



# Dialogic<sup>®</sup> Brooktrout<sup>®</sup> SR140 Fax Software with Mitel 3300 Mx<sup>e</sup> Controller

Installation and Configuration Integration Note

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## 1. Scope

This document is intended as a general guide for configuring a basic installation of the Mitel 3300 MXe Gateway for use with Dialogic® Brooktrout® SR140 Fax over IP (FoIP) software platform. The interoperability includes SIP call control and T.38/T.30 media.

This document is not intended to be comprehensive and thus does not replace the manufacturer's detailed configuration documentation. Users of this document should already have a general knowledge of how to install and configure the Mitel 3300 MXe Controller.

The sample configuration shown and/or referred in the subsequent sections was used for lab validation testing by Dialogic. Therefore, it is possible and even likely that the example configuration will not match the exact configuration and versions that would be present in a deployed environment. However, the sample configuration does provide a possible starting point to work with the equipment vendor for configuring your device. Please consult the appropriate manufacturer's documentation for details on setting up your specific end user configuration.

For ease of reference, the Dialogic® Brooktrout® SR140 Fax Software and Dialogic® Brooktrout® TR1034 Fax Boards will sometimes be denoted herein, respectively, as SR140 and TR1034. All references to the SDK herein refer to the Dialogic® Brooktrout® Fax Products SDK. The Mitel 3300 MXe will be denoted herein as Mitel 3300 or 3300 MXe, or some other form thereof.

## 2. Configuration Details

The following systems were used for the sample configuration described in the document.

### 2.1 Mitel 3300 MXe Controller Gateway

Vendor	<b><i>Mitel</i></b>
Model	<b><i>3300 MXe</i></b>
Software Version	<b><i>9.0.3.15</i></b>
PSTN Device	<b><i>Dialogic® Brooktrout® TR1034 Fax Board</i></b>
Protocol from Gateway to PSTN	<b><i>T1 PRI ISDN</i></b>
IP Device	<b><i>Dialogic® Brooktrout® SR140</i></b>
Additional Notes	<b><i>Same firmware is used on 3300 CXi, CX, and MXe devices. Softswitch (call manager) option also available for overall network solution. T.38 licenses must be loaded. DSP module must be present.</i></b>

## 2.2 Dialogic® Brooktrout® SR140 Fax Software

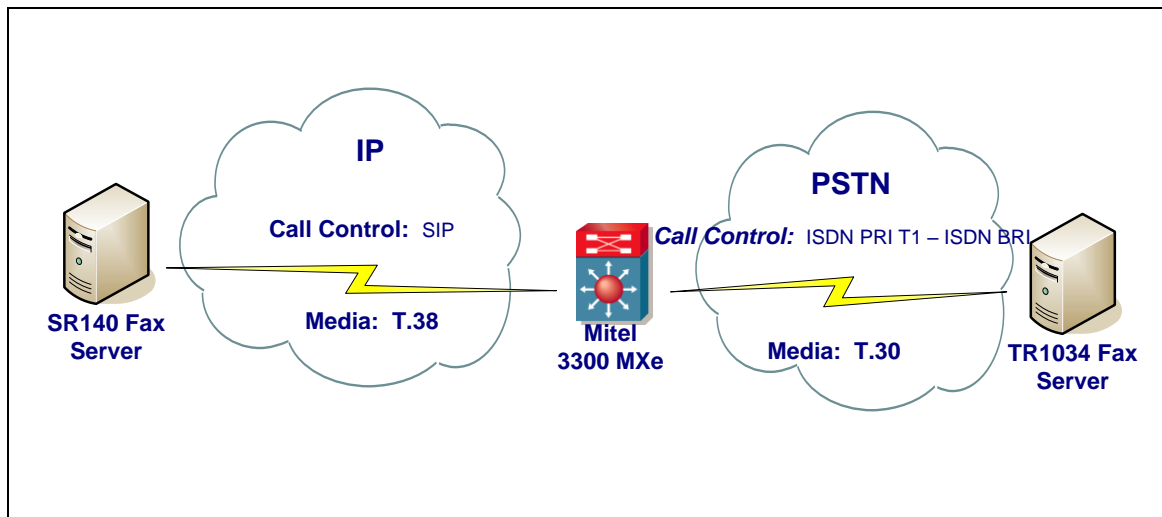
Vendor	<b>Dialogic</b>
Model	<b>Dialogic® Brooktrout® SR140 Fax Software</b>
Software Version	<b>Dialogic® Brooktrout® SDK 6.1.1</b>
Protocol to Gateway	<b>SIP</b>
callctrl.cfg file	<b>Default values</b>

