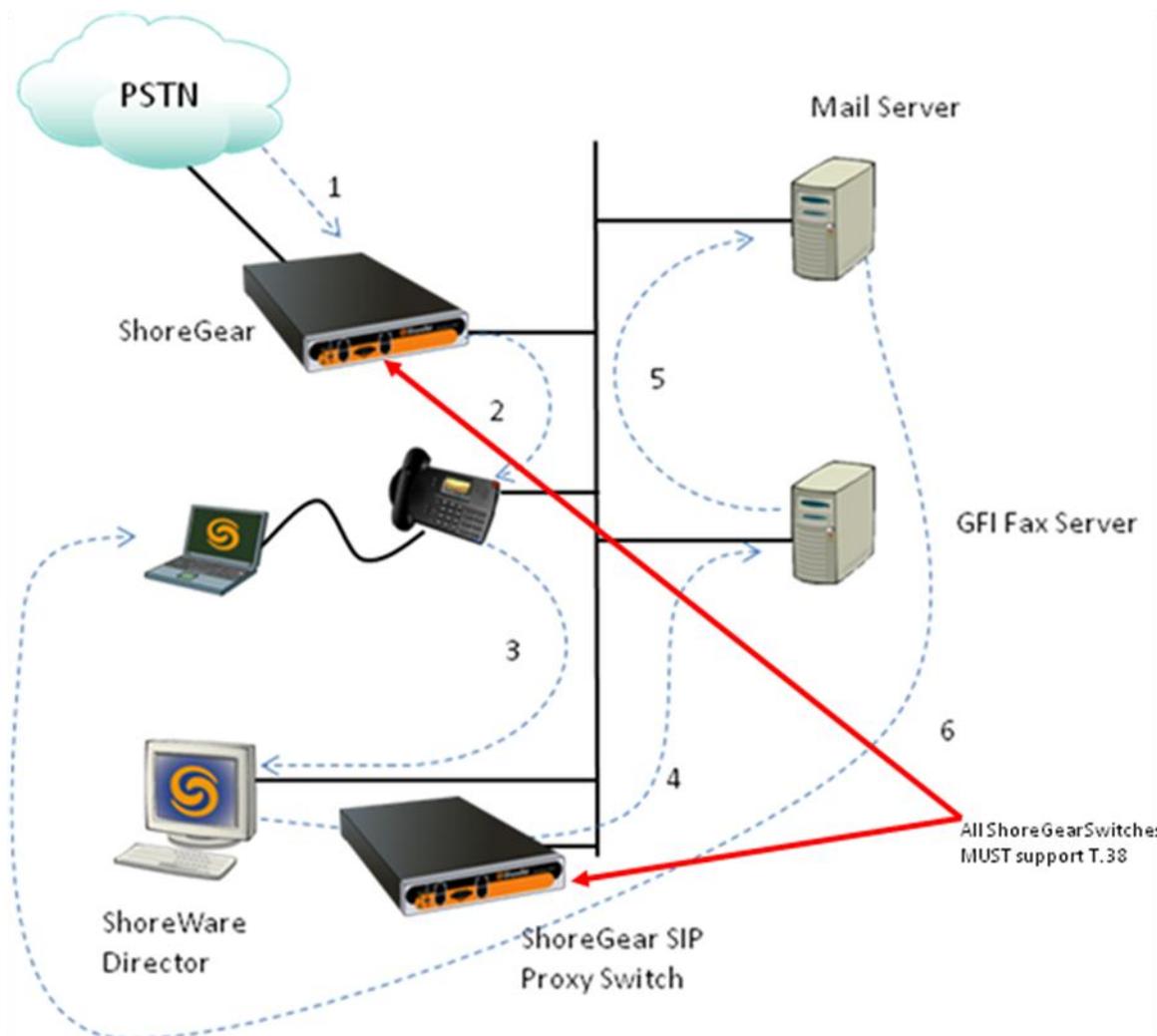
GFI FaxMaker supports analog, digital, and Fax over IP (FoIP) connectivity options. For FoIP, it integrates with IP-enabled PABXs and Brooktrout's SR140 technology to send faxes over an IP infrastructure.

GFI FaxMaker is an award-winning fax server and has been voted #1 by Windows IT Pro readers for 3 years running.

Current pricing information may be obtained at the following site: <http://www.gfi.com/products-and-solutions/email-and-messaging-solutions/gfi-faxmaker>

## Architecture Overview

GFI FaxMaker sits on the network and is connected to the Email Server through an SMTP connector. See the diagram below.



**Figure 1 – Call Flow Diagram**

## Call Flow When Receiving Faxes

When the ShoreTel system detects that an inbound call is a fax, the call is routed to the fax device located in the GFI FaxMaker server. This fax device receives the fax and provides it to the GFI FaxMaker application. After conversion to the desired format (PDF, TIF, GIF, JPG, or PNG), GFI FaxMaker attaches the received fax to an email transmission report and sends it to the email server for delivery to the designated user.

## Call Flow When Sending Faxes

Internal users send an email to either a business fax contact or to [number@FaxMaker.com](mailto:number@FaxMaker.com) which is then routed by the email server to the GFI FaxMaker server. GFI FaxMaker converts the email and any attachments to a fax format and utilizes the fax device for transmission to the ShoreTel system. The ShoreTel system handles the connection between the fax device and the public switched telephone network (PSTN) cloud. After the successful or unsuccessful transmission of the fax, GFI FaxMaker sends an email transmission report back to the sender of the email with the status. GFI FaxMaker also supports sending via API and printer driver as well as receiving to printer or folder.

## Requirements, Certification and Limitations

### System Requirements:

- Windows 2003/2008/2012 machine
- 1GB of RAM
- 2GHz Processor
- Fax device (such as a Dialogic Brooktrout SR140 Fax Software)
- All ShoreTel ShoreGear Switches that participate in a T.38 fax call MUST support T.38 protocol
- The fax machine/fax server behind the ShoreTel PBX should disable V34 to avoid using the G711/Linear clear channel
- V.34 faxes are not supported
- ShoreTel only supports T.38 in udptl form. T.38 calls in RTP or TCP forms are not supported at this time
- ShoreTel does not support either IP media or RFC2833-based fax tone detection (in RFC2833, ShoreTel only supports DTMF, no named telephony events).
- ShoreTel depends on fax CNG tone detection or T.38 invite to redirect an incoming fax call. If the fax connection is established with on SIP-based endpoint (such as SIP extension or SIP trunk), ShoreTel depends on the SIP invite to either establish a fax connection or redirect the call to a preconfigured fax device.
- T.38 support is not supported on SIP-BRI

## Version Support

Note: Version 2011 support will be dropped by GFI in November 2013.

ShoreTel Release	GFI FaxMaker	
	Version 2011	Version 2013
10.x	✓	✓
11.x	✓	✓
12.x	✓	✓
13.x		✓

**Table 1 - Supported Software Version Matrix (see note on page 45 for version 13.x)**

**Special considerations:**

The following switches do not support T.38 protocol. For those and older switches, G711/L16 clear channel is used for fax purposes.

- ShoreGear – 8
- ShoreGear – 12
- ShoreGear- 120
- ShoreGear – T1
- ShoreGear – E1
- ShoreGear – TW
- ShoreGear – 24 and ShoreGear – 24a

**Certification Testing Results Summary****Table 1 - Initialization and Basic Feature Test Cases**

<b>ID</b>	<b>Name</b>	<b>Description</b>	<b>Results</b>
1.1	Configure a User for Testing with GFI FaxMaker	ShoreTel Certification lab will add a user to both the GFI FaxMaker Server and GFI FaxMaker Client for use.	Pass
1.2	Sending Faxes with GFI FaxMaker Client	ShoreTel Certification lab will use the GFI FaxMaker Client to send a Fax to a Fax Machine using FoIP and the ShoreGear SIP Proxy switch.	Pass
1.3	Automatic Faxing with NetPrintQueue2Fax	ShoreTel Certification lab will use the NetPrintQueue2Fax to send a Fax to a Fax Machine using FoIP and the ShoreGear SIP Proxy switch.	Pass
1.4	Sending Faxes with TextAPI	ShoreTel Certification lab will use the GFI FaxMaker Client to send a Fax to a Fax Machine using FoIP and the ShoreGear SIP Proxy switch.	Pass
1.5	Receiving Faxes with GFI FaxMaker	ShoreTel Certification lab will receive a fax from an external fax machine to a mailbox (either Internet mail or local mail).	Pass
1.6	Receive a Transmission Report with GFI FaxMaker	ShoreTel Certification lab will send a fax and receive a Transmission Report using GFI FaxMaker.	Pass

**Table 2 - Installation and Configuration Tests**

ID	Name	Description	Notes
2.1	Installing and configuring Microsoft Internet Information Services (IIS)	ShoreTel Certification lab will install Microsoft IIS and configure it for successful use with GFI FaxMaker.	Pass
2.2	Installing GFI FaxMaker	ShoreTel Certification lab will install GFI FaxMaker 14.	Pass
2.3	Software installation of the Brooktrout SR140 drivers	ShoreTel Certification lab will install the Brooktrout SR140 drivers.	Pass

**Table 3 - Fault Insertion**

ID	Name	Description	Notes
3.1	Telephony Connectivity Failure between ShoreGear SIP Proxy switch and Brooktrout	Telephony Connectivity Failure should result in easily recognizable symptoms.	Pass
3.2	SMTP Connection Failure	SMTP Delivery Failure should not prevent faxes from being transmitted.	Pass

**Table 4 - Documentation**

ID	Name	Description	Notes
4.1	GFI FaxMaker Manual	Product manual for GFI FaxMaker 14 – provides installation procedures and general configuration/usage information regarding the product.	Pass
4.2	Installing the SR140 Digital / Ethernet PCI Board documentation	Technical document for installing SR140 Digital board – contains diagram of board as well as installation instructions.	Pass

**Table 5– Fax transmissions**

ID	Name	Description	Notes
5.1	Incoming fax test	Receive a 10 page fax using T.38 at 9600bps	Pass
5.2	Outgoing fax test	Send a 10 page fax using T.38 at 9600bps	Pass

**T.38 Fax Applications****Application 1 – One Main Number for Both Voice and Fax – Fax Redirect**

It is common for businesses to have a main number for unified communications. In this application, all fax and voice communications are received through one main number. The ShoreTel system will manage all incoming fax communications so that they are routed via SIP Redirect Method to the GFI fax server. The GFI fax server will then forward the fax in an email format to the email address designated for the intended recipient's or to a general fax mailbox.

**Note:** When working with GFI or ShoreTel support, specify that you are using this method as the DID fax number displays differently within the SIP packet as opposed to application 2.

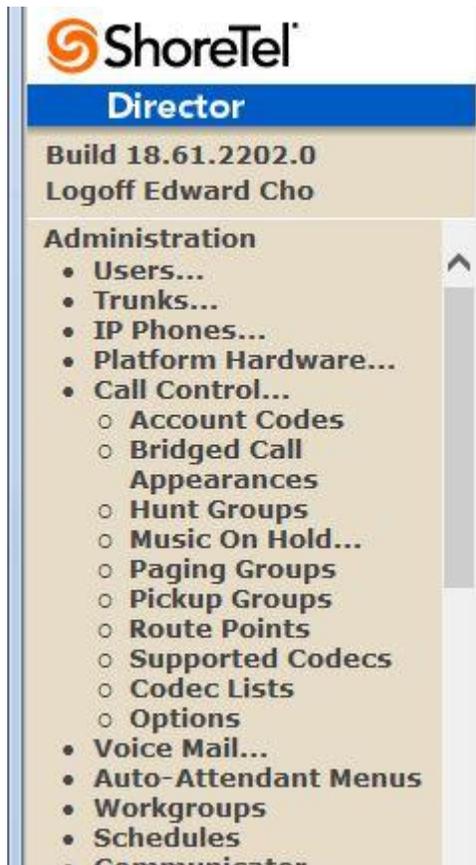
**Note:** Enable a ShoreGear SIP Proxy switch to be the SIP proxy for the site where you want to add the SIP UM server. This switch is referred to as the site SIP proxy switch.

## ShoreTel Configuration

This section describes the ShoreTel system configuration to support T.38 fax using the GFI FaxMaker software.

### Step 1: Call Control Settings

The first settings to configure within ShoreWare Director are the Call Control Options. To configure these settings for the ShoreTel system, log into ShoreWare Director and select “Administration” then “Call Control” followed by “Options”



**Figure 2 – Call Control Options**

## Call Control Options

Edit

Save

Reset

[Help](#)

Edit this record

[Refresh this page](#)

### General:

- Use Distributed Routing Service for call routing.
- Enable Monitor / Record Warning Tone.
- Enable Silent Coach Warning Tone.
- Generate an event when a trunk is in-use for  minutes.
- Park Timeout (1-100000) after  seconds.
- Hang up Make Me Conference after  minutes of silence.

