MITEL – SIP CoE

Technical

Configuration Notes

Configure the Mitel 5000CP for use with GFI FaxMaker

SIP CoE 12-4940-00224

MITEL

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Mitel Technical Configuration Notes – Configure the Mitel 5000CP for use with GFI FaxMaker
November 2012, 12-4940-00224

Overview

This document provides a reference to Mitel Authorized Solutions providers for configuring the Mitel 5000CP and GFI FaxMaker. This document covers a basic setup with required option setup.

Interop History

Version	Date	Reason
1	November 8, 2012	Initial Interop with Mitel 5000CP and GFI FaxMaker 15.0

Interop Status

The Interop of GFI FaxMaker has been given a Certification status. This service provider or trunking device will be included in the SIP CoE Reference Guide. The status GFI FaxMaker application achieved is:

COMPATIBLE	The most common certification which means GFI FaxMaker has been tested and/or validated by the Mitel SIP CoE team. Product support will provide all necessary support related to the interop, but issues unique or specific to the 3rd party will be referred to the 3rd party as appropriate.

Software & Hardware Setup

This was the test setup to generate a basic SIP call between GFI FaxMaker and Mitel 5000CP.

Manufacturer	Variant	Software Version
Mitel	Mitel 5000CP	5.1 PR3
Mitel	Minet sets: 5340, 5220, 5330	04.01.01.05
GFI Software	GFI FaxMaker	15.0

Tested Features

This is an overview of the features tested during the Interop test cycle and not a detailed view of the test cases. Please see the SIP Trunk Side Interoperability Test Plans (08-4940-00034) for detailed test cases.

Feature	Feature Description	Issues
T.38 Faxing	Fax transmission with protocol T.38	☑
G.711 Faxing	Fax transmission with codec G.711U	☑
Fallback from T.38 to G.711	Fax transmission with fallback from T.38 to G.711	X

☑ - No issues found X - Issues found, cannot recommend to use ⚠ - Issues found

Device Limitations and Known Issues

This is a list of problems or not supported features when the GFI FaxMaker is connected to Mitel 5000CP.

Feature	Problem Description
Outgoing FAX Failover to G.711 FaxMaker -to-modem	Mitel MCD interrupts fax transmission (it sends BYE) on 2-nd page of the fax. This happened because FaxMaker failed to respond (ACK) on 200OK from Mitel. **Recommendation:** Do not select option "**T.38 with fallback to G.711 pass-through**" under T.38 Parameter tab in Brooktrout Configuration Tool.
Incoming FAX Failover to G.711 Modem-to-FaxMaker	FaxMaker drops the call (it sends BYE) as soon as Mitel rejected T.38 faxing. It should fallback to G.711 instead. **Recommendation:** Do not select option "**T.38 with fallback to G.711 pass-through**" under T.38 Parameter tab in Brooktrout Configuration Tool.

Network Topology

This diagram shows how the testing network is configured for reference.

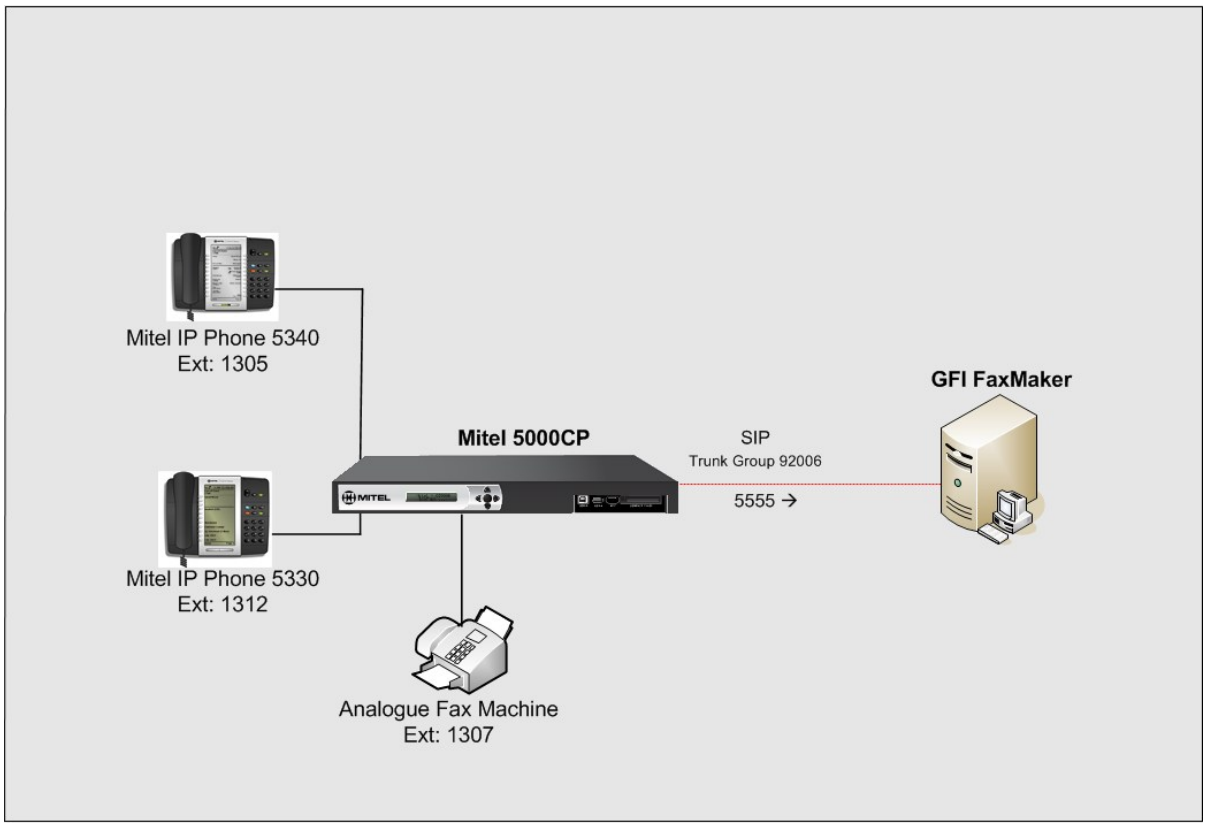

Figure 1 – Network Topology

Configuration Notes

This section is a description of how the SIP Interop was configured.

Disclaimer: Although Mitel has attempted to setup the interop testing facility as closely as possible to a customer premise environment, implementation setup could be different onsite. YOU MUST EXERCISE YOUR OWN DUE DILIGENCE IN REVIEWING, planning, implementing, and testing a customer configuration.

Mitel 5000 Communications Platform Configuration Notes

The following steps show how to program Mitel 5000 Communications Platform to interconnect with GFI FaxMaker server.

Network Requirements

- There must be adequate bandwidth to support the voice over IP. As a guide, the Ethernet bandwidth is approx 85 Kb/s per G.711 voice session and 29 Kb/s per G.729 voice session (assumes 20ms packetization). As an example, for 20 simultaneous SIP sessions, the Ethernet bandwidth consumption will be approx 1.7 Mb/s for G.711 and 0.6Mb/s for G.729. Almost all Enterprise LAN networks can support this level of traffic without any special engineering. Please refer to the 5200 Engineering guidelines for further information.
- For high quality voice, the network connectivity must support a voice-quality grade of service (packet loss <1%, jitter < 30ms, one-way delay < 80ms).

Assumptions for the Mitel 5000 Communications Platform Programming

The SIP signaling connection was configured to use UDP on Port 5060.

Licensing and Option Selection – SIP Licensing

Ensure that the Mitel 5000 is equipped with enough SIP Trunks licences for the connection to GFI FaxMaker server. This can be verified within the Software License form (see **Figure 2**).

Check the total number of licenses in the SIP Trunk Licences field. This is the maximum number of SIP trunk sessions that can be configured in the Mitel 5000 to be used with all service providers and applications.