## 2.3 Dialogic® Brooktrout® TR1034 Fax Board

Vendor	<b>Dialogic</b>
PSTN Device	<b>Dialogic® Brooktrout® TR1034 BRI Fax Board</b>
Software Version	<b>Dialogic® Brooktrout® SDK 6.1.1</b>
Protocol to PSTN Device	<b>BRI ISDN</b>
callctrl.cfg file	<b>Default values with European Community as country code.</b>

## 2.4 Network System Configuration

The diagram below details the sample configuration used in connection with this document.



### Notes:

- SR140 Fax Server = Fax Server including Dialogic® Brooktrout® SR140 Fax Software and third party fax application.
- TR1034 Fax Server = Fax Server including Dialogic® Brooktrout® TR1034 Fax Board and third party fax application.

### 3. Prerequisites

For T.38, DSP II module, T.38 licenses and SIP Trunk licenses must be installed and enabled on the Mitel 3300 MXe.

### 4. Summary of Limitations

The Mitel 3300 MXe DSP module used in testing only supported v.17 14400 bps fax transfer on T.38.

By default, ECM (error correction mode) is turned off on the Mitel. ECM was enabled in one of the test configurations to improve the fax quality on the test network.

### 5. Mitel 3300 MXe Gateway Fax Configuration

SIP trunking was used for the interconnection. See IP Endpoint Configuration section for details.

#### 5.1 Installing and Configuring the T.38 Licensing and Hardware Resources

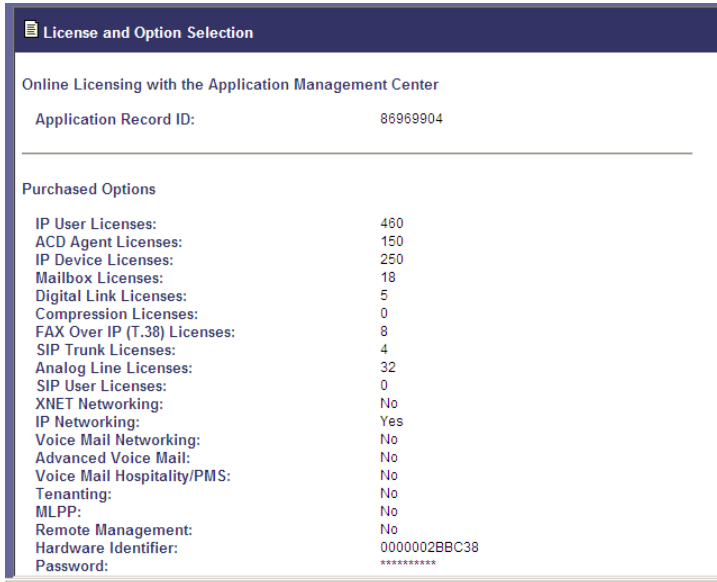
The following guidance was used when installing and configuring the Mitel 3300 for testing:

There are a number of limits that apply with T.38 faxing which include: software license limits, hardware limits and practical limits. A brief description of each is noted below:

- **Software license limits:** 64 sessions. Software license limits is the total number of T.38 licenses that can be entered in the License and Options select form. Licenses can be purchased in groups of 4 up to a maximum of 64. A reboot is required to enable new licenses.
- **Hardware limits:** T.38 Faxing requires the use of a DSP II card. Please note that available resources are determined if the license limits can be achieved. For example, if there are insufficient DSP resources for T.38 faxing, the operational limit may be reached before the license limit. Because DSP resources are allocated at 3300 initialization based on license numbers, not traffic requirements, it is possible to allocate all DSP resources and have nothing left for telecom tone receivers and generators, so calls cannot be made on the system. Although a maximum of 64 T.38 sessions can be provisioned, this is not a recommended configuration.
- **Practical limits:** 16 sessions. The practical limits are determined by the level of traffic that the system will handle at the same time as the T.38 sessions. There is a direct trade-off between traffic handling and FAX T.38 sessions. The practical limit of 16 is derived from the requirement to provide both T.38 FAX and support the full range of IP-Phone users with typical office traffic. If the unit is being used as a FAX gateway, WITHOUT any type of phones (i.e.: IP phones, SIP phones, any type of telephony Trunking or connected to voice/data applications) then it should be possible to increase this limit up to a maximum 32 T.38 sessions. This is assuming that the T.38 sessions are busy 100% of the time and there is sufficient traffic demand to keep these channels fully used.

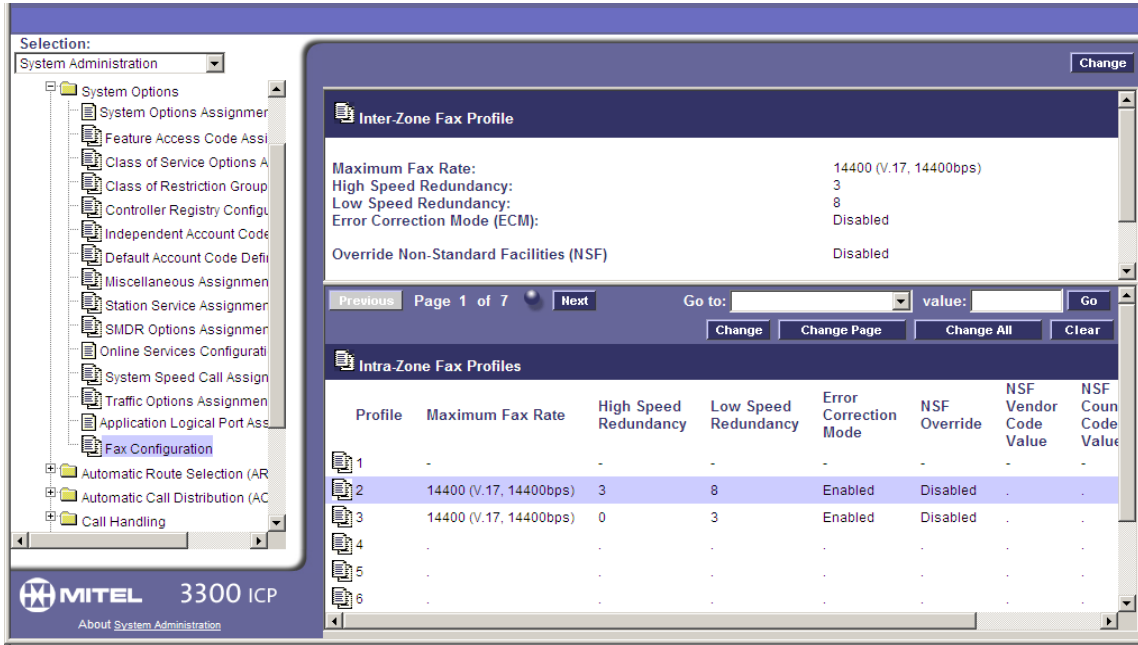
T.38 licenses are referred to as "FAX over IP (T.38) Licenses". If the number of T.38 licenses programmed exceeds the available DSP resources, a DSP alarm is raised and a maintenance log is generated.

The number of T.38 (8) and SIP trunking licenses (4) used in the test configuration is shown in the following screenshot titled: "License and Option Selection".



## 5.2 Fax Configuration

This Fax Configuration form allows you to define the settings for FAX communication over the IP network.




The Inter-Zone Fax Profile defines the FAX settings between the different zones in the network. There is only one Inter-Zone Fax Profile and it applies to all inter-