Delay before sending DTMF to Fax Server:  msec

DTMF Payload Type (96 - 127):

### SIP:

Realm:

- Enable SIP Session Timer.
  - Session Interval (90 - 3600):  sec
  - Refresher:  ▼

### Voice Encoding and Quality of Service:

Maximum Inter-Site Jitter Buffer (20 - 400):  msec

DiffServ / ToS Byte (0-255):  (DSCP = 0x2e)

Media Encryption:  ▼

- Admission control algorithm assumes RTP header compression is being used.
- Always Use Port 5004 for RTP (This option is unavailable because your system utilizes SIP Servers, SIP Trunks or SIP Extensions. This feature is incompatible with SIP devices.)

**Figure 3 – Edit Call Control Options**

1. Confirm that the parameter, “Always Use Port 5004 for RTP” is unchecked or grayed out. Disabling this parameter is required for implementing SIP on the ShoreTel system. For SIP configurations, Dynamic User Datagram Protocol (UDP) must be used for RTP Traffic. If the parameter is disabled, Media Gateway Control Protocol (MGCP) will no longer use UDP port 5004; MGCP and SIP traffic will use dynamic UDP ports. Once this parameter is disabled (unchecked), make sure that “everything” (IP Phones, ShoreGear® Switches, ShoreWare Server, Distributed Voice Mail Servers / Remote Servers, Conference Bridges and Contact Centers) is “fully” rebooted – this is a “one time only” item. By not performing a full system reboot, one-way audio will probably occur during initial testing.

## 2. Configure the SIP Profile



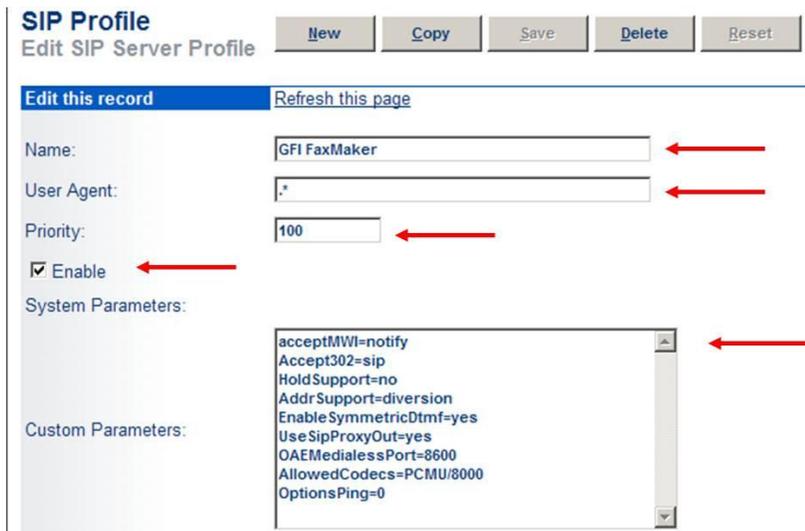
The screenshot shows the ShoreTel Director interface. On the left is a navigation menu with 'Administration' expanded to show 'SIP Profiles'. The main content area is titled 'SIP Profiles' and shows a table of 'SIP Server Profiles'. The table has columns for Name, User Agent, Enabled, and Priority. Three profiles are listed: DuVoiceHospitality, GFI FaxMaker, and Microsoft Exchange. The GFI FaxMaker profile is highlighted. Below the table is a copyright notice: '© 1998-2013 ShoreTel, Inc. All rights reserved.'

	Name	User Agent	Enabled	Priority
<input type="checkbox"/>	DuVoiceHospitality	*	Yes	100
<input type="checkbox"/>	GFI FaxMaker	*	Yes	100
<input type="checkbox"/>	Microsoft Exchange	*	Yes	50

**Figure 4 – SIP Server SIP Profile**

- a. Click the **Administration** link to expand the submenus
- b. Click on SIP Servers
- c. Click on SIP Profiles
- d. Click on New button

A new SIP Profiles screen is displayed (Figure 5)



The screenshot shows the 'Edit SIP Profile' form. At the top, there are buttons for 'New', 'Copy', 'Save', 'Delete', and 'Reset'. Below these is a section for 'Edit this record' with a 'Refresh this page' link. The form fields are: Name (GFI FaxMaker), User Agent (\*), Priority (100), and a checked 'Enable' checkbox. Below these are 'System Parameters' and 'Custom Parameters' sections, both containing a list of SIP-related parameters. Red arrows point to the Name, User Agent, Priority, Enable checkbox, and System Parameters text area.

**SIP Profile**  
Edit SIP Server Profile

**Edit this record** Refresh this page

Name: GFI FaxMaker  
User Agent: \*  
Priority: 100  
 Enable  
System Parameters:  
Custom Parameters:

```
acceptMWI=notify
Accept302=sip
HoldSupport=no
AddrSupport=diversion
EnableSymmetricDtmf=yes
UseSipProxyOut=yes
OAEMedialessPort=8600
AllowedCodecs=PCMU/8000
OptionsPing=0
```

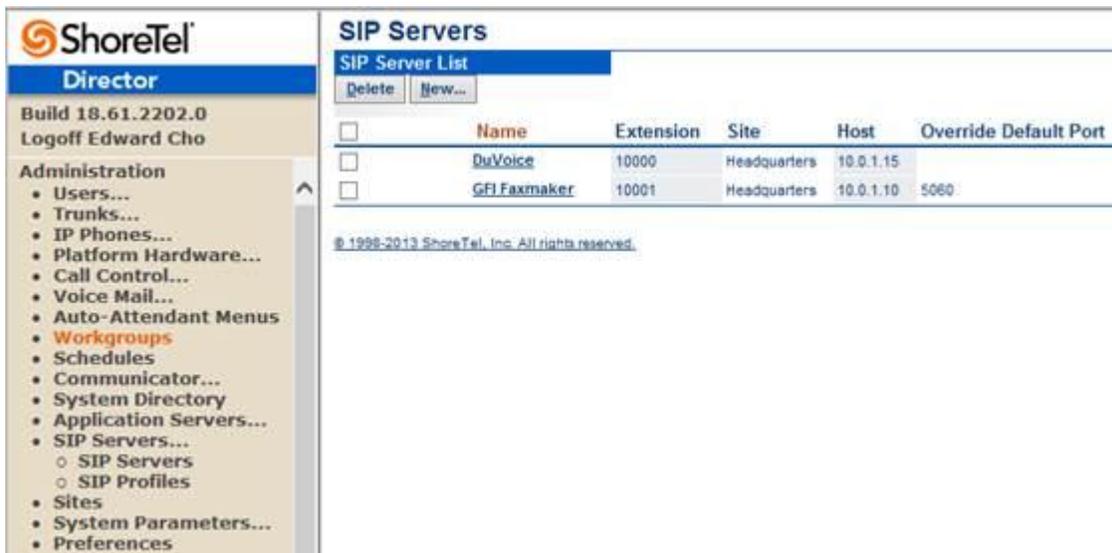
**Figure 5 – Edit SIP Server Profile**

3. Complete the form to create a new SIP Profile
  - a. Name: This parameter is the label by which Director refers to the profile

- b. User Agent: This parameter is the expression ShoreWare uses to identify devices covered by the profile, it is not used by the SIP servers. The profile cannot be saved without a value, so you should define it as '\*' (without the single quotes, should just be period followed by the asterisk).
- c. Priority: This parameter lists the status of the profile. The default is 100 and there is no need to modify this parameter.
- d. Enabled: This check-box controls whether the profile is available for use. The default is not enabled (not checked) be sure to enable / check this option
- e. System Parameters: This field lists the device characteristics and default settings.
- f. Custom Parameters: The contents of this field list additional device settings or overwrite default settings listed in the System Parameters field. Make sure to include the following entries in the Custom Parameters (note these are case sensitive):
  - i. acceptMWI=notify
  - ii. Accept302=sip
  - iii. HoldSupport=no
  - iv. AddrSupport=diversion
  - v. EnableSymmetricDtmf=yes
  - vi. UseSipProxyOut=yes
  - vii. OAEMedialessPort=8600
  - viii. AllowedCodecs=PCMU/8000
  - ix. OptionsPing=0

**Note:** Please do not disable any of the default SIP Profiles. In case there are issues with the custom profile defined, disabling the system profiles may cause the GFI FaxMaker to not be added to the ShoreTel system. Refer to the ShoreTel Administration Guide for more information.

#### 4. Configure the GFI FaxMaker as a SIP UM Server



**Figure 6 – SIP Servers New**

- a. Click the **Administration** link to expand the submenus
- b. Click on SIP Servers
- c. Click on SIP Servers
- d. Click on the New button

A new SIP Server screen is displayed

Name:	<input type="text" value="GFI Faxmaker"/>
Site:	<input type="text" value="Headquarters"/>
Protocol:	<input type="text" value="UDP"/>
Host (Name / Address / Domain):	<input type="text" value="10.0.1.10"/> <input type="button" value="Ping"/>
Override Default Port:	<input type="text" value="5060"/>
<input type="checkbox"/> Allow External Voice Mail for Extension-Only User	
<input checked="" type="checkbox"/> Allow Fax Redirect to This Server	
Extension:	<input type="text" value="10001"/>
Assigned User Group:	<input type="text" value="Executives"/>
SIP Profile:	<input type="text" value="GFI FaxMaker"/>
Digest Authentication:	<input type="text" value="&lt;None&gt;"/>
Username:	<input type="text"/>
Password:	<input type="text"/>

**Figure 7 – SIP Server New Screen**

Enter the SIP Server information for the new server as described in the table below.

Table 6 displays the SIP server configuration fields and descriptions.

Field	Description
Name:	Enter an appropriate descriptive server name
Site:	Select the appropriate site location
Protocol:	Select UDP
Host (Name/Address/Domain):	Enter the IP address of the GFI FaxMaker server
Override Default Port:	Enter 5060
Allow Ext. Voice Mail for Extension-Only User	Leave unchecked
Allow Fax Redirect to This Server	Check this parameter
Extension:	The system will automatically assign the next available extension, however you can define a different unused extension.
Assigned User Group:	Assign an appropriate user group that has access to the necessary trunks, in this example we selected the "Executives" user group.
SIP Profile:	Enter the SIP profile created in previous step, see <b>Figure 5</b> .
Digest Authentication:	Leave this as <None>
User ID:	Leave blank
Password:	Leave blank

**Table 6 - SIP Server Info Requirements**

- e. Click **Save** to store your changes

## 5. Enable SIP Proxy Ports on ShoreGear Switch

When allocating Ports for SIP extensions, these changes are modified by selecting "Administration," "Platform Hardware", then "Voice Switches / Service Appliances" then "Primary" in ShoreWare Director (see Figure 8)

- a. Click the **Administration** link to expand the submenus
- b. Click on Platform Hardware
- c. Click on Voice Switches / Service Appliances
- d. Click on Primary

**ShoreTel**  
**Director**  
 Build 18.61.2202.0  
 Logoff Edward Cho

Administration

- Users...
- Trunks...
- IP Phones...
- Platform Hardware...
  - Voice Switches / Service Appliances...
    - Primary
    - Spare
  - Conference Bridges
- Call Control...
- Voice Mail...
- Auto-Attendant Menus
- Workgroups
- Schedules

**Primary Voice Switches / Service Appliances**

Add new switch/appliance at site:  of type:  [Go](#)

Name	Quick Launch	Description	Site	Server	Database Server	Type	IP Address	MAC Address
<a href="#">SG24A-01</a>			Headquarters	Headquarters		SG-24A	10.0.1.30	00-10-49-1E-
<a href="#">SG24A-02</a>			Headquarters	Headquarters		SG-24A	10.0.1.31	00-10-49-1E-
<a href="#">SG24A-03</a>			Headquarters	Headquarters		SG-24A	10.0.1.32	00-10-49-1E-
<a href="#">SG24A-04</a>			Headquarters	Headquarters		SG-24A	10.0.1.33	00-10-49-1E-
<a href="#">SG90-01</a>			Headquarters	Headquarters		SG-90	10.0.1.20	00-10-49-23-
<a href="#">SGt1k-01</a>			Headquarters	Headquarters		SG-T1k	10.0.1.40	00-10-49-1E-
<a href="#">SGt1k-02</a>			Headquarters	Headquarters		SG-T1k	10.0.1.41	00-10-49-1E-
<a href="#">SoftSwitch</a>		SoftSwitch	Headquarters	Headquarters	Headquarters	SW	10.0.1.10	

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**Figure 8 – List of Primary Switches**

This action brings up the “Primary Switches” screen. From the “Switches” screen, simply select the name of the switch to configure. The “Edit ShoreGear ...Switch” screen will be displayed (see Figure 9). Within the “Edit ShoreGear ...Switch” screen, define one of the “Port Type” settings from the available ports to “100 SIP Proxy”, then save the change.