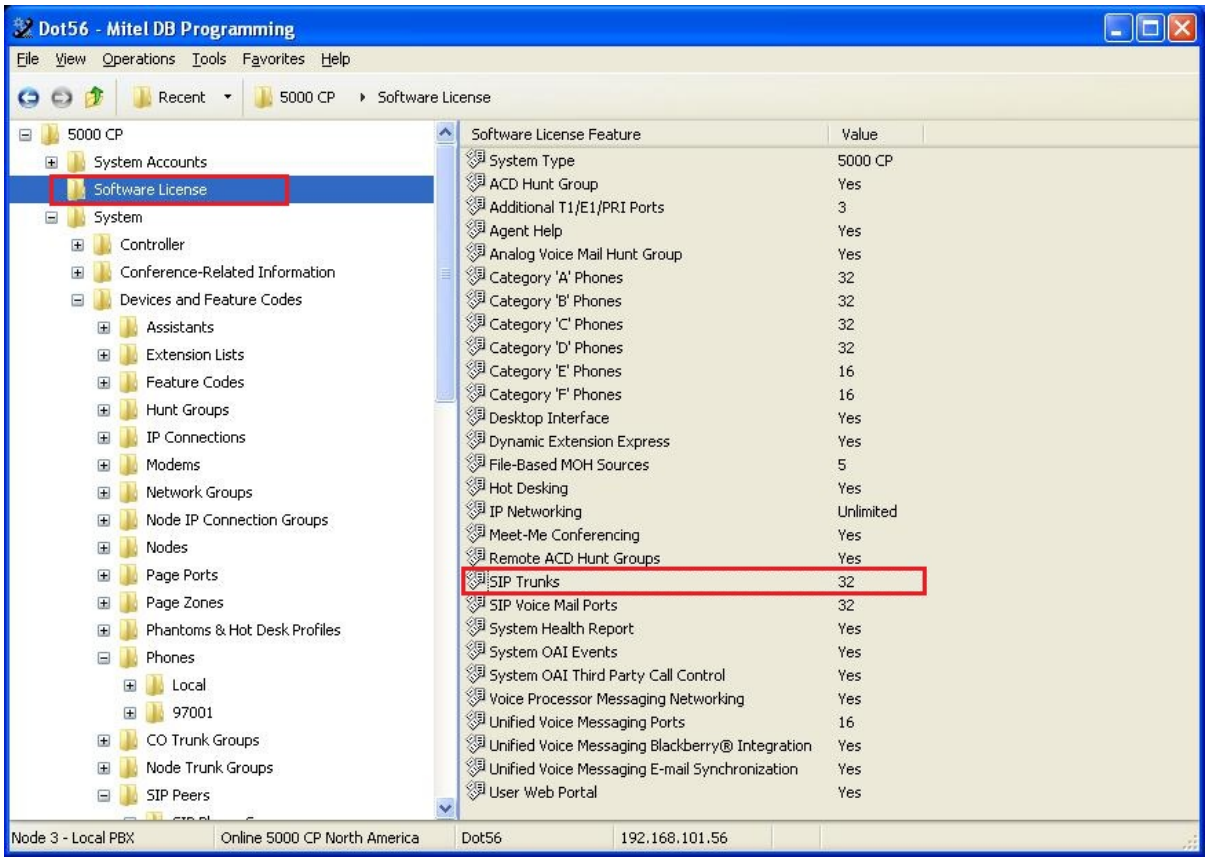

Figure 2: Example of SIP Licensing

Creating and Configuring a SIP Peer Trunk Group

To support SIP trunks through a SIP trunk service provider, the SIP Trunk Groups folder was added to the SIP Peers folder in DB Programming.

To create a SIP Trunk Group for GFI FaxMaker server, navigate to System->Device and Feature Codes->SIP Peers->SIP Trunk Groups and right click in the right hand pane. Then select “Create SIP Trunk Group”. (See **Figure 3**)

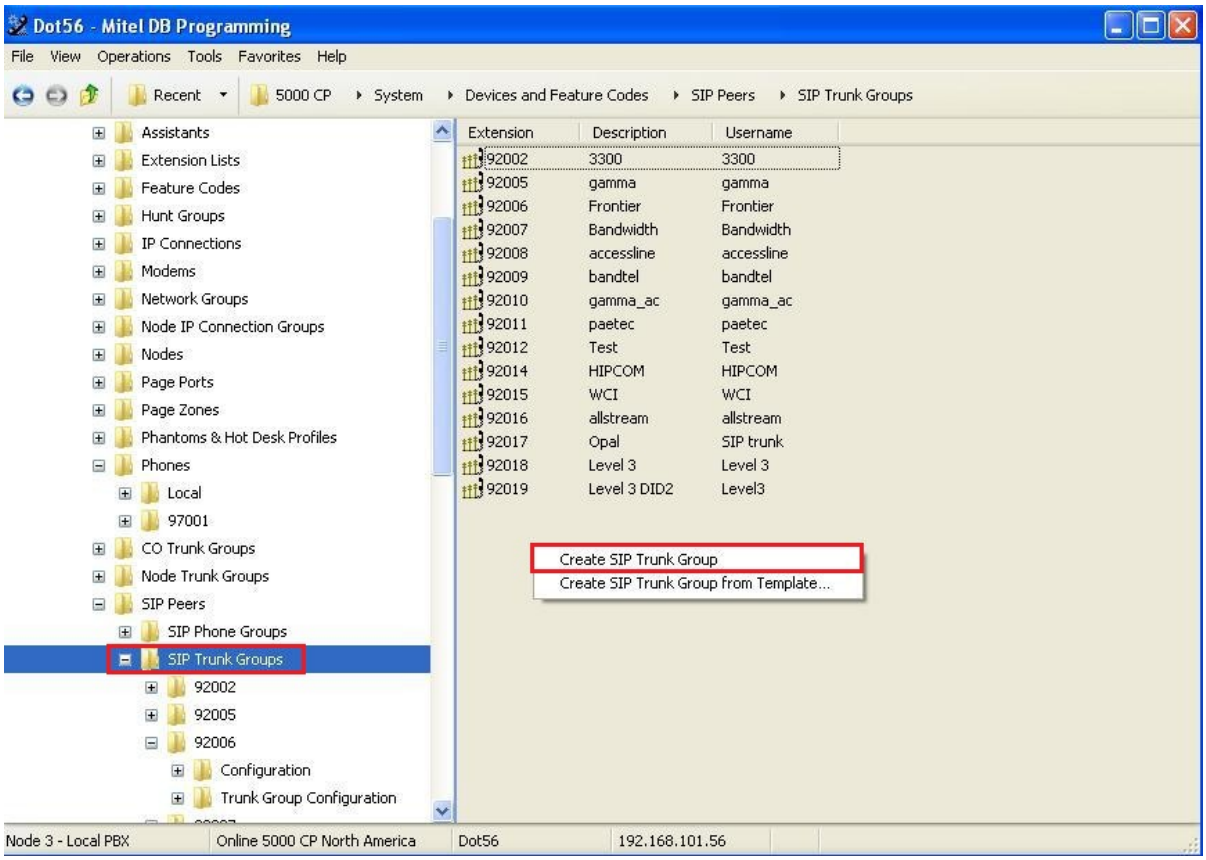

Figure 3: Example of Create SIP Trunk Group

When Trunk group for GFI FaxMaker server is been created, we have to configure parameters in Configuration and Trunk Group Configuration nodes.

Programming the Configuration settings

Registrar: This is an internal SIP trunk and it does not require registration. So, set Enable Registration option to **No** as shown in **Figure 4**.

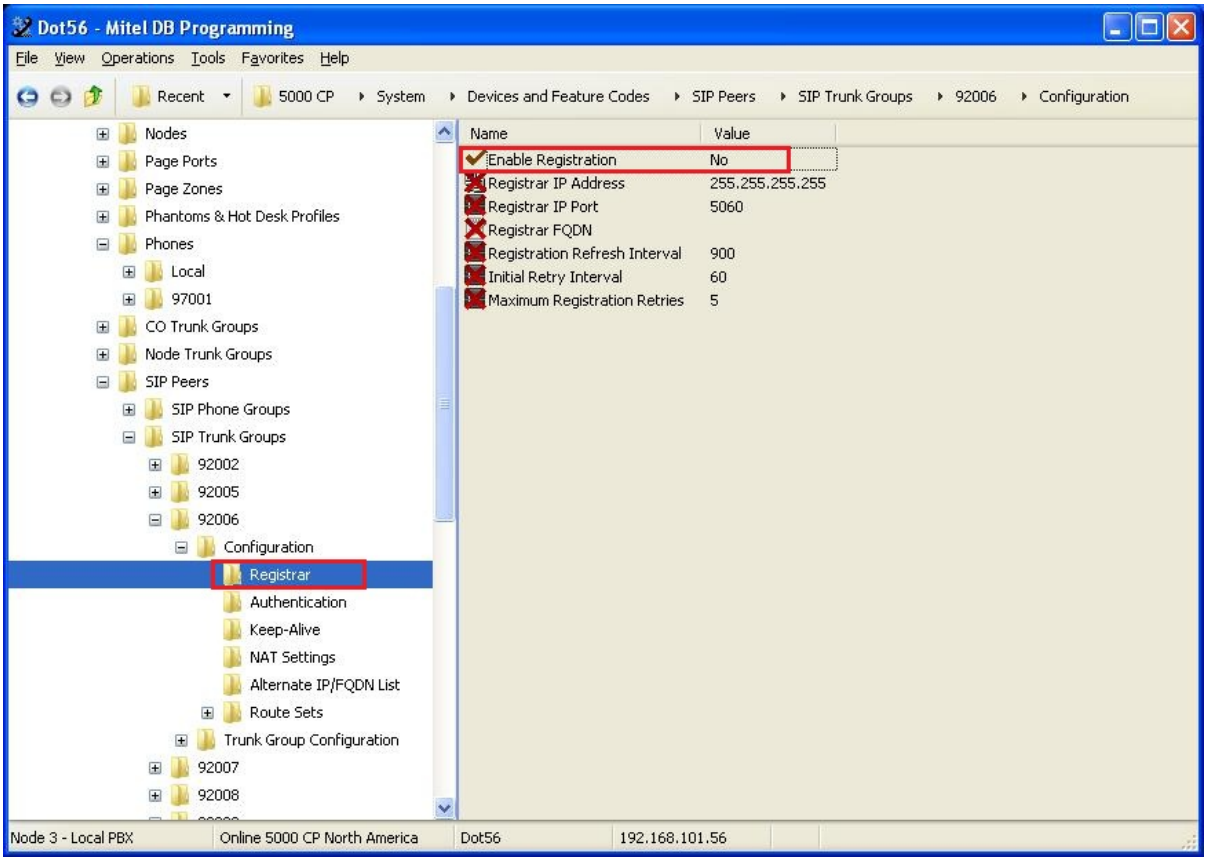

Figure 4: Example of Registrar form

- **Authentication**:

In this form, make sure that Authentication is disabled and Username and Password fields are blank as shown in **Figure 5**.

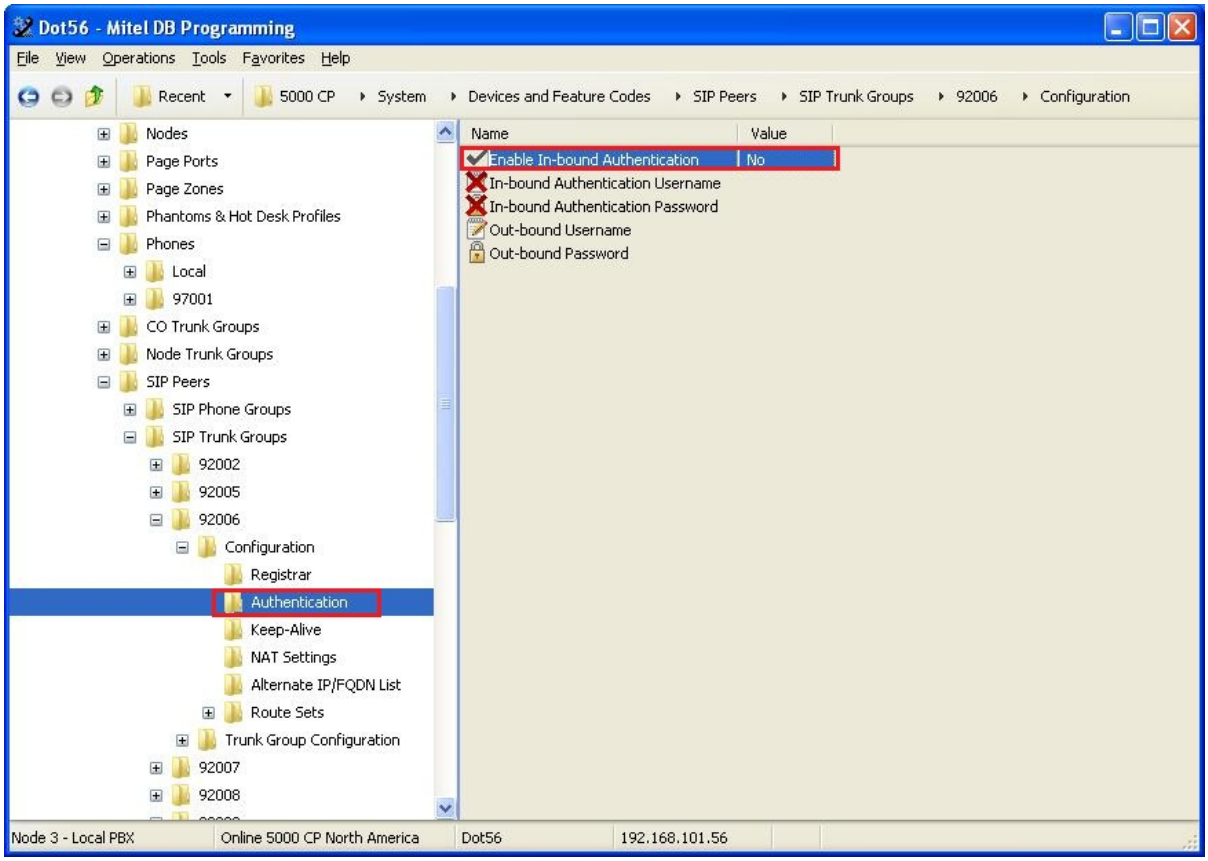

Figure 5: Example of Authentication form

- **Keep-Alive**: The Keep-Alive option keeps refreshing the NAT bindings for any Firewall/NAT in the path. It also helps in determining whether the SIP peer is reachable or not. We have set Enabling Pinging to **Yes** and leave the default values there.
- **NAT Settings**: Specifies the NAT address type. The default is “No NAT or SIP-Aware NAT” (for systems that are using a SIP-aware firewall). If you are not using a SIP-aware firewall, you must change the setting to “Non SIP-Aware NAT”. Leave the default values here.
- **Alternate IP/FQDN List**: There is no need to configure any alternative IP addresses or FQDNs.
- **Route Sets**: Since this is internal SIP trunk, we don’t need to configure any additional routes to get to this trunk.

Click Configuration node (see **Figure 6**)

- **IP Address**: Configure the IP address of your GFI FaxMaker server here. Typically, this is the local IP address of the computer where GFI FaxMaker's software is running.
- **Port Number**: Indicates the port that the system listens on the system for SIP peer messages. The range is 0–65535. Leave the default value of 5060.
- **Fully Qualified Domain Name**: Indicates the domain name of the SIP peer trunk group. In our test environment, we do not use FQDN. Therefore, leave it blank.

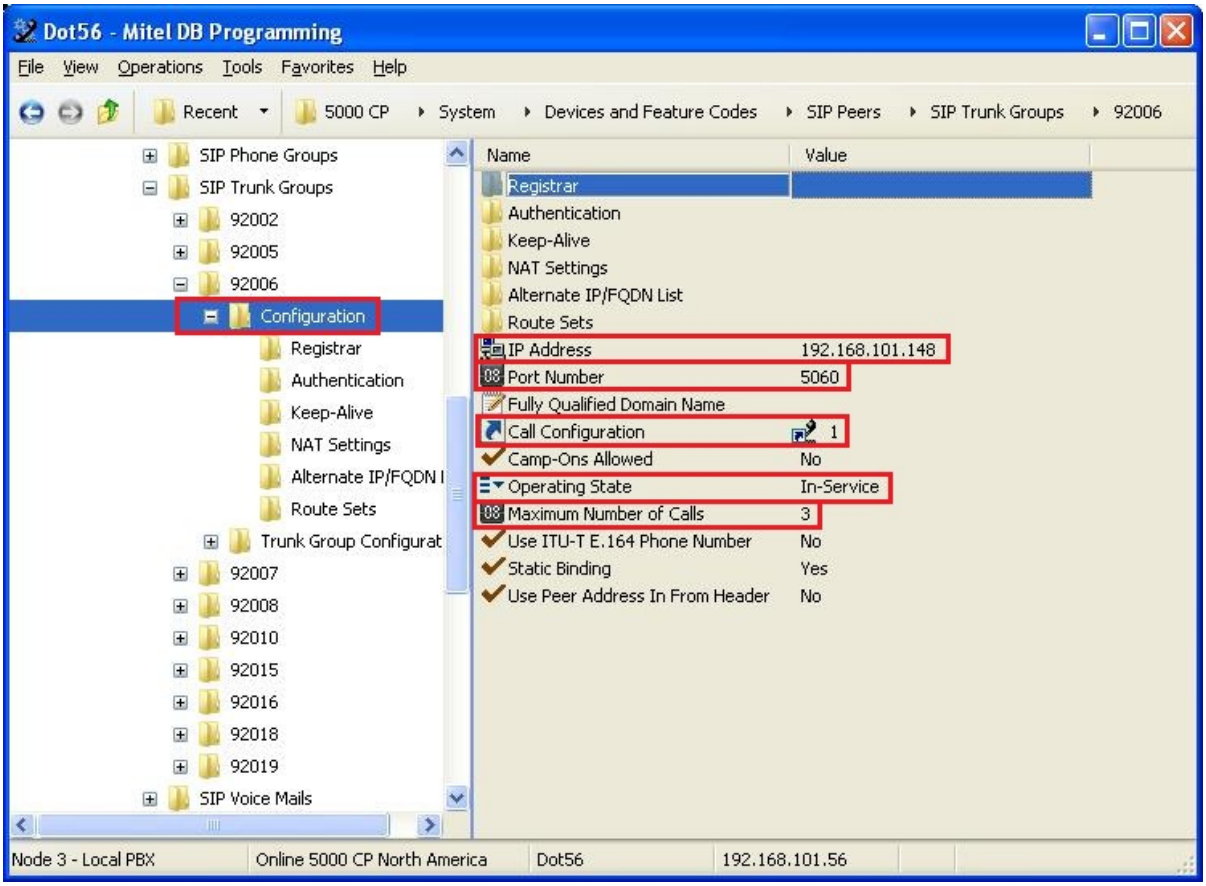

Figure 6: Example of Configuration form

- **Call Configuration**: Enter the call configuration number in Value field that you want to use with this trunk group.

  Double clicking **Call Configuration** takes you to the Call Configuration folder where you can add a new call configuration profile or configure the existing profile(s) (e.g. codecs for voice and faxing, DTMF settings, etc. See section Call Configurations). (System->IP-Related Information->Call Configurations-><*call configuration number*>).
- **Operating State**: Indicates the current operating state of the SIP peer. If required, the status could be changed to "Out-of-Service – Maintenance".
- **Maximum Number of Calls**: Indicates the maximum number of concurrent calls that are been permitted towards the SIP peer. This number is not configurable in here and depends on number of trunks added at System->Device and Feature Codes->SIP Peers->SIP Trunk Groups-><*SIP Trunk group #*>->Trunk Group Configuration->Trunks (see section Programming the Trunks in Trunk Group Configuration Folder for details)

- **Use ITU-T E.164 Phone Number**: If set to Yes, the Mitel 5000 handles ITU-T E.164 formatted phone numbers as part of the incoming SIP INVITE messages from the SIP peer.
- **Static Binding**: It specifies whether a static binding exist for the corresponding SIP Peer. If set to Yes, then IP address and listening port for the SIP Peer must be configured. Leave this setting to Yes.
- **Use Peer Address In From Header**: In our test environment, we set it to No.

Programming the Trunk Group Configuration properties

To program the Trunk Group Configuration properties, navigate to System->Device and Feature Codes->SIP Peers->SIP Trunk Groups-><*SIP Trunk group* #>->Trunk Group Configuration:

As per **Figure 7**, we need to configure several parameters:

- **Day** and **Night Ring-In Type** – in our test environment we configured **Collected Digits** ring-in type. Because this SIP trunk is terminated at GFI FaxMaker server, any incoming call will be answered there independently what was dialed over the trunk.
- **Calling Party Number** and **Name** – is the default calling party number, which 5000CP presents to the SIP trunk. These Name and Number do not block anything and serving for the information only. So, enter some meaningful data here.