**Voice Switches**  
Edit ShoreGear 90 Switch

New Copy Save Delete Reset

Edit this record Refresh this page

Name: SG90-01

Description:

Site: Headquarters

IP Address: 10.0.1.20 Find Switches

Ethernet Address: 00-10-49-23-2D-53

Server to Manage Switch: Headquarters

Caller's Emergency Service Identification (CESID): (e.g. +1 (408) 331-3300)

Built-in Capacity: IP Phone + SIP Trunk = Total  
29 + 1 = 30 of 30 (0 SIP proxy ports)

Enable Jack Based Music On Hold  
Jack Based Music On Hold Gain (-49 to 13): 0 dB

Use Analog Extension Ports as DID Trunks



Port	Port Type	Trunk Group	Description	Jack Number	Lo
1	100 SIP Proxy		P01		
2	5 IP Phones		P02		

**Figure 9 – Edit ShoreGear Switch**

If the ShoreGear switch that you have selected has “built-in” capacity (i.e., ShoreGear 50/90/220T1/E1, etc.) for IP phones and SIP trunks, you can also remove 5 ports from the total number available to provide the “100 SIP Proxy” configuration necessary.

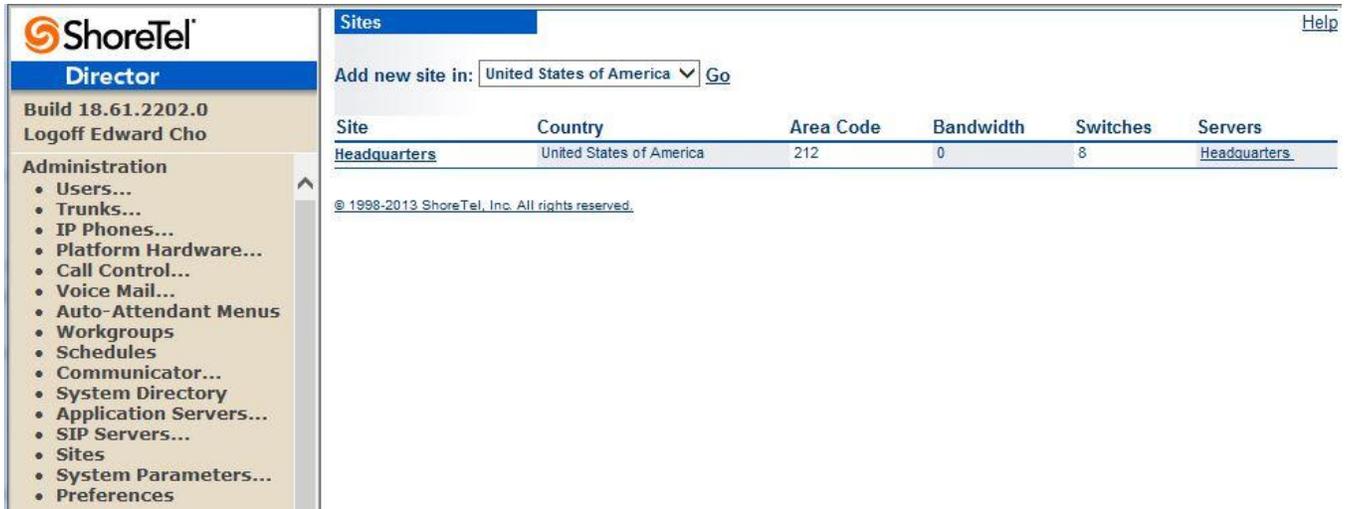
**Note:** Every 5 ports you remove from the total available will result in “100 SIP Proxy” ports being made available.

One dedicated ShoreGear 120 switch can act as a proxy for the entire site and support up to 2400 SIP phones.

## 6. Modifying the Site Settings

The next settings to address are the administration of sites. These settings are modified under the ShoreWare Director by selecting “Administration” then “Sites” (Figure 10)

- a. Click on Sites
- b. Click on an existing site or add a new site where the users will be using the fax service. In this example, Headquarters is the site where the users are located.



ShoreTel  
Director  
Build 18.61.2202.0  
Logoff Edward Cho

Administration

- Users...
- Trunks...
- IP Phones...
- Platform Hardware...
- Call Control...
- Voice Mail...
- Auto-Attendant Menus
- Workgroups
- Schedules
- Communicator...
- System Directory
- Application Servers...
- SIP Servers...
- Sites
- System Parameters...
- Preferences

Sites [Help](#)

Add new site in:  [Go](#)

Site	Country	Area Code	Bandwidth	Switches	Servers
<a href="#">Headquarters</a>	United States of America	212	0	8	<a href="#">Headquarters</a>

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### Figure 10 – Sites

Within the “Sites” screen, select the name of the site to configure. The “Edit Site” screen will then appear. Scroll down to the “SIP Proxy” parameters (Figure 11).

## Sites

### Edit Site

New Copy Save Delete Reset

---

[Edit this record](#)

[Refresh this page](#)

Name:	<input type="text" value="Headquarters"/>
Service Appliance Conference Backup Site:	<None> ▼
Country:	United States of America ▼
Language:	English(US) ▼
Parent:	Top of Tree
<input type="checkbox"/> Use Parent As Proxy	
Local Area Code:	<input type="text" value="212"/>
Additional Local Area Codes:	<input type="button" value="Edit"/>
Caller's Emergency Service Identification (CESID):	<input type="text"/> (e.g. +1 (408) 331-3300)
Time Zone:	(UTC-05:00) Eastern Time (US & Canada), Eastern Standard Time
Night Bell Extension:	<input type="text"/>
Night Bell Switch:	None ▼ <a href="#">Edit Night Bell Call Handling</a>
Paging Extension:	<input type="text"/>
Paging Switch:	None ▼
Operator Extension:	<input type="text" value="10713 : OperatorLine"/> <input type="button" value="Search"/>
FAX Redirect Extension:	<input type="text" value="10001 : GFI Faxmaker"/> <input type="button" value="Search"/>
SMTP Relay:	<input type="text" value="192.168.1.11"/> <input type="button" value="Ping"/>
Network Time Protocol Server:	<input type="text" value="10.0.1.8"/>
<b>Bandwidth:</b>	
Admission Control Bandwidth:	<input type="text" value="0"/> kbps
Intra-Site Calls:	High Bandwidth Codecs ▼
Inter-Site Calls:	Low Bandwidth Codecs ▼
FAX and Modem Calls:	Fax Codecs - High Bandwidth ▼
<b>SIP Proxy:</b>	
Virtual IP Address:	<input type="text"/>
Proxy Switch 1:	SG90-01 ▼
Proxy Switch 2:	None ▼
<b>Emergency Number List:</b>	

**Figure 11 – Edit Site**

7. If editing an existing Site, select that Site
  - a. For the parameter FAX Redirect Extension, click on the search button and select the GFI FaxMaker server created earlier, see **Figure 7**. The FAX Redirect Extension must be an existing user. In this example, the SIP UM Server extension created earlier, “10001: GFI Faxmaker” is the fax redirection number
  - b. For the parameter FAX and Modem Calls, select “Fax Codecs – High Bandwidth”

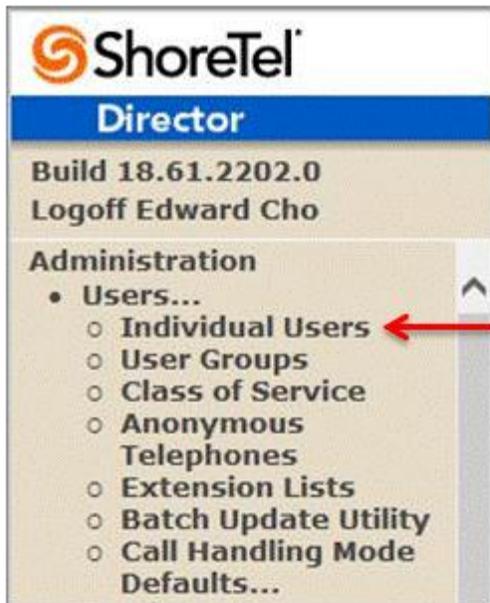
**Note:** T.38 has been added to the default Codec Lists (Fax Codecs – High Bandwidth and Fax Codecs – Low Bandwidth)

- c. In the “SIP Proxy:” parameter area, for the parameter “Proxy Switch 1:”, select the appropriate ShoreTel SIP Proxy Switch that supports T.38
- d. Click on **Save**

For additional details on configuring SIP Proxy or Virtual IP Address please refer to the ShoreTel Administration Guide.

**Note:** Bandwidth of 2046 is just an example. Please refer to the *ShoreTel Planning and Installation Guide* for additional information on setting Admission Control Bandwidth.

8. **Modify Individual Users for Fax – Creating a SIP Extension**
  - a. Click on Users
  - b. Click on Individual Users



**Figure 12 –Individual Users**

Users

[Help](#)

Edit User

\* modified

▼ General
▶ Personal Options
▶ Distribution Lists
▶ Workgroups

[Refresh this page](#)

First Name:	<input type="text" value="1st Floor"/>
Last Name:	<input type="text" value="Conference Room"/>
Number:	<input type="text" value="10150"/>
License Type:	<input type="text" value="Extension-Only"/> ▼
Access License:	<input type="text" value="Personal"/> ▼ <input type="checkbox"/> Enable Contact Center Integration
Caller ID:	<input type="text"/> (e.g. +1 (408) 331-3300)
<input type="checkbox"/> DID Range:	<input type="text" value="+12127448922 (1 of 1 available) PRI"/> ▼ <a href="#">View System Directory</a>
DID Number:	<input type="text" value="+12127448922"/> (Range: +12127448922 - 12127448922)
PSTN Failover:	<input type="text" value="None"/> ▼
User Group:	<input type="text" value="Executives"/> ▼ <a href="#">Go to this User Group</a>

---

Site:	<input type="text" value="Headquarters"/> ▼
Language:	<input type="text" value="English(US)"/> ▼
Primary Phone Port:	<input checked="" type="radio"/> IP Phones <input type="text" value="00-10-49-22-94-FE"/> ▼ <input type="radio"/> Ports <input type="text" value="SG24A-04 - 2"/> ▼ <input type="radio"/> SoftSwitch <input type="text" value="SoftSwitch"/> ▼
Current Port:	<input type="text" value="00-10-49-22-94-FE"/> <input type="button" value="Go Primary Phone"/>
Jack #:	<input type="text"/>

---

Mailbox Server:	<input type="text" value="Headquarters"/> ▼ <a href="#">Escalation Profiles and Other Mailbox Options</a>
<input type="checkbox"/> Accept Broadcast Messages	
<input checked="" type="checkbox"/> Include in System Dial By Name Directory	
<input type="checkbox"/> Make Number Private	
Fax Support:	<input type="text" value="User - Redirect"/> ▼
Allow Video Calls:	<input type="text" value="None"/> ▼
<input checked="" type="checkbox"/> Allow Telephony Presence	
<input type="checkbox"/> Shared Call Appearances	
Associated BCA:	<input type="text"/>

**Figure 13 – Edit User**

9. Select the user whose fax calls you want to be redirected to the Fax Redirected Extension (GFI FaxMaker server). If this is a new user then select any existing user, then click on the New button to create a new user

- a. For the parameter “Fax Support:”, make sure to select “**User – Redirect**” (this is the default setting)
- b. Click the **Save** button

## Application 2 – User with a Unique Voice Extension and a Unique Fax Extension

ShoreTel’s implementation of fax redirect requires that the call be answered (either by the user or voice mail) in order for the fax call to be redirected to the proper fax redirect extension. Some users prefer not to hear the CNG (fax) tones when receiving a fax call, and instead prefer to have a separate fax phone number (DNIS/DID) that would route directly to their fax server (GFI FaxMaker), then the fax server would deliver the fax to the user’s email

Should your implementation require a unique number for fax that is different from the voice number, then you will need to configure the ShoreTel system and GFI Fax server for SIP trunks using Off System Extensions (OSEs) rather than a SIP UM server.

**Note:** When working with GFI or ShoreTel support, specify that you are using this method as the DID fax number displays differently within the SIP packet as opposed to application 1.

The following steps describe how to configure the ShoreTel system for faxing using SIP Trunks and Off System Extensions (OSEs).

### Switch Settings - Allocating Ports for SIP Trunks

These settings are modified by selecting **Administration**, then **Platform Hardware** followed by **Voice Switches / Service Appliances** followed by **Primary** in the **ShoreWare Director** section (Figure 14).



**Figure 14 –Switches Administration**

This will bring up the **Switches** screen. From the **Switches** screen simply select the name of the switch to configure. The **Edit ShoreGear Switch** screen will be displayed. Within the **Edit ShoreGear Switch** screen, select the desired number of SIP trunks from the ports available (Figure 15).



**Figure 15 – ShoreGear Switch Settings**

Each port designated as a SIP trunk port type enables the support for 5 individual SIP trunks.

**ShoreTel System Settings – Trunk Groups**

ShoreTel trunk groups only support Static IP Address SIP endpoint Individual Trunks.

The settings for trunk groups are changed by selecting **Administration**, then **Trunks** followed by **Trunk Groups** in the **ShoreWare Director** section (Figure 16).



**Figure 16– Trunk Groups Administration**

From the dropdown menus on the **Trunk Groups** screen, select the site desired and select *SIP* as the trunk type to configure. Then click the **Go** link right from the **Type** field. The **Edit SIP Trunk Group** screen will appear (**Figure 17**).