For the rest of the settings, refer to the DB Programming Help for trunk programming

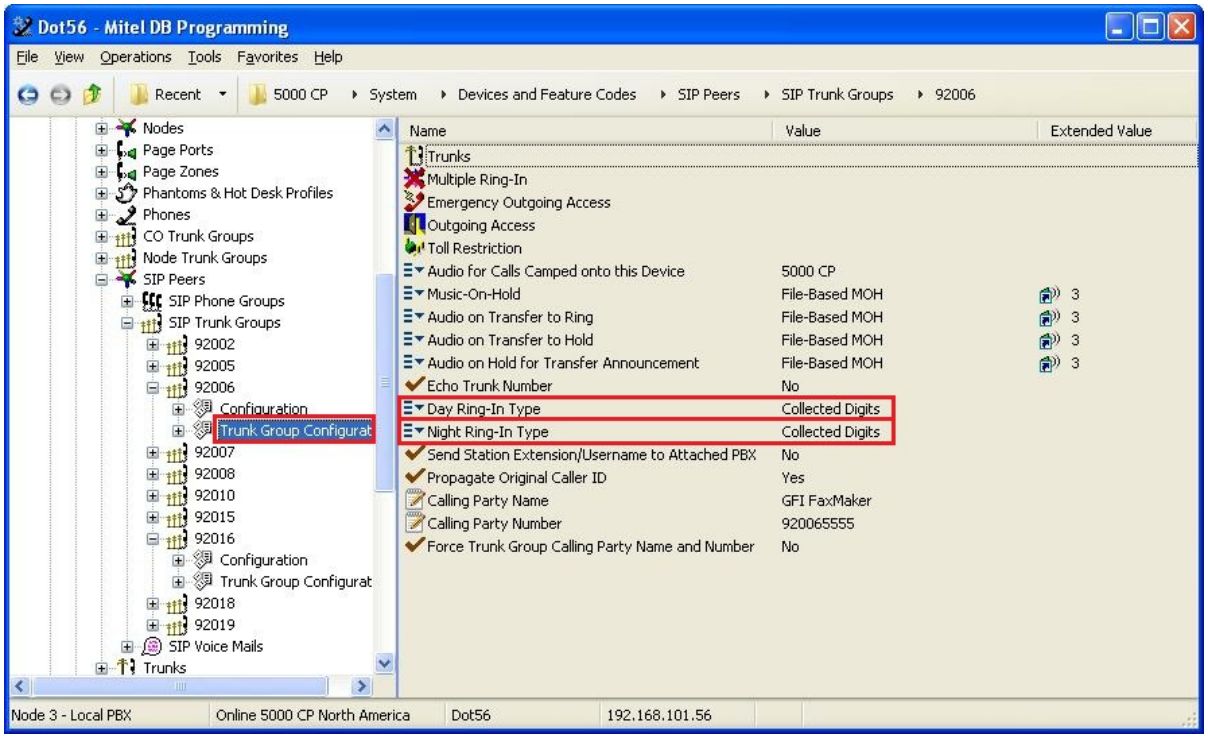

Figure 7: Example of Trunk Group Configuration

Programming the Trunks in Trunk Group Configuration Folder

The number of SIP trunks that we create in here will appear as **Maximum Number of Calls** in the Configuration screen (see **Figure 6**).

Create the SIP peer trunks as follows:

- Navigate to System->Device and Feature Codes->SIP Peers->SIP Trunk Groups-><*SIP Trunk group #*>->Trunk Group Configuration->Trunks
- Right-click the right pane and the select **Create SIP Peer Trunk**. The Create SIP Peer Trunk dialog box appears (see **Figure 8**).
- Select the extension number you want to use for the item in the Starting Extension field. The recommended range is 94001–94999;
- Indicate the number of extensions you want to create in the Number of Extensions field. If the system is set to have more than one extension, the new trunks will be assigned sequentially to the next available numbers.
- Click **OK**. For the SIP trunk for GFI FaxMaker server, 3 extensions were created, See **Figure 8**. The number of available SIP Trunks licenses restricts the number of SIP peer trunks.

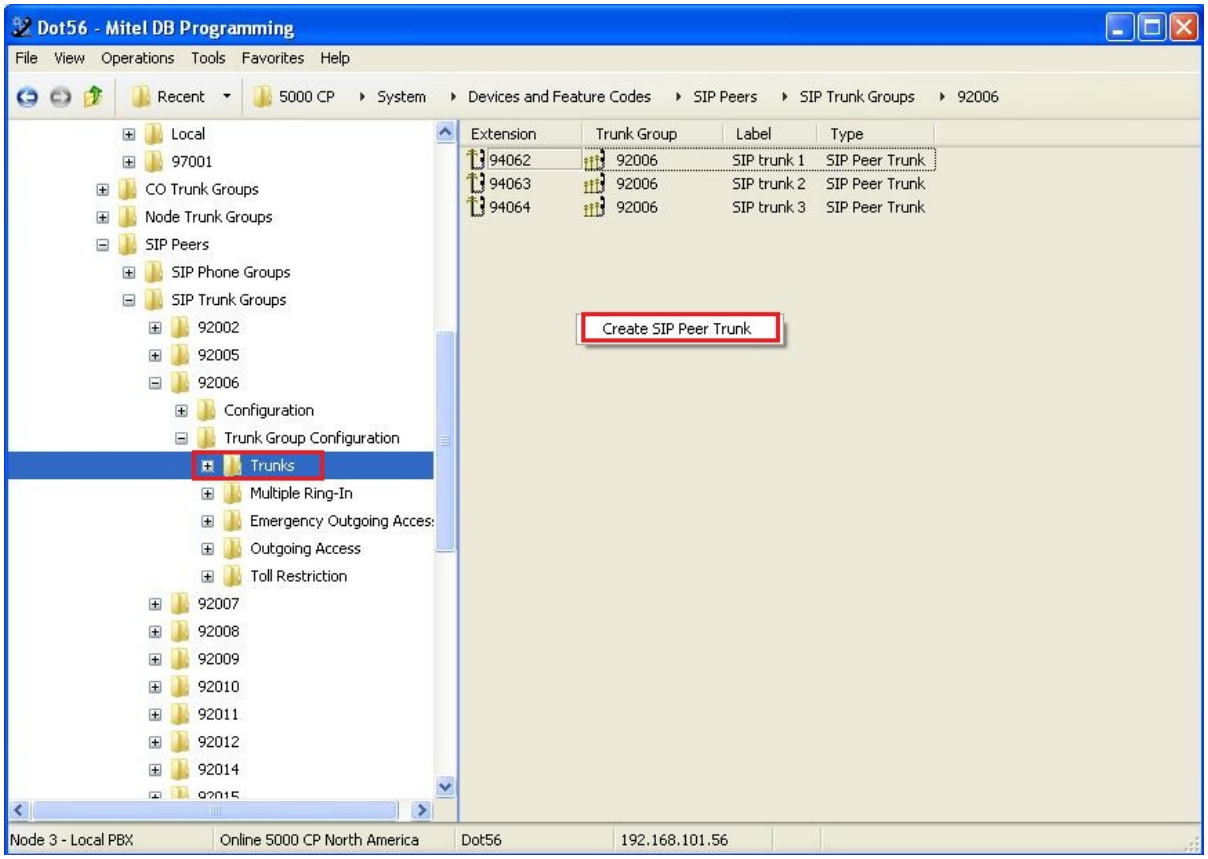

Figure 8: Example of SIP Trunks creation

Call Configurations

Call configurations define the settings that IP phones and gateways use when connected to calls. You can assign multiple devices to a specific call configuration.

By default, all IP devices are being placed in Call Configuration 1, which is programmable. You can program up to 25 different Call Configurations.

Because fax transmission shows better results when using T.38 faxing, we would recommend enabling T.38 protocol for faxing (see **Figure 9** for details).

Change **Fax Detection Sensitivity** to 2 or 3.

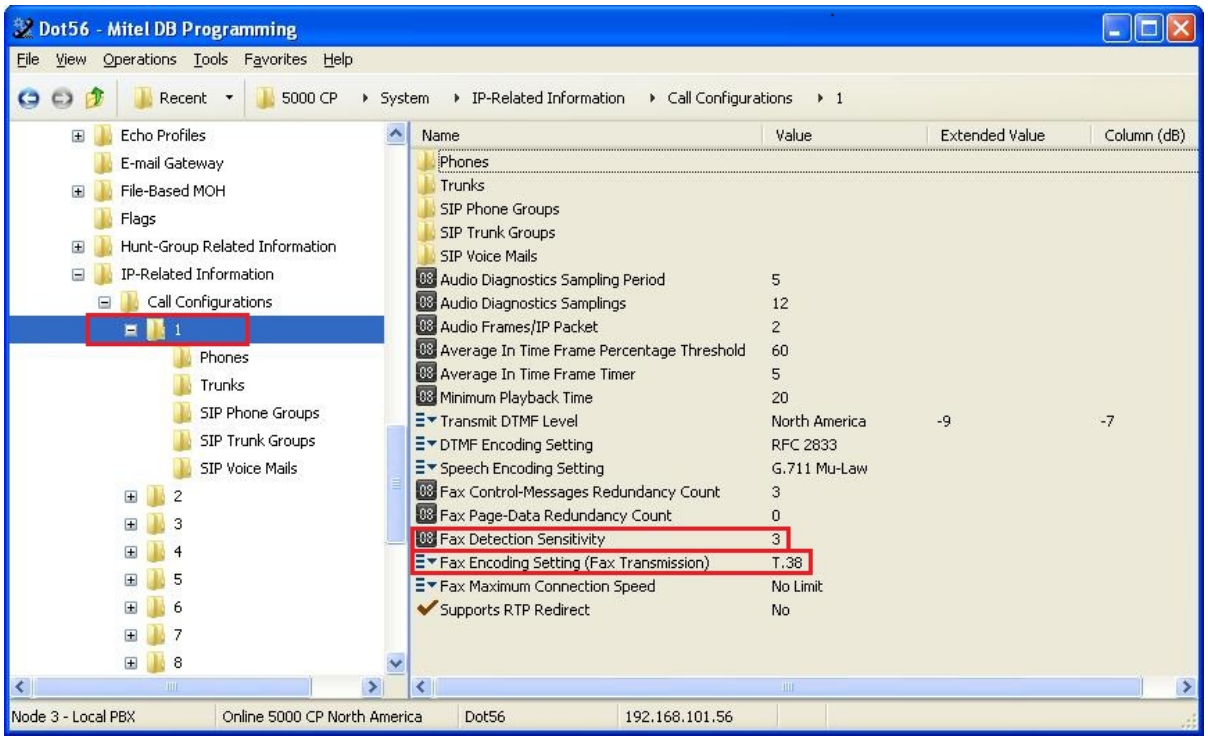

Figure 9: Call Configuration Options

To view and move SIP Trunk Groups to the Call Configuration:

- Navigate to System->IP-Related Information->Call Configurations-><*call configuration number*>
- Click **SIP Trunk Groups**
- Right click in right hand pane and select **Move to SIP Trunk Groups List**
- Select the type, e.g. SIP Trunk Group and click Next
- Select the required trunk group that you want to move and click **Move Items** button
- Click Finish

Programming call routing for incoming PSTN calls

Some configurations of Mitel 5000CP assume having two SIP trunks: SIP trunk to the public telephone network (PSTN) and the SIP trunk to GFI FaxMaker (see example in **Figure 10**).

As per **Figure 10**, we would like to give the configuration example on how to program call routing from PSTN SIP trunk to GFI FaxMaker server (e.g. for number 613-555-2101).

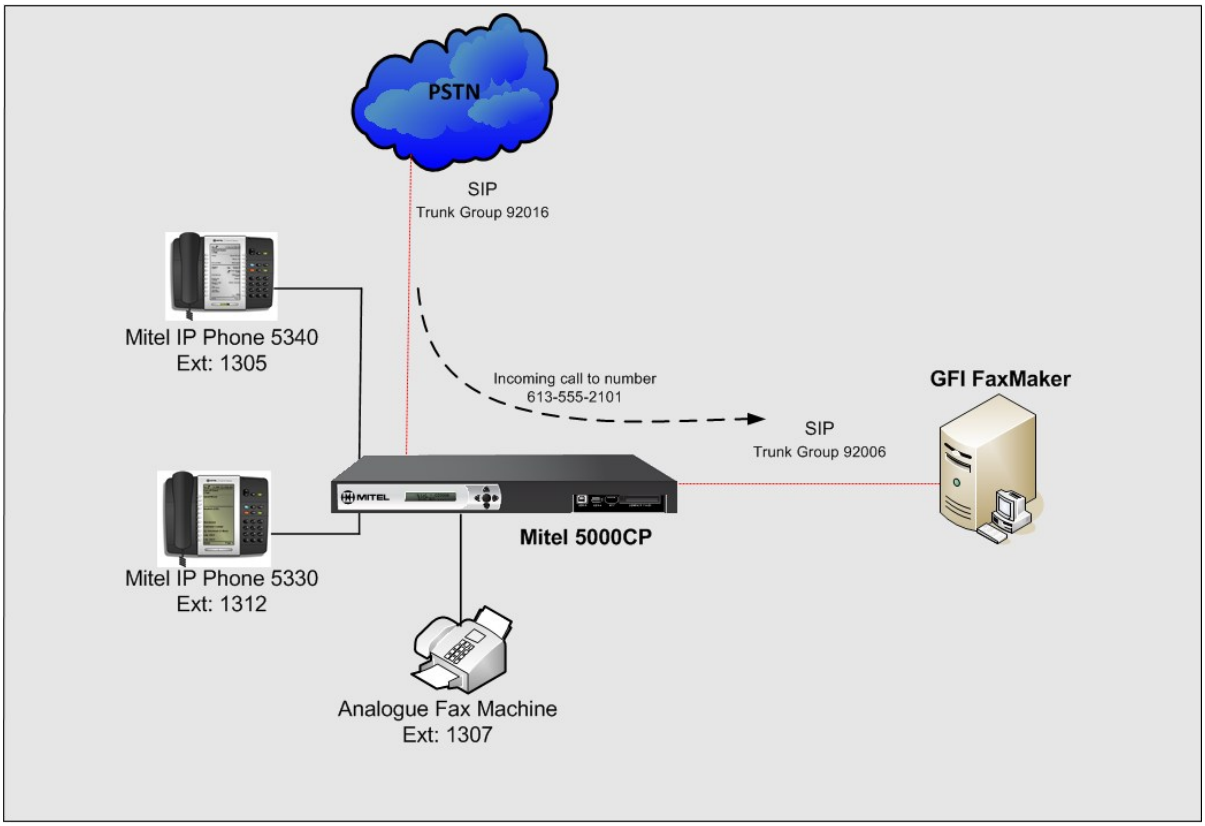

Figure 10 – The configuration with two SIP trunks

Generally saying, we simply need to set SIP Trunk Group number (92006) and as a destination for the PSTN SIP Trunk Group 92016.

However, by default, in the Normal programming mode, you can not make such an assignment in Mitel 5000CP. We have to enable On-Line Monitor (OLM) mode first.

Navigate to the View menu as shown in **Figure 11** and select On-Line Monitor. Click OK to confirm your selection.

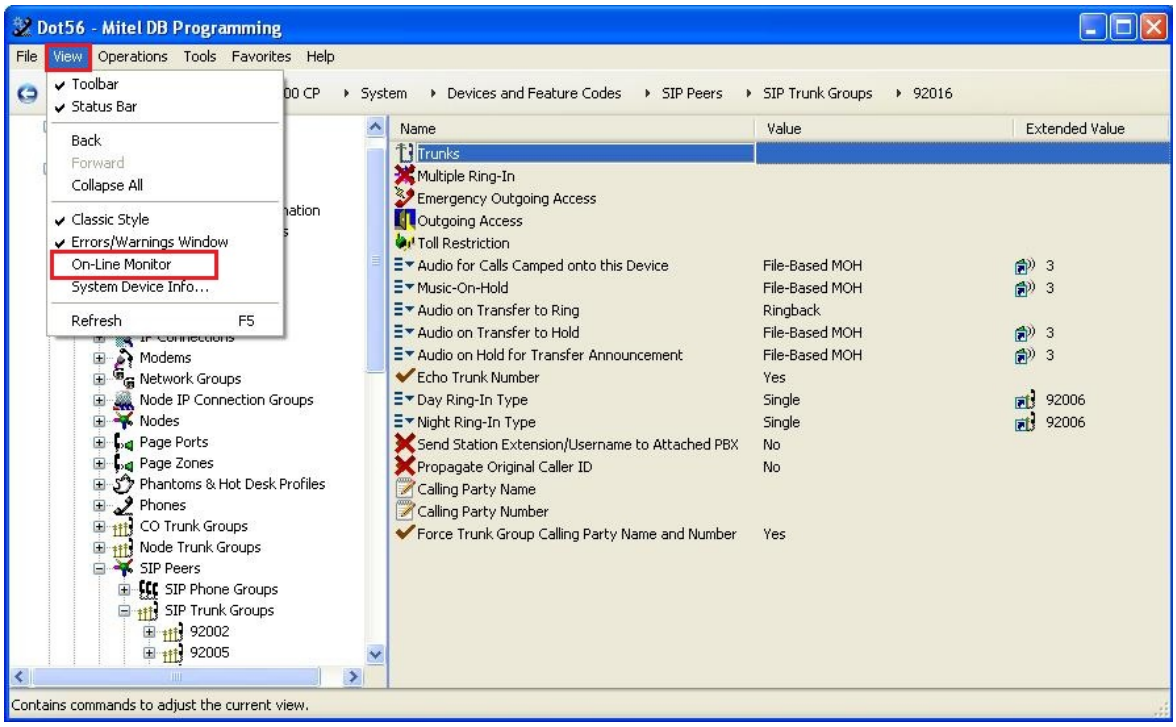

Figure 11 – OLM enabling

After OLM enabling, navigate to the Trunk Group Configuration of your PSTN SIP trunk (trunk number 92016 in this example).

Configure Day Ring-in Type with “Single” value.
For Extended value, right click in the corresponding field and select Change Extended Value. Then select “SIP Trunk Group” from the list and indicate the SIP Trunk Group leading to FaxMaker (92006 in this configuration) as the value. See example in **Figure 12**.
Do the same assignment to Night Ring-in Type.

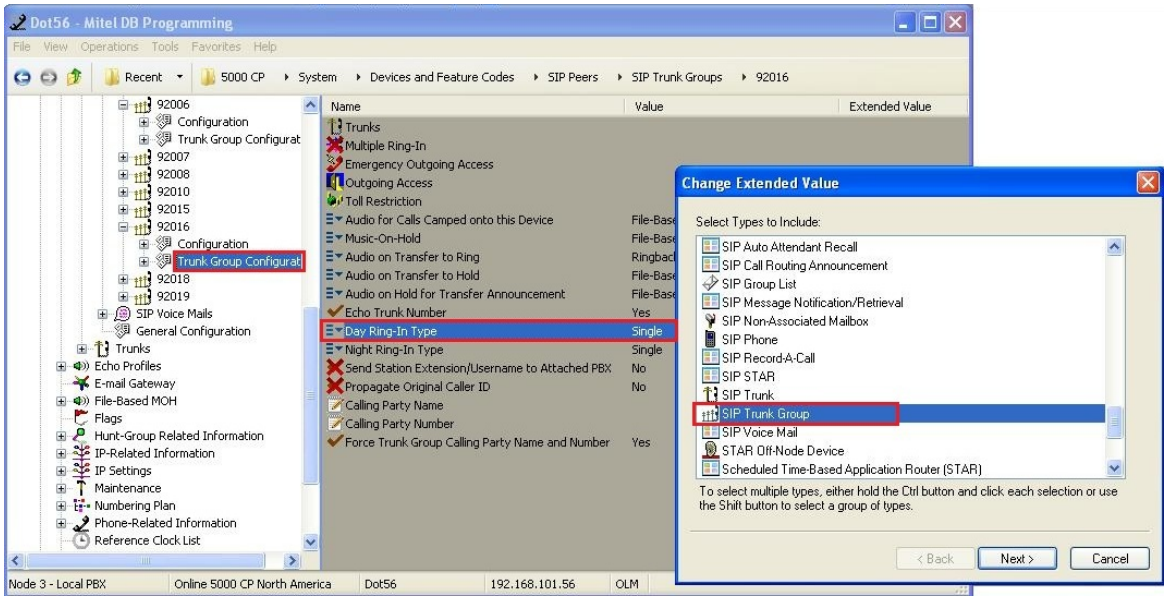

Figure 12 – Extended Value assignment

Make sure to set option “Echo Trunk Number” to “**Yes**”.