## Trunk Groups

### Edit SIP Trunk Group

New
Copy
Save
Delete

---

**Edit this record**

Name:

Site:

Language:  ▼

Enable SIP Info for G.711 DTMF Signaling

Profile:  ▼

Digest Authentication:  ▼

Username:

Password:

**Inbound:**

Number of Digits from CO:

DNIS

DID

Extension

Translation Table:  ▼

Prepend Dial In Prefix:

Use Site Extension Prefix

Tandem Trunking

User Group:  ▼

Prepend Dial In Prefix:

Destination:

**Outbound:**

**Network Call Routing:**

Access Code:

Local Area Code:

Additional Local Area Codes:

Nearby Area Codes:

Billing Telephone Number:

**Trunk Services:**

...

[Refresh this page](#)

### Figure 17– Edit SIP Trunk Group

The next step within the **Edit SIP Trunks Group** screen is to define the name for the trunk group. .

The **Enable SIP Info for G.711 DTMF Signaling** parameter should be disabled (checkbox clear). Enabling SIP info is currently only used with SIP tie trunks between ShoreTel systems.

The “Profile” parameter defaults to “Default Tie Trunk”, no further modification is required..

The **Digest Authentication** parameter defaults to <None>; no modification is required here.

Next, you need to make the appropriate settings for the **Inbound** parameters in the **Edit SIP Trunks Group** screen (**Figure 18**).

**Inbound:**

Number of Digits from CO:

DNIS

DID

Extension

Translation Table:

Prepend Dial In Prefix:

Use Site Extension Prefix

Tandem Trunking

User Group:

Prepend Dial In Prefix:

Destination:

### Figure 18 – Inbound Settings

Within the **Inbound** settings, the **Number of Digits from CO** should match what the ShoreGear SIP trunk switch will be receiving from this public network and this is usually configured to match the systems extension length. It is not necessary to enable the **DNIS** or **DID** parameters as they are not required. Ensure that the **Extension** and **Tandem Trunking** checkboxes are selected. For additional information on these parameters refer to *ShoreTel’s Planning and Installation Guide*

The following section is configured in the same way as any normal trunk group.

## Trunk Groups

Edit SIP Trunk Group

[New](#) [Copy](#) [Save](#) [Delete](#) [Reset](#) [Help](#)

**Outbound:**

**Network Call Routing:**

Access Code:

Local Area Code:

Additional Local Area Codes:

Nearby Area Codes:

Billing Telephone Number:  (e.g. +1 (408) 331-3300)

**Trunk Services:**

Local

Long Distance

International

Enable Original Caller Information

n11 (e.g. 411, 611, except 911 which is specified below)

Emergency (e.g. 911)

Easily Recognizable Codes (ERC) (e.g. 800, 888, 900)

Explicit Carrier Selection (e.g. 1010xxx)

Operator Assisted (e.g. 0+)

Caller ID not blocked by default

**Figure 19 – Outbound and Trunk Services**

Select the **Outbound** checkbox and specify a Trunk **Access Code** and **Local Area Code** as appropriate.

In the **Trunk Services** section, there is no real need to enable any specific options as access to GFI FaxMaker will be via Off System Extensions (OSE's).

The last parameter ( “Caller ID not blocked by default” ), this parameter determines if the call is sent out as <unknown> or with caller information (Caller ID), this parameter should be enabled (checked).

Next, configure the **Trunk Digit Manipulation** (Figure 20):

**Trunk Digit Manipulation:**

Remove leading 1 from 1+10D  
*Hint: Required for some long distance service providers.*

Remove leading 1 for Local Area Codes (for all prefixes unless a specific local prefix list is provided below)  
*Hint: Required for some local service providers with overlay area codes.*

Dial 7 digits for Local Area Code (for all prefixes unless a specific local prefix list is provided below)  
*Hint: Local prefixes required for some local service providers with mixed 7D and 1+10D in the same home area.*

Dial in E. 164 Format

Local Prefixes:  [Go to Local Prefixes List](#)

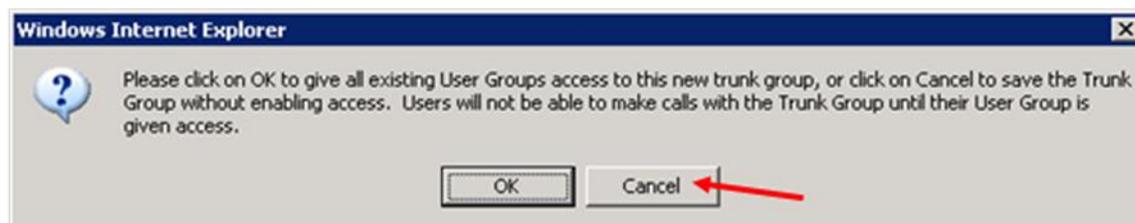
Prepend Dial Out Prefix:

Off System Extensions:

Translation Table:

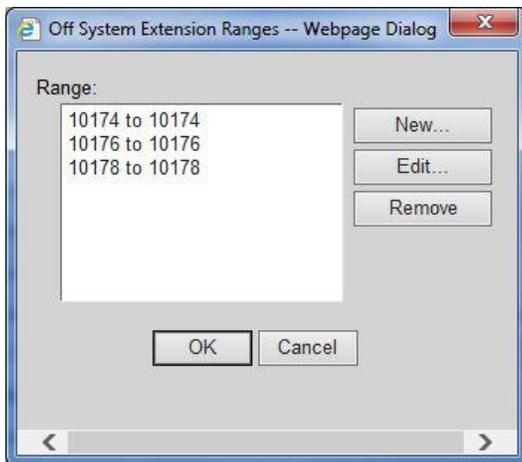
**Figure 20 – Trunk Digit Manipulation**

You need to define an **Off System Extension (OSE)**, but before you can do so, you'll need to save your settings by clicking **Save** to input the changes. You will be prompted to give all User Groups access to this newly created trunk group (see **Figure 21**). It is not necessary to grant access as connectivity is via Off System Extensions, so click **Cancel**.



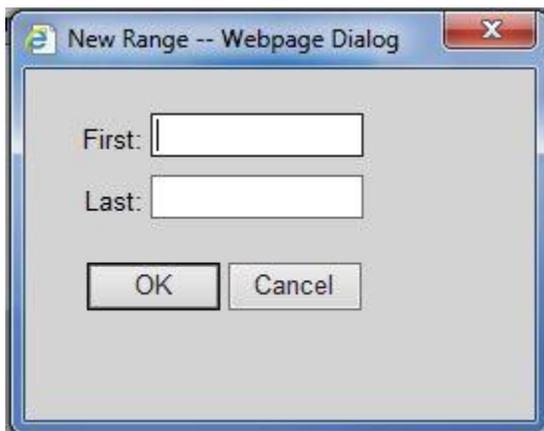
**Figure 21 – Grant User Groups access to new Trunk Group**

After you have saved your changes you will need to define your Off System Extension range. This can be any extension not currently in use on the ShoreTel system. Click **Edit** to the right of the **Off System Extensions** field in the **Trunk Digit Manipulation** section (see **Figure 18**), The **Off System Extensions Ranges** dialog will be displayed as shown in **Figure 22**.



**Figure 22 – Off System Extension Ranges**

Click New to get the New Range dialog as shown in Figure 23.



**Figure 23 – Off System Extension - New Range Dialog**

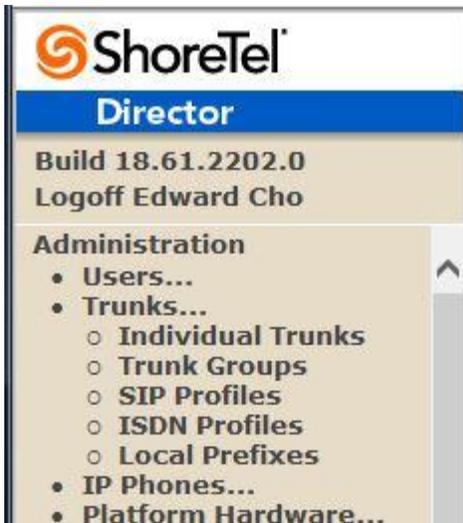
Define a single extension range that is within your ShoreTel PBX extensions and click **OK**. This range must match the extension range of the users defined on the GFI FaxMaker server.

This completes the settings needed to set up the trunk groups on the ShoreTel system.

**Note:** Each individual Off System Extension will be an individual user's fax destination, be certain to add a sufficient OSE range to cover all the individual users that require faxing capabilities.

### **ShoreTel System Settings – Individual Trunks**

This section covers the configuration of the individual trunks. Select **Administration**, then **Trunks** followed by **Individual Trunks** to configure the individual trunks (Figure 27).



**Figure 24 – Individual Trunks**

The **Trunks by Group** screen is used to change the individual trunks settings that appear (**Figure 25**).



**Figure 25– Trunks by Group**

Select the site for the new individual trunk(s) to be added and select the appropriate trunk group from the dropdown menus at the top of the screen. In this example, the site is Headquarters and the trunk group is *GFI Faxmaker*, as created above, see **Figure 17**. Click **Go** to bring up the **Edit Trunk** screen (**Figure 26**).

**Trunks** [Help](#)

**Edit Trunk**

\* modified

---

**Edit this record** [Refresh this page](#)

Site: Headquarters

Trunk Group: GFI Faxmaker

Name:

Switch:

IP Address:

Number of Trunks (1 - 220):

---

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**Figure 26 - Edit Trunk Screen for Individual Trunks**

On the **Edit Trunk** screen for individual trunks, enter a **Name** for the individual trunks. It is recommended to name the individual trunks the same as the name of the trunk group so that the trunk type can easily be tracked.

Next, select the appropriate **Switch** upon which the individual trunk will be created. This will be the ShoreGear switch that you defined to have SIP Trunks, see **Figure 16**.

Next, specify the IP address of the GFI FaxMaker server under **IP Address**.

Next, enter the number of individual trunks desired into the **Number of Trunks** field. Each individual trunk supports “one” audio path – example if 10 is configured, then 10 audio paths can be up at one time, meaning that you can have up to 10 fax calls connected at once.

Once these edits are complete, click **Save** to commit the changes.

After setting up the trunk groups and individual trunks, refer to the *ShoreTel Planning and Installation Guide* to make the appropriate changes for the User Group settings. This completes the settings for the ShoreTel system side.

## GFI Configuration

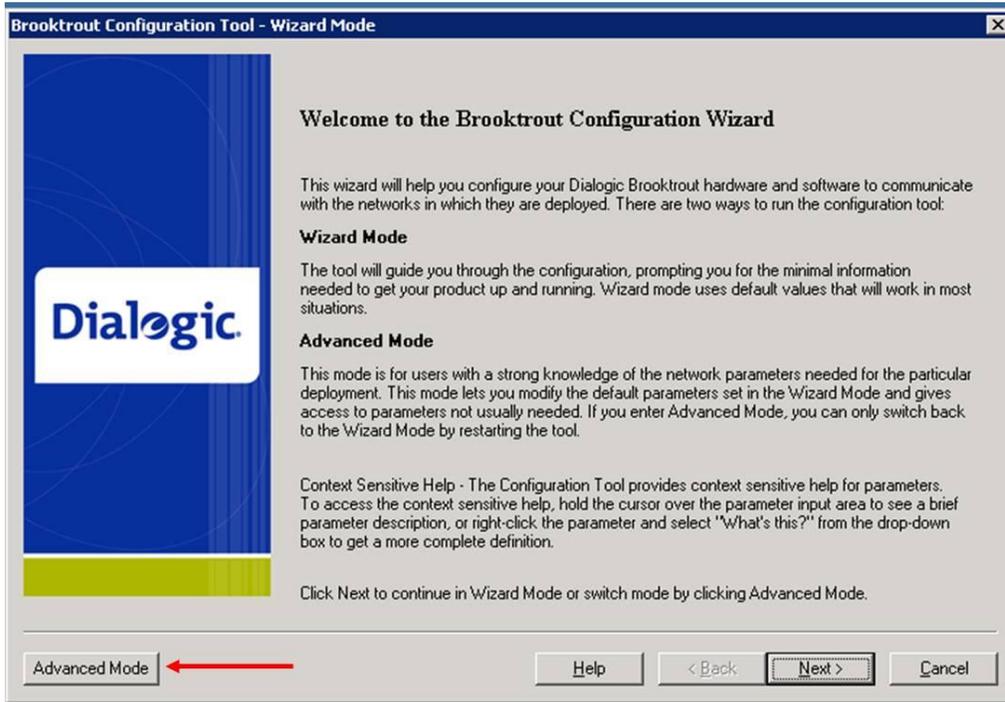
The GFI FaxMaker software will need to be installed on a Windows 2003, 2008 or 2012 server operating system with Microsoft IIS/SMTP installed. GFI FaxMaker is supported on a Hyper-V or VMware based virtual machine when using the Brooktrout SR140 for Fax over IP.

Additionally, an SMTP connection to either an Internet email account or a local email server will be necessary from the GFI FaxMaker server for the fax delivery to a user's mailbox.