Eventually, the settings for your PSTN SIP trunk should look like in **Figure 13**.

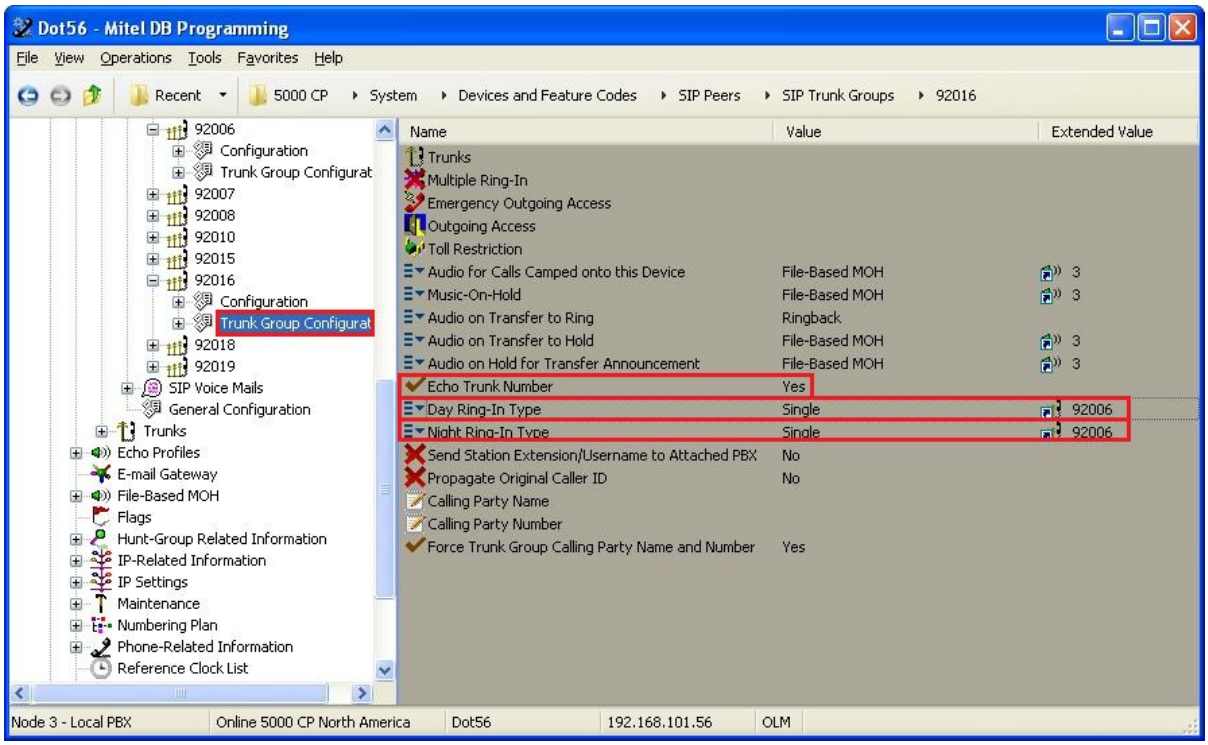

Figure 13 – Ring-in Type settings

GFI FaxMaker Configuration

The following steps show how to configure GFI FaxMaker to interconnect with the Mitel 5000CP.

The configuration settings below are the main reference points and by any means could not be considered as the comprehensive configuration instructions.

We strongly recommend contacting the application' manufacturer – GFI Software for more detailed instructions and manuals (http://support.gfi.com/manuals/).

We assume that initial installation of the GFI FaxMaker software was complete and successful. Depending on your configuration and available hardware, GFI FaxMaker could be configured for several line types.

As in our tests, we use Brooktrout SR140 SIP lines to interconnect GFI FaxMaker with Mitel 5000CP.
NOTE: Installation files and licensing of Brooktrout SR140 (by Dialogic) are available through GFI Software.

In GFI FaxMaker Configuration, we have to create/add new Brooktrout' lines.

Launch GFI FaxMaker Configuration, select Lines/Devices and then click Properties. Click Add button to add Brooktrout' line as shown in **Figure 14**.

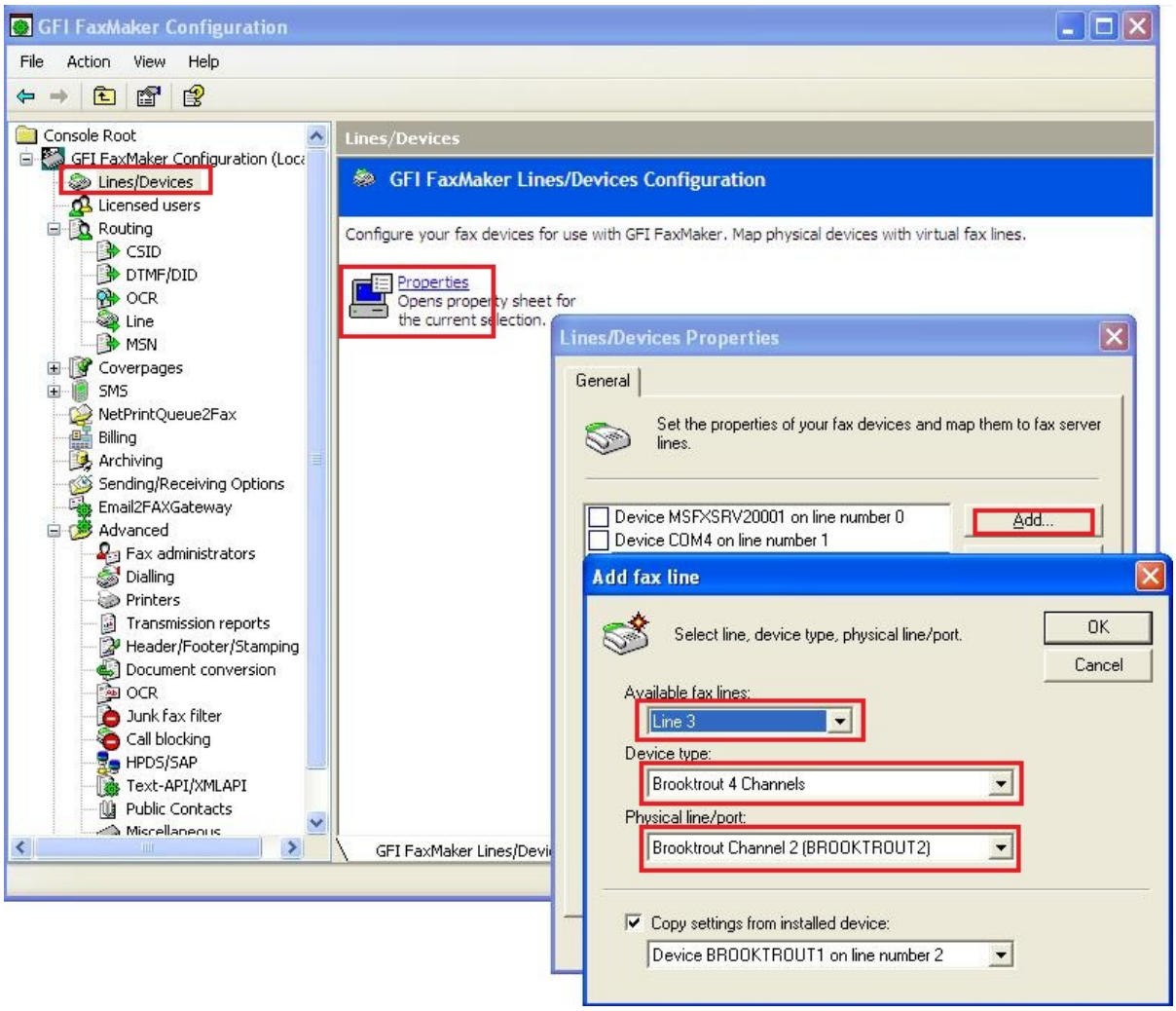

Figure 14 – Add a Brooktrout SR140' line

Upon adding the line, select newly created Brooktrout' line in GFI FaxMaker Configuration, and click Properties. Configure the line's properties as shown in **Figure 15**.

NOTE: Since we have only one user in our test environment, we don't need to configure any DID capabilities in FaxMaker. That's why the "Line capabilities" in **Figure 15** is set to None.