The most common mistake is not restarting the GFI FaxMaker services following a change in the configuration. Any time a change is made (i.e. adding lines, changing users, etc.) the GFI FaxMaker services should be restarted. For additional FAQs, please visit <http://www.gfi.com/FaxMaker/> and click on the "Support" link.

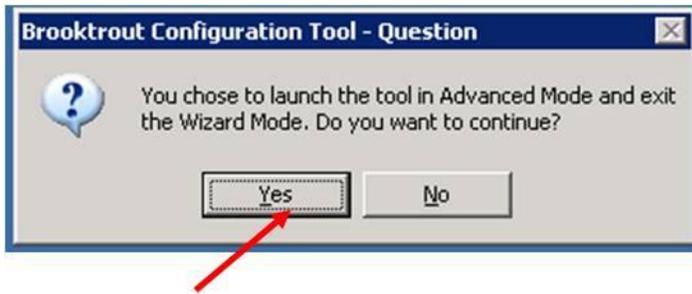
## Configuration for the GFI/Brooktrout SR140

1. From the GFI server PC, click Start/All Programs/GFI FaxMaker Brooktrout TR1034 Drivers/Brooktrout Configuration Tool



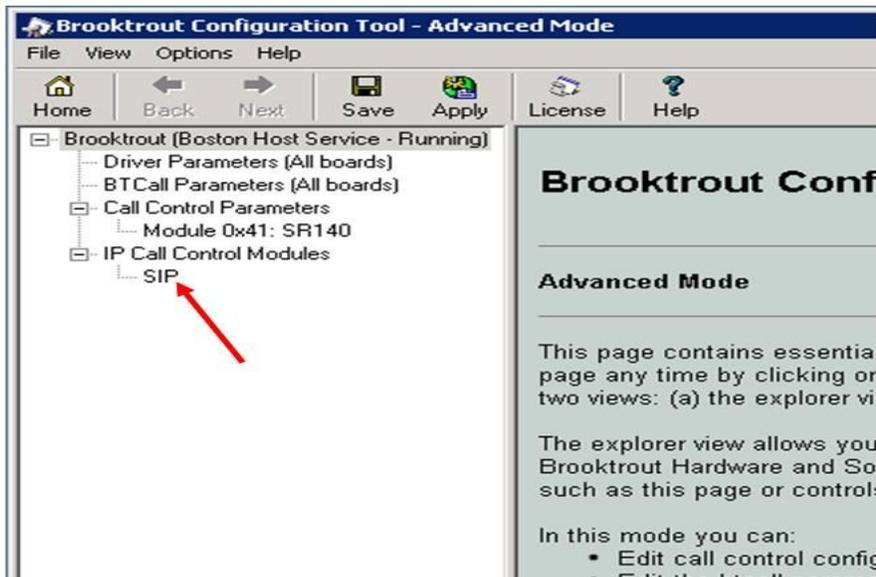
**Figure 27 – Brooktrout Configuration Wizard**

2. Click on Advanced Mode



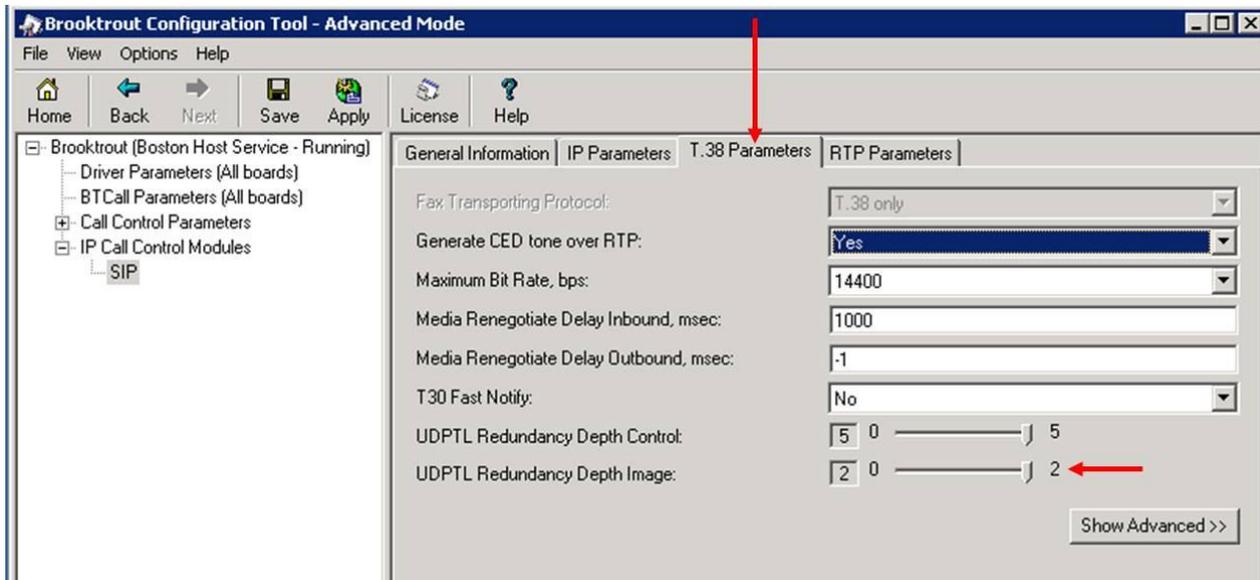
**Figure 28 – Brooktrout Configuration Wizard Question**

3. Click on Yes



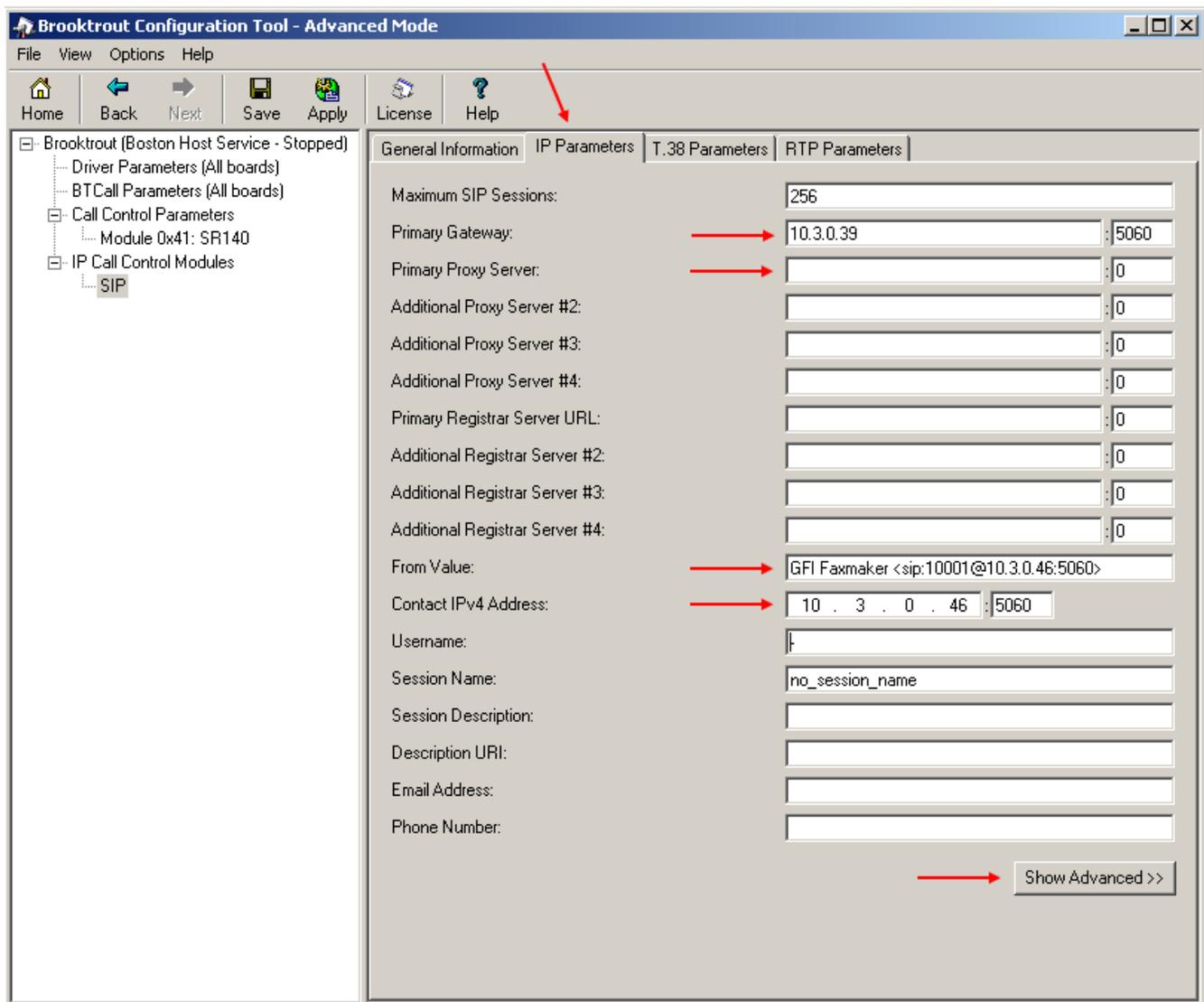
**Figure 29 – Brooktrout Configuration Tool Advanced Mode**

4. Expand the tree. Click on IP Call Control Modules. Click on SIP



**Figure 30 – Brooktrout Configuration Tool Advanced Mode T.38 Parameters**

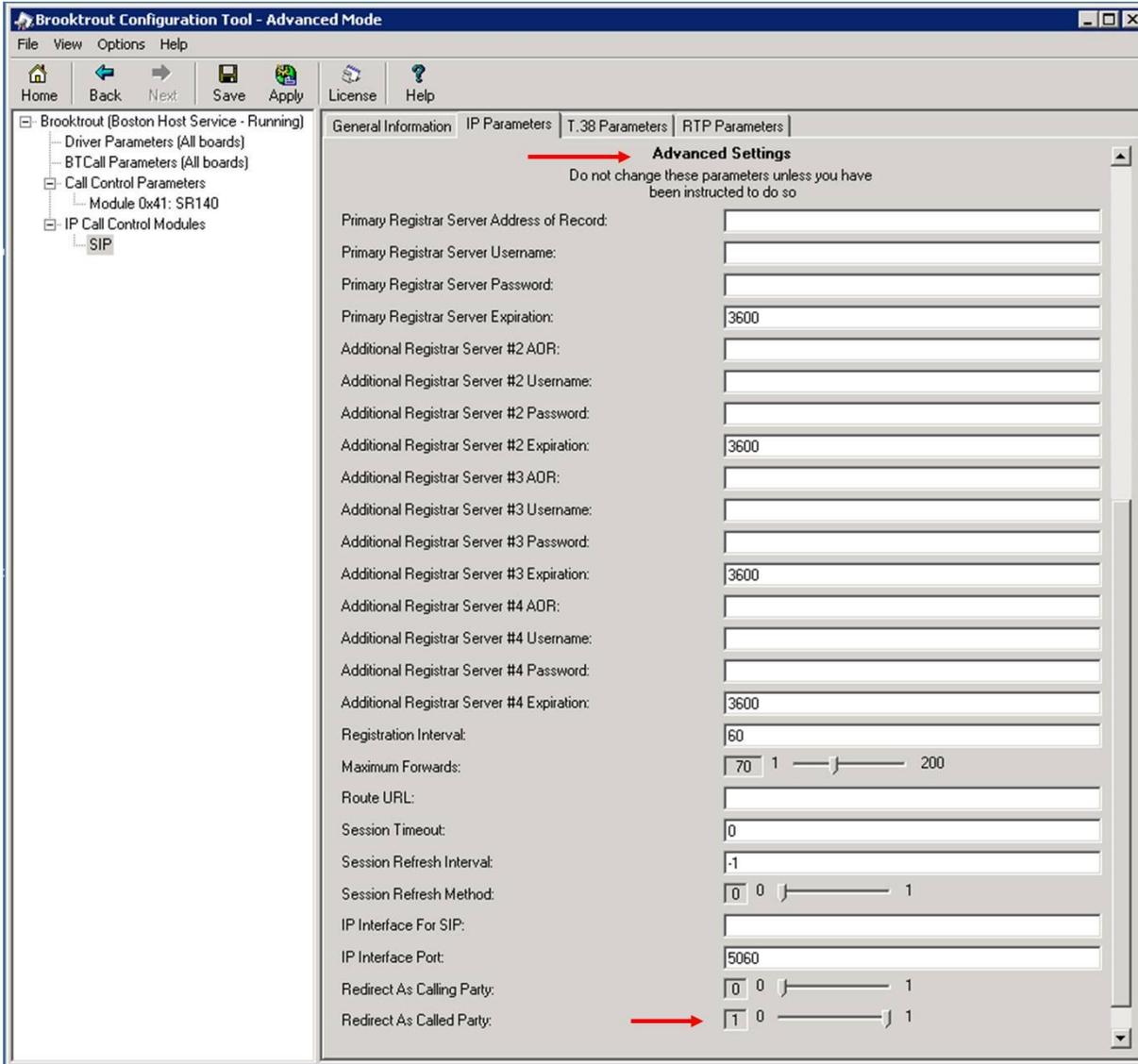
5. Click on T.38 Parameters Tab
  - a. Adjust the UDPTL Redundancy Depth Image from 0 to 2



**Figure 31 – Brooktrout Configuration Tool Advanced Mode IP Parameters**

6. Click on IP Parameters Tab
  - a. Primary Gateway - Enter the IP address of the ShoreGear SIP Proxy Switch and enter the default SIP UDP port 5060
  - b. Primary Proxy Server – Leave blank.
  - c. From Value: - Enter the GFI FaxMaker Request URI (For this example - GFI Faxmaker <[sip:10001@10.3.0.46:5060](mailto:sip:10001@10.3.0.46:5060)>), where “GFI Faxmaker” is the name that will be used in the SIP call request and “10001” is the extension defined for the GFI. After the “@” you should define the IP address of the GFI server followed by a colon “:” and 5060.

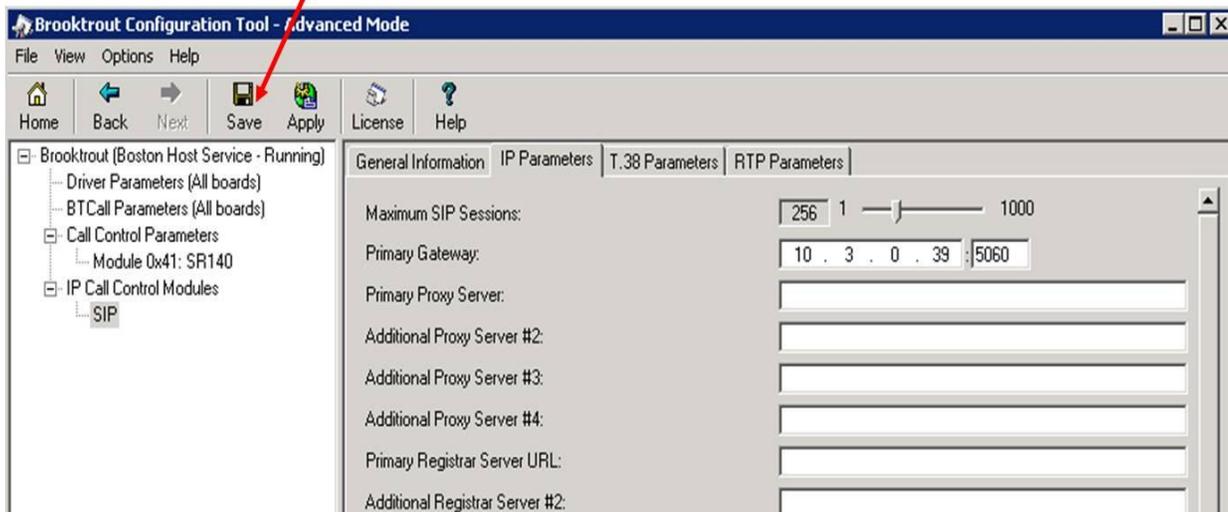
- d. Contact: - Enter the IP address of the GFI Fax Server and the SIP UDP port 5060
- e. Click on the Show Advanced button



**Figure 32 – Brooktrout Configuration Tool Advanced Mode IP Parameters Advanced Settings**

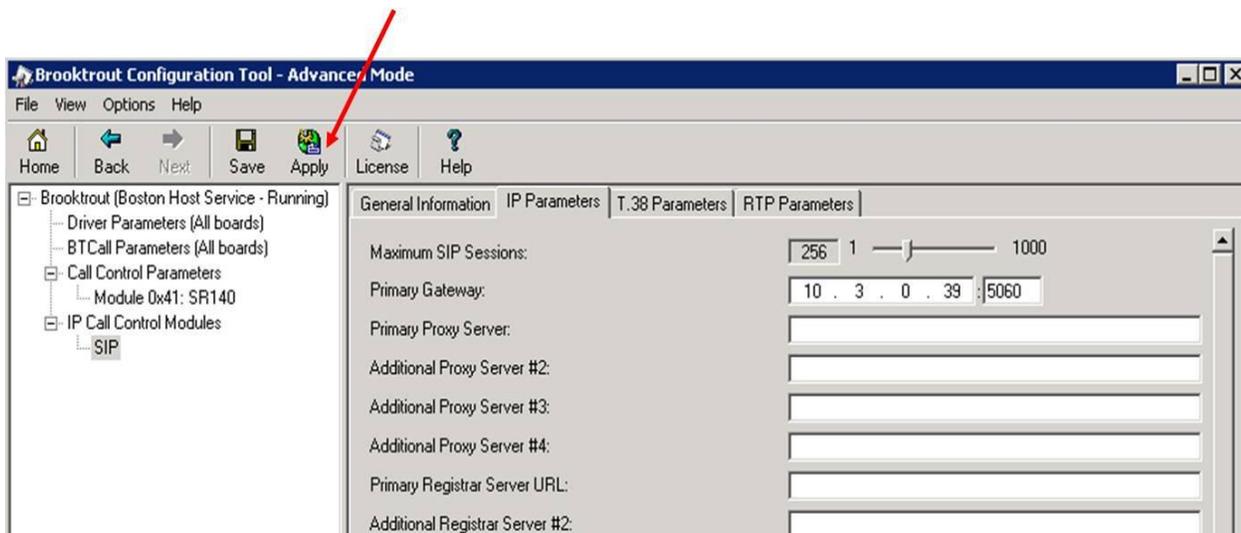
- 7. Redirect As Called Party – Adjust the value from 0 to 1. The parameter tells the GFI FaxMaker Server to route fax calls based on the Diversion Header of the Invite message instead of the Request URI.

**Note:** Set the “Redirect As Called Party” value to 0 if you are configuring your fax solution using SIP Trunks and Off System Extensions (OSEs) rather than a SIP UM server.



**Figure 33 – Brooktrout Configuration Tool Advanced Save**

8. Click on Save



**Figure 34 – Brooktrout Configuration Tool Advanced Apply**

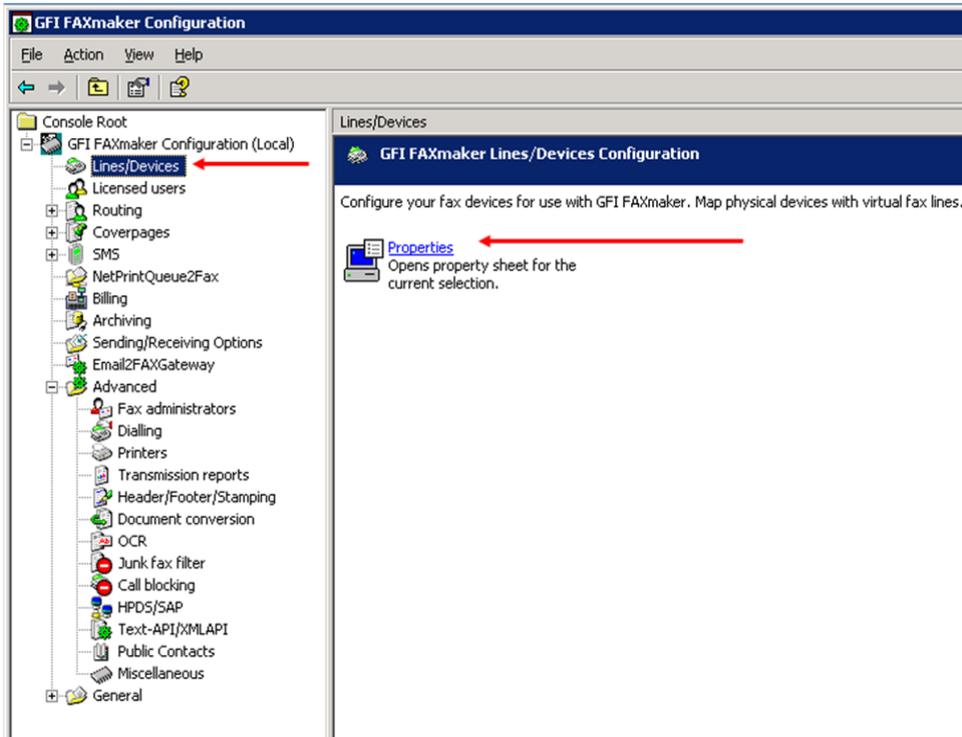
9. Click on Apply

1. Launch the GFI FaxMaker Configuration Application from the Start/Programs menu
  - a. Click on GFI FaxMaker Configuration to expand the menu tree
  - b. Click on Line/Devices

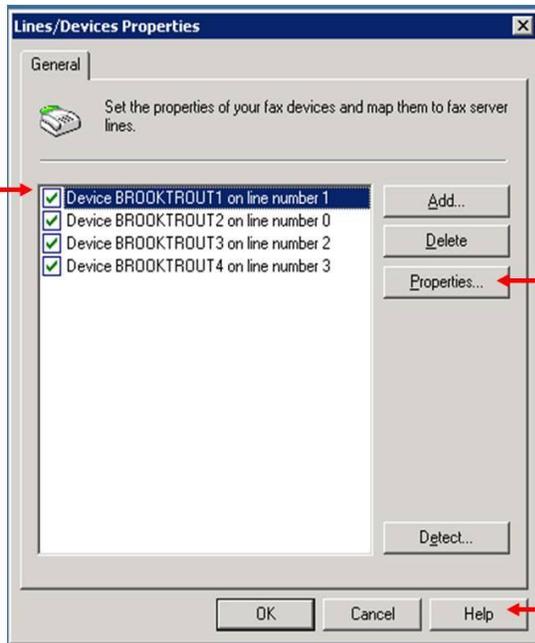
- c. Click on Properties

## 2. Configuring GFI Lines

- a. Launch the GFI FaxMaker Configuration Application
- b. Click on GFI FaxMaker Configuration
- c. Click on Lines/Devices
- d. Click on properties

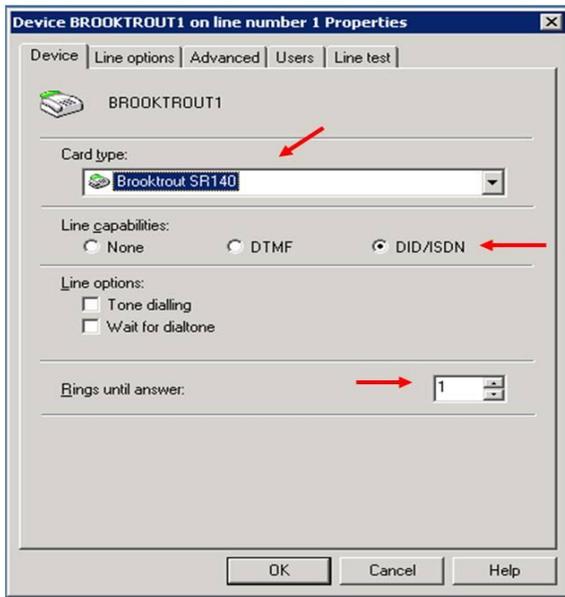


**Figure 35 – GFI FaxMaker Configuration**



**Figure 36 – Lines/Device Properties**

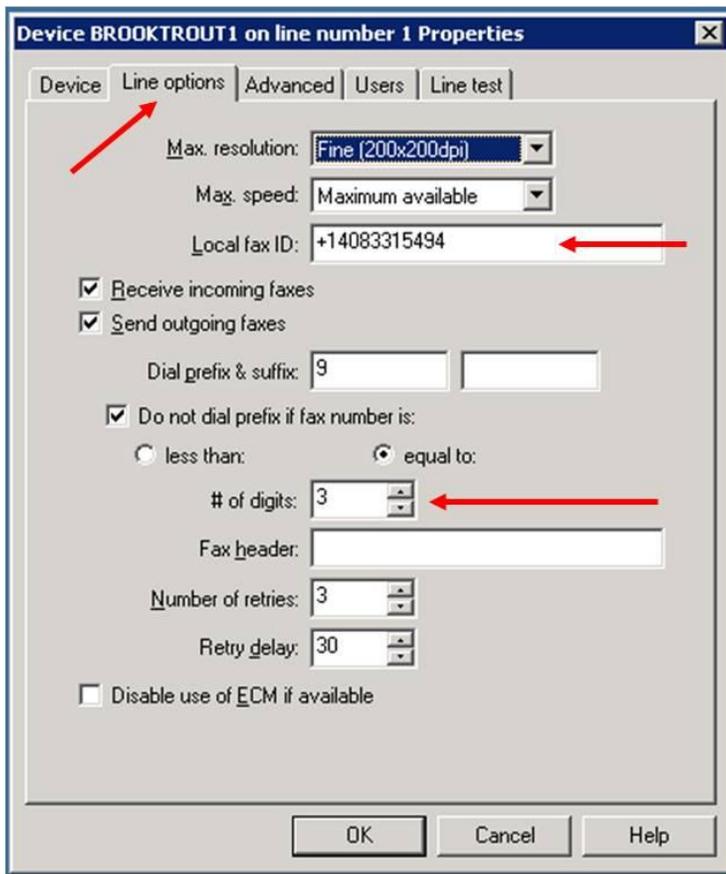
3. Click on Add to add a new line or to edit an existing just highlight that line and Click on properties
  - a. Reference: Click the Help button for details explanation on all the parameters



**Figure 37 – Device Brooktrout Line Number Properties Device Tab**

4. Select the Card type as Brooktrout SR140
  - a. Line capabilities, select DID/ISDN
  - b. Ring until answer, select the number 1
  - c. Click the Help button for details explanation on all the parameters
  - d. Verify that the Line options parameters (Tone dialing and Wait for dialtone) are not enabled (checked)

**Note:** After making any changes to the GFI FaxMaker Lines/Devices configuration make sure to restart the GFI FaxMaker Fax Server service for the changes to take effect. Then check the Fax Server Monitor to make sure that the lines have been initialized.