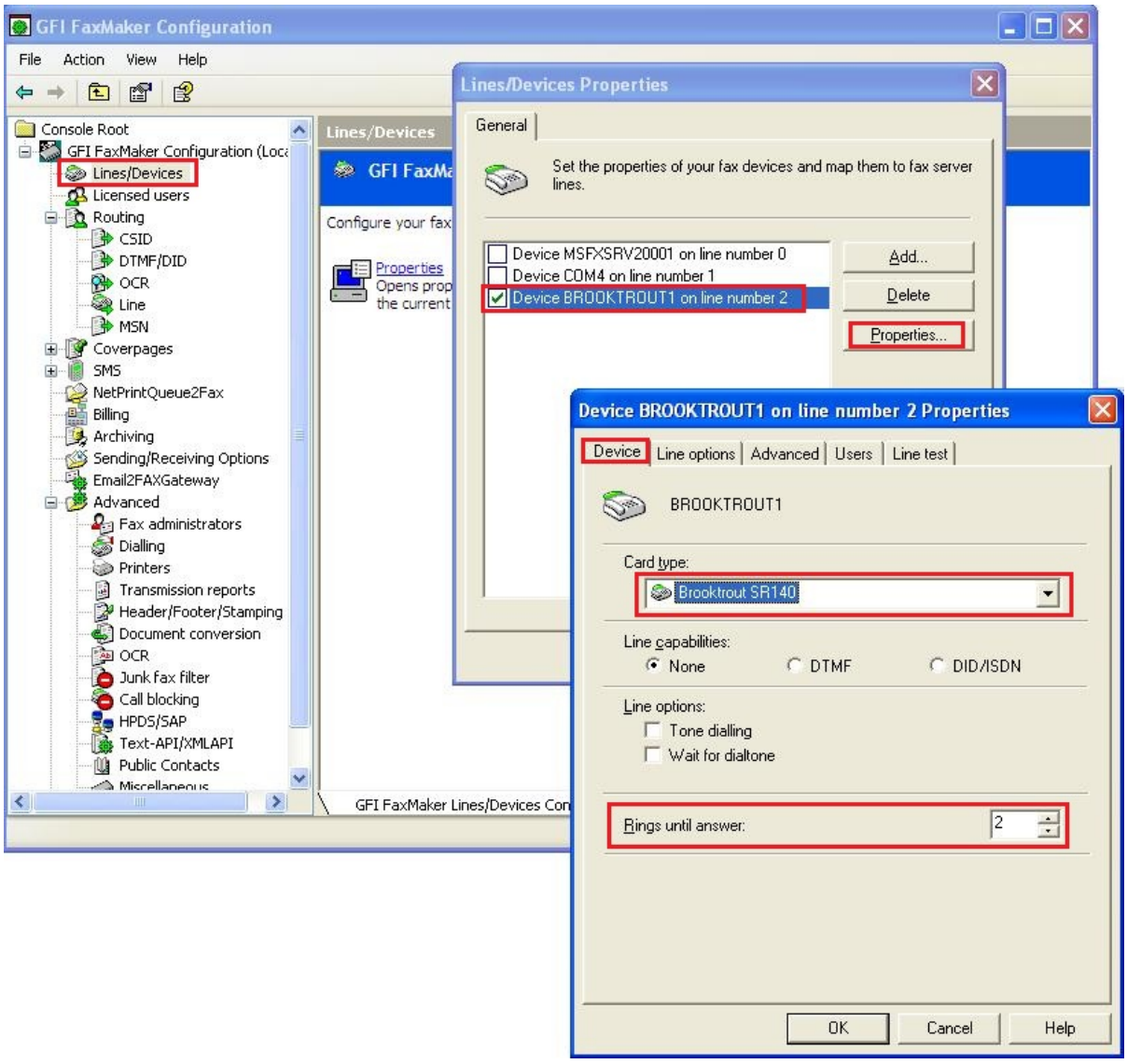

Figure 15 – Configuration settings for Brooktrout SR140' line

In GFI FaxMaker Configuration, create a new user:

- select Licensed users node;
- In right pane, click on New licensed user/group
- Enter the user's data as shown in **Figure 16**.

NOTE: Actually, GFI FaxMaker does not reject the incoming calls because of not matching numbers. It answers on any incoming call received from the SIP trunk. As such, Fax No value in User's form (6135552101) is required rather for correct faxes' distribution among the FaxMaker' users.

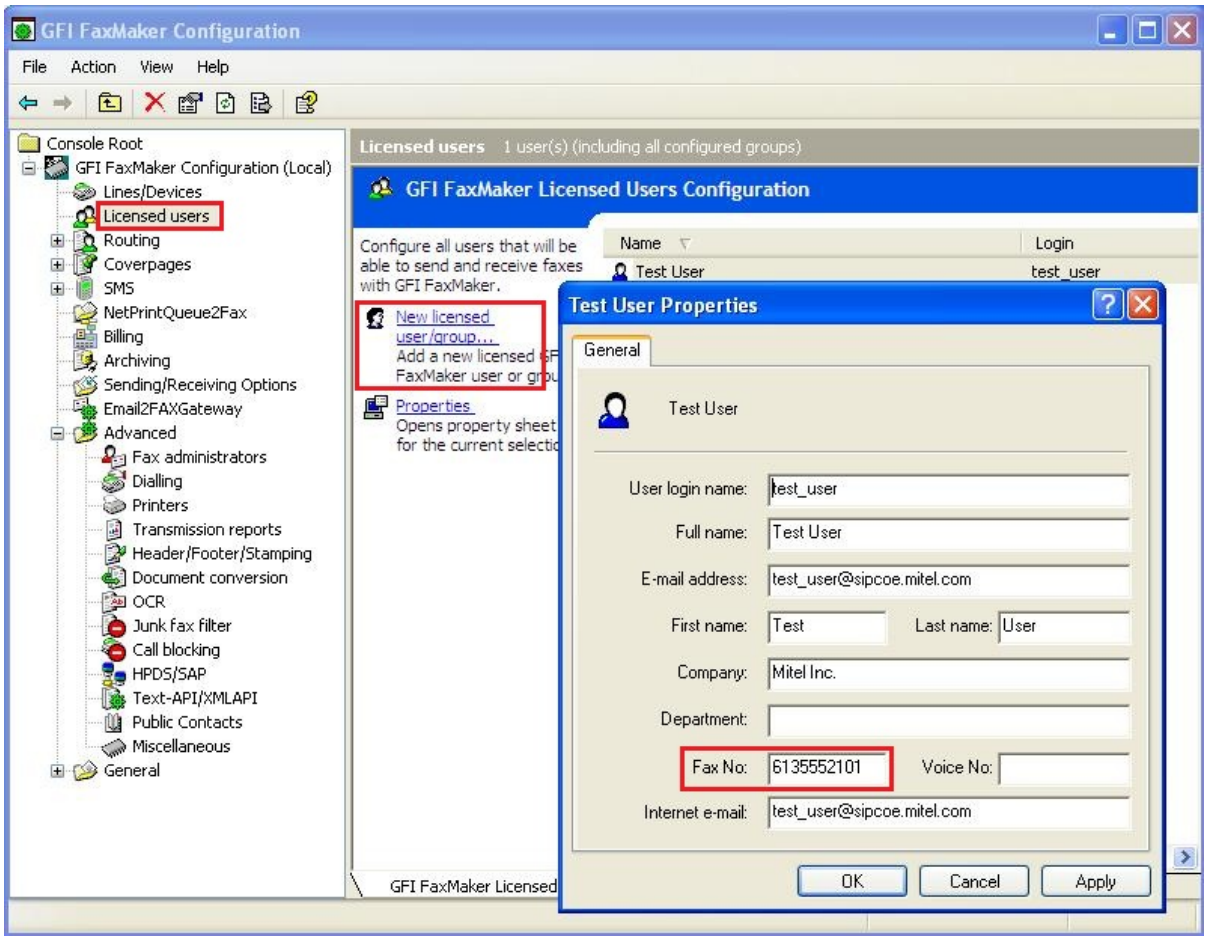

Figure 16 – User configuration settings

Brooktrout SR140 Configuration

As we mentioned earlier, in our testing, we use Brooktrout SR140 SIP lines to interconnect GFI FaxMaker with Mitel 5000CP.

After successful installation and license registration, launch Brooktrout Configuration Tool and select Advanced Mode (see **Figure 17**).

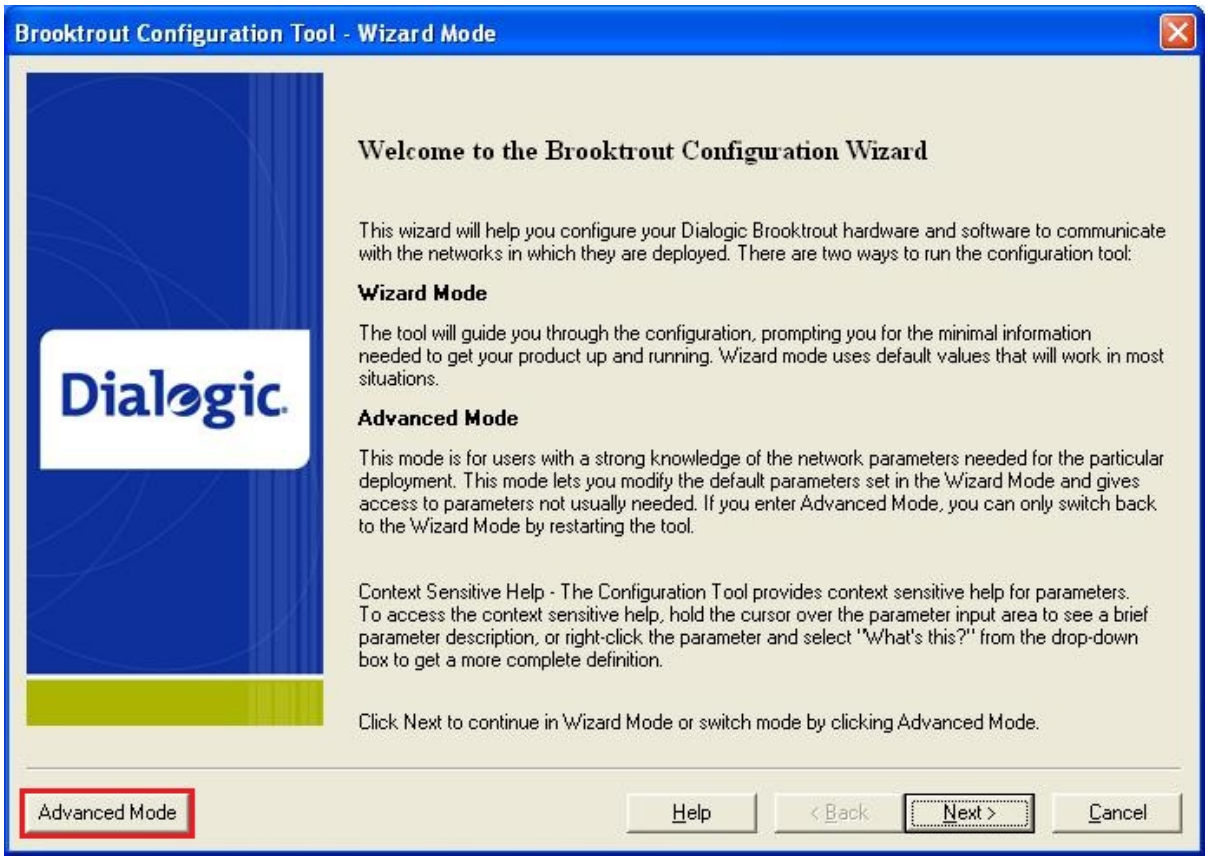

Figure 17 – Select Advanced Mode for Brooktrout Configuration Tool

In Advanced Mode, select SIP node and then navigate to IP Parameters tab in the right pane (see **Figure 18**).