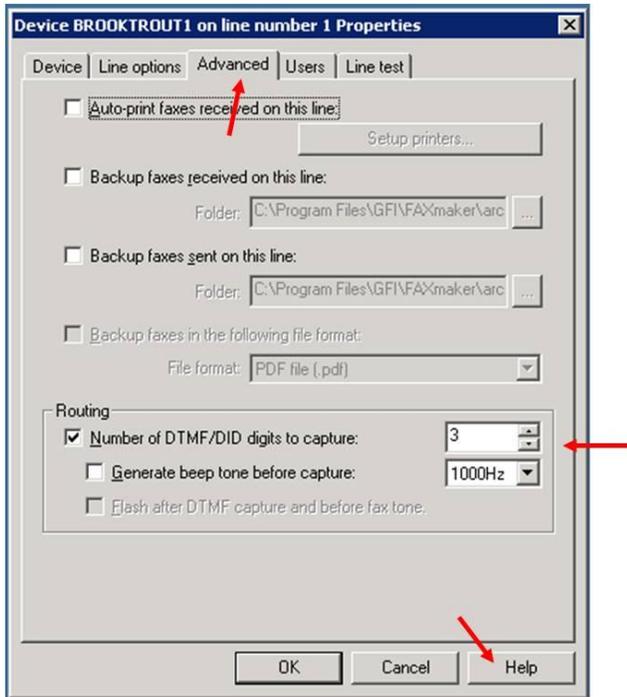


**Figure 38 – Device Brooktrout Line Number Properties Line Options Tab**

5. Click on the Line options tab

- a. Local fax ID: This is the number that will be given to the receiving fax machine as part of the transmission process. Usually a fax number is entered as the local fax id.
- b. Click the Help button for details explanation on all the parameters

**Note:** After making any changes to the GFI FaxMaker Lines/Devices configuration make sure to restart the GFI FaxMaker FAX Server service for the changes to take effect. Then check the Fax Server Monitor to make sure that the lines have been initialized.



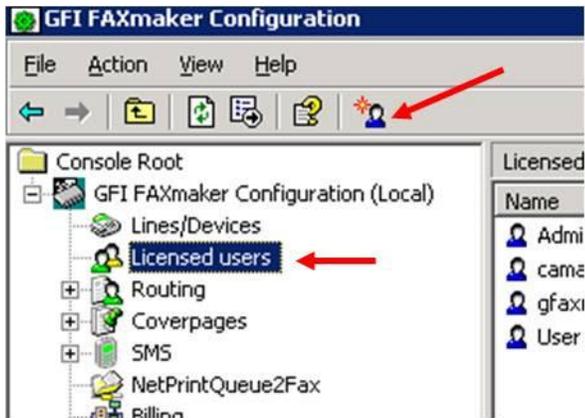
**Figure 39 – Device Brooktrout Line Number Properties Advanced Tab**

Repeat the above steps to add any additional lines you wish to use with GFI FaxMaker.

6. Click on Advanced tab (if you plan to use fax routing to route faxes to individual users based on the DID number, click on the **Advanced** tab and then select the **Number of DTMF/DID digits to capture** check box. The number of digits should be set to the size of the range of numbers you will be capturing. (i.e. For a range of 0-99 you should capture two digits. For a range of 0000-5000 you would capture 4 digits)
  - a. Enable (checkbox) the “Number of DTMF/DID digits to capture:” parameter
  - b. Enter the number of digits to capture (equal to the number of digits for your extension dial plan or equal to the extension length of your Off System Extensions (OSE)).
  - c. Click the Help button for details explanation on all the parameters

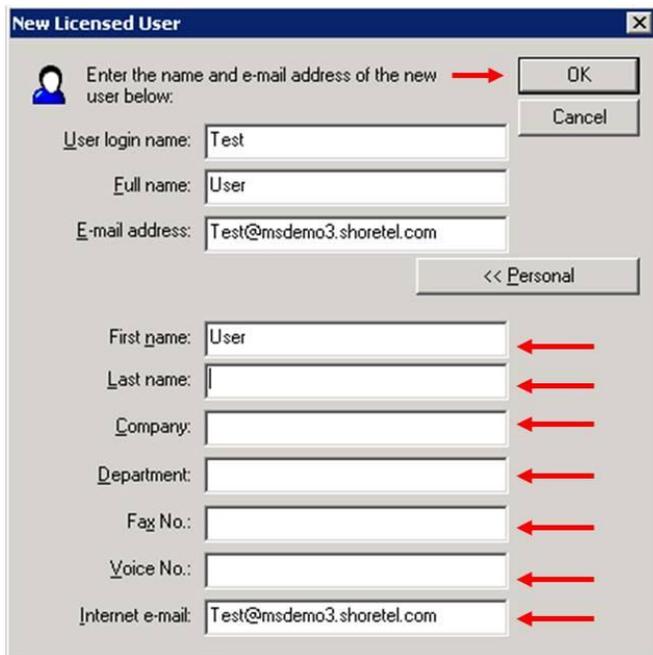
**Note:** After making any changes to the GFI FaxMaker Lines/Devices configuration make sure to restart the GFI FaxMaker Fax Server service for the changes to take effect. Then check the Fax Server Monitor to make sure that the lines have been initialized.

### 7. Adding a User



**Figure 40 – GFI FaxMaker Configuration New**

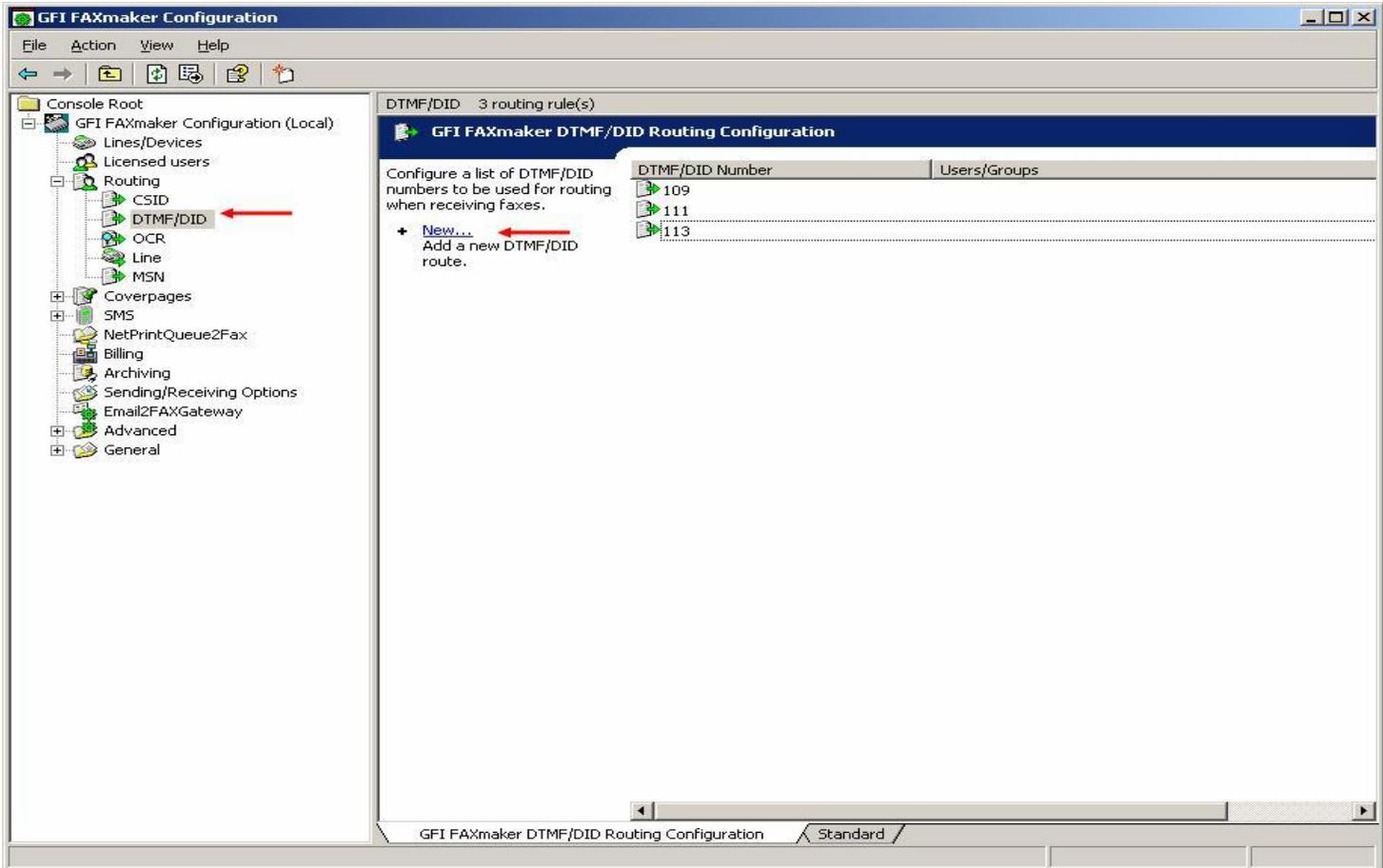
8. Click on Licensed Users
  - a. Click on the “New FaxMaker user” icon on the top menu bar



**Figure 41 – GFI FaxMaker Configuration New Licensed User**

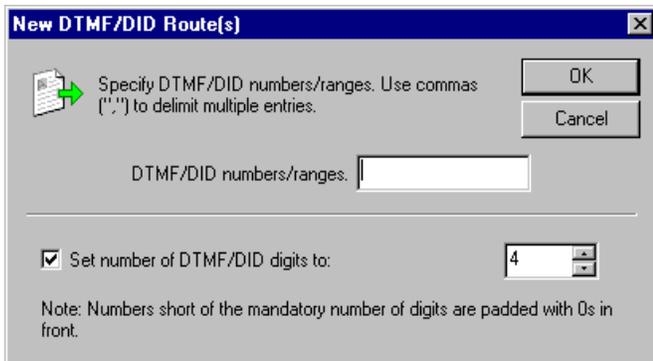
9. Enter all the user information in the blank form, then Click OK

Expand the “Routing” tree and click on “DTMF/DID”:



**Figure 42 – GFI FaxMaker DTMF/DID Routing Configuration**

Click on the “New” link.



## Figure 43 –New DTMF/DID Range

### 10. Configuring DID/DTMF Routing

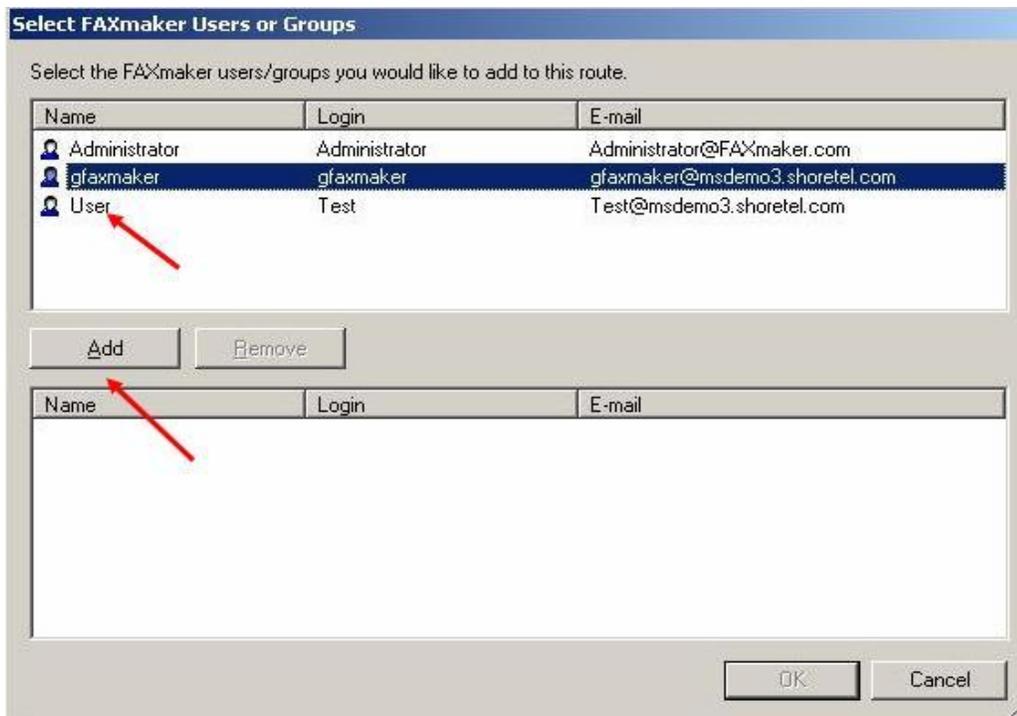
Associate the DID numbers with the users, this is called a DID route. This will be the digits received by GFI from ShoreTel (either the user's extension number or the Off System Extension).

- a. Define the "DTMF/DID numbers/ranges" to the desired user extension. **Note:** You can also add as a range. Please refer to GFI FaxMaker documentation for further details.
- b. Enable (check) the parameter "Set number of DTMF/DID digits to:" and set the value to match the digits being received by GFI. **Note:** this parameter will default to a value of previously defined DID routes.
- c. Click OK, this action brings up the properties for the DTMF/DID routing entry you just created, see **Figure 44**.



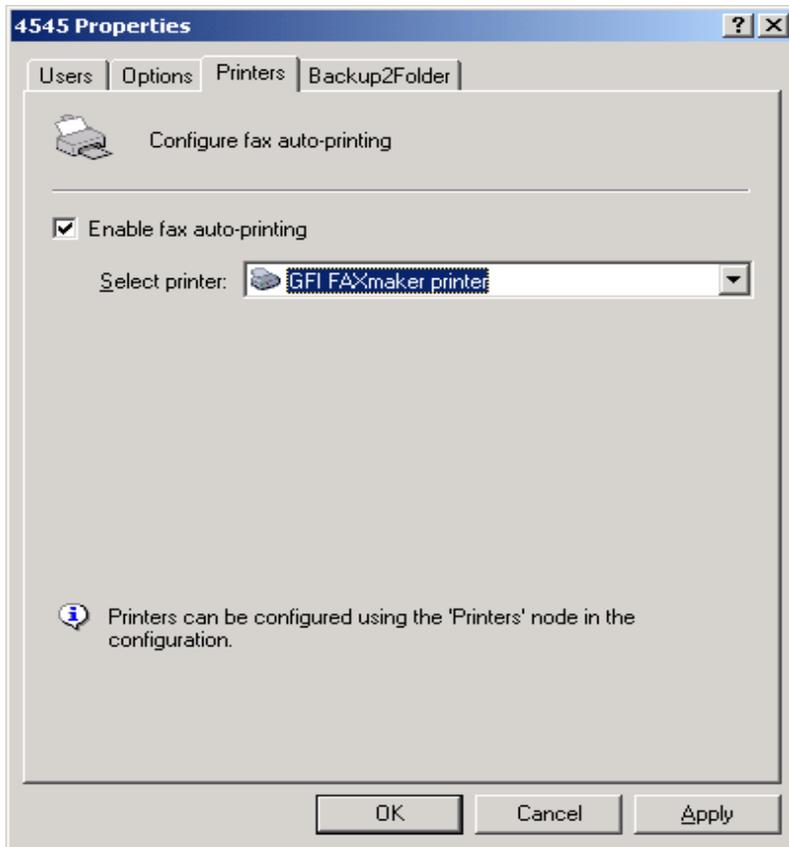
## Figure 44–Properties Users Tab

Click on the "Add..." button.



**Figure 45–Select FaxMaker Users or Groups**

Click on the desired user, which was created above see **Figure 40 & 41**, then click on the "Add" button, then click on OK.



**Figure 46 –Properties Printer Tab**

You can also specify that any faxes received on this route should be printed on a particular printer. To do this, select the printers tab, enable 'Automatically print faxes routed through this rule' and select the printer in the printer list box.

**Note:** You must configure any printers you wish to use in an inbound route in the printer's node. If you do not have any printers configured, this tab will appear grayed out. For information on how to configure printers, see the previous paragraph 'general routing options'.

### Importing/Exporting a range of DID routes

If you have a large number of users, it might be easier to prepare a list of DID numbers and associate user names in another application like Excel.

To import or export a range of DID numbers:

1. In the GFI FaxMaker configuration, right-click on the **Routing ► DTMF/DID** node.
2. From the menu, select either import or export DTMF/DID range. A file dialog will appear asking you to specify a text file with the data to be imported. The data must be in the following CSV format:

"did/dtmf number", "user1", "user2", "user3", ...

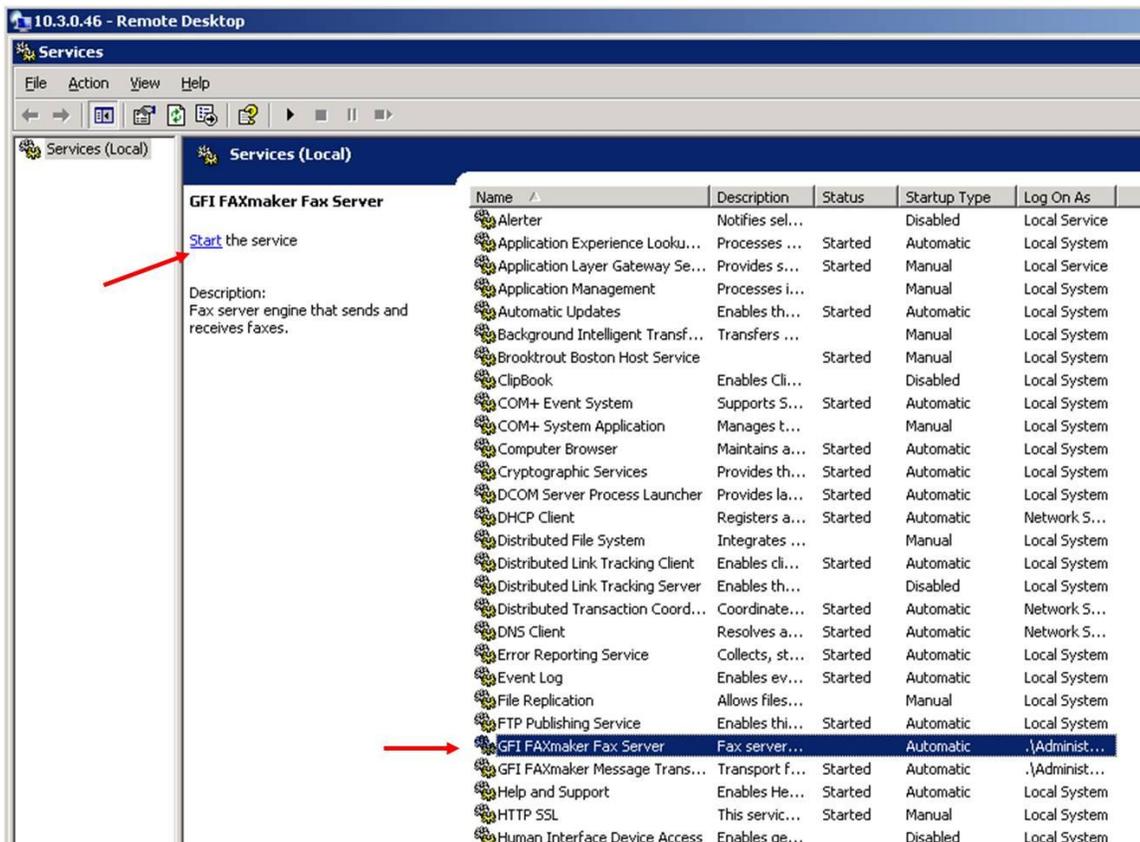
E.g.

"1234", "John J, Doe", "Bill Smith", "Roger Brown", "Joe Bloggs"

Specify the user name as either the Active Directory display name, or the SMTP email address.

**Note:** The configuration will link the user name specified to either the user's display name or any of the user's SMTP email addresses. All the user accounts to be imported must be in the Licensed Users list. On Export, the configuration will use the user's display name for the user fields.

Click OK when finished

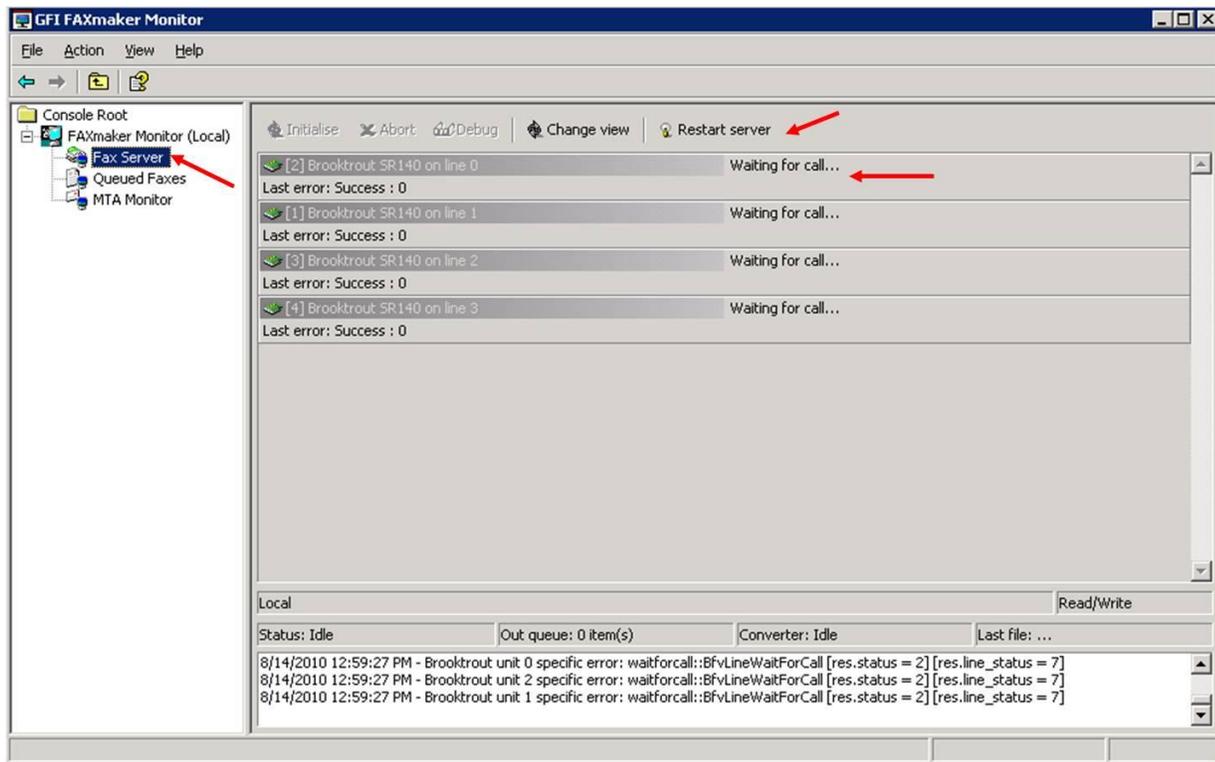


**Figure 47 –Services**

14. Start the GFI FaxMaker Fax Server service

15. Launch the GFI FaxMaker Monitor

- a. Start/All Programs/GFI FaxMaker/GFI FaxMaker Monitor
- b. Click on Fax Server
- c. Click on Restart server



**Figure 48 –GFI FaxMaker Monitor**

**GFI FaxMaker note for ShoreTel version 13.x**

The following registry entry should be added on the GFI FaxMaker server under HKLM\Software\GFI Fax & Voice\Faxmaker\config.

Type: String value  
 Name: AppendDomainToClip  
 Value: <ip address of the fax server>

This change is used to modify the “From” header in the INVITE from “ From: <sip:phonenumber>tag=...” to “From:sip:phonenumber@ipaddress>tag=...” to match the expected format required by ShoreTel.

**GFI Troubleshooting**

To troubleshoot GFI FaxMaker, go into the FaxMaker Configuration Module, expand the Advanced tree and click on Miscellaneous. Click Properties. Check the checkbox for Enable Debug mode under Troubleshooting Options. Restart the FaxMaker Fax Server Service. Run GFI FaxMaker until the issue presents itself again.

After the issue occurs again, go to Start, Programs, GFI FaxMaker Troubleshooter and follow the instructions of the Troubleshooter Wizard. After the wizard is complete, create a support ticket online at <http://www.gfi.com/support/technical-support-form>, or call GFI Technical Support at 855-832-6434.

## **GFI Technical Support**

GFI Software Technical Support can be contacted via telephone at 855-832-6434, Monday through Friday from 8:00 AM to 6:00 PM Eastern Time. GFI Software Technical Support can also be contacted via email by submitting a support request at <http://www.gfi.com/support/technical-support-form>. After hours technical support is also available through the GFI offices in Europe and Australia. See <http://www.gfi.com/company/contact.htm> for contact information.

## **Application Note Feedback**

ShoreTel IP PBX administrators who would like to provide feedback on the contents of this document should send it to [INFeedback@ShoreTel.com](mailto:INFeedback@ShoreTel.com). Please be sure to note the TPP app note number and the date of the document when providing feedback

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