In this pane:

- Enter **Primary Gateway** IP address – this is the IP address on Mitel 5000CP;
- Enter **From Value** (optional) – to identify FaxMaker correctly in the SIP messages, we would suggest that From Value needs to be configured;
- Enter **Contact IPv4 Address** – this is IP address of the computer where GFI FaxMaker and Brooktrout SR140 software are running. If you leave zeros there, like in this example, then the local host' IP address will be used.

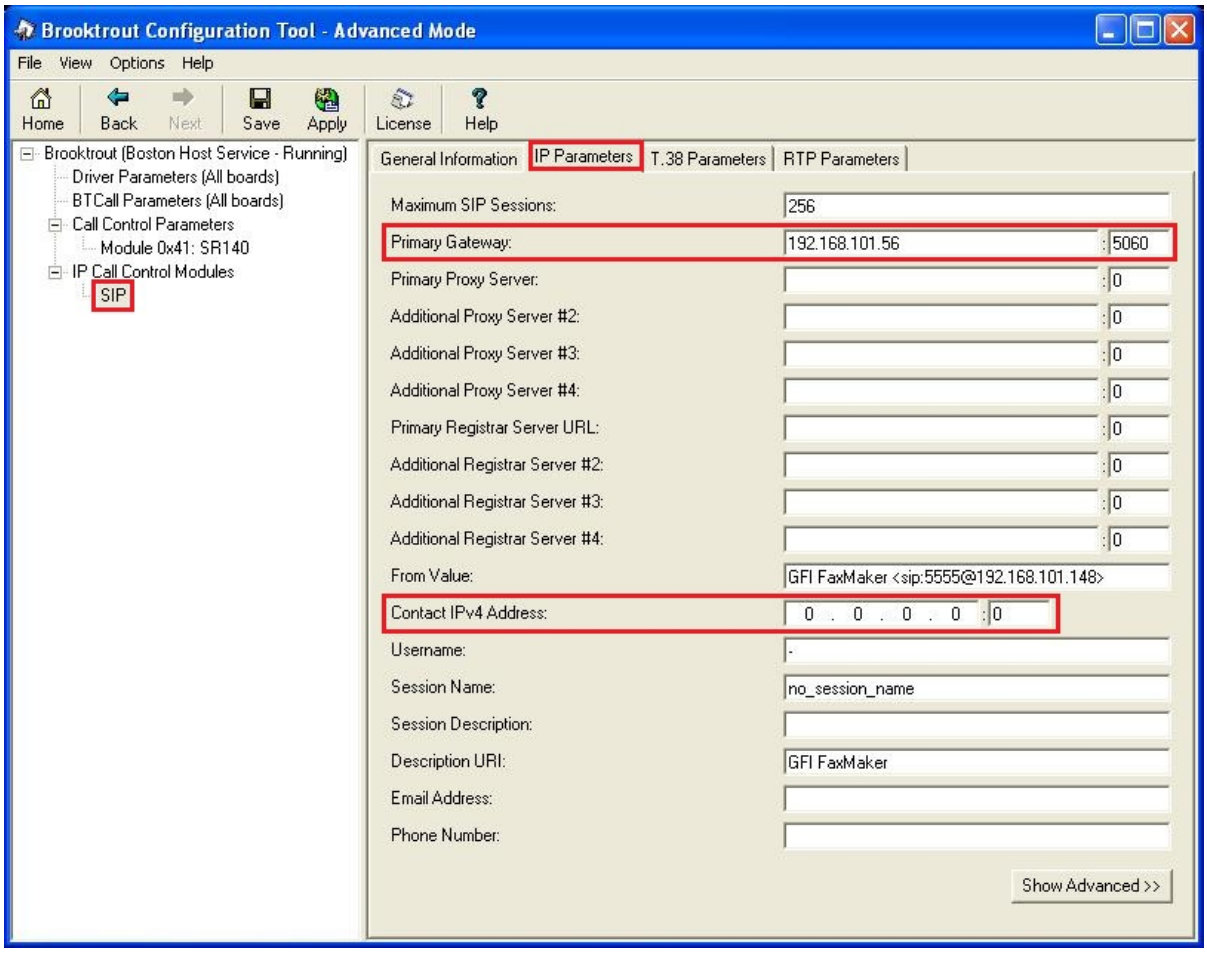

Figure 18 – IP Parameters' settings for Brooktrout SR140

Navigate to T.38 Parameters tab in the right pane (see **Figure 19**).

Set the Fax Transporting Protocol to either "**T.38 only**" or "**G.711 pass-through only**".

NOTE: We DO NOT recommend selecting option "**T.38 with fallback to G.711 pass-through**" because our tests revealed that faxing send/receive fails at the very beginning or don't start at all when this option is selected.

If required, change the setting for Maximum Bit Rate (we used the default value of 14400).

NOTE: When changes to IP Parameters or/and T.38 Parameters are completed, you have to Save them and Apply. Normally, when applying the changes, the Windows' service named "**GFI FaxMaker Fax Server**" should be restarted. We have noticed however that often this service fails restarting and FaxMaker just does not answer the calls. If this is the case, open Windows Services mmc console and start "**GFI FaxMaker Fax Server**" service manually.

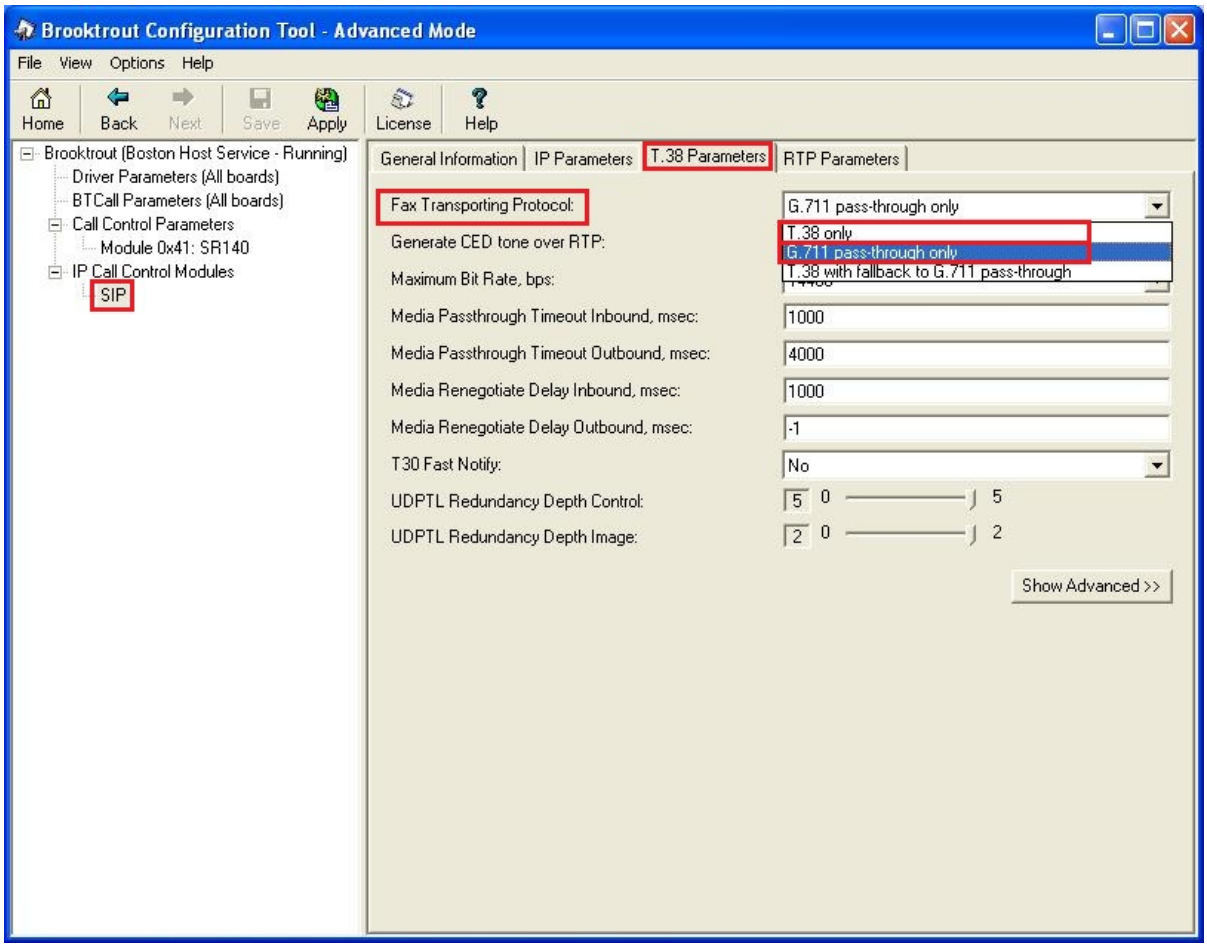

Figure 19 – T.38 Parameters' settings for Brooktrout SR140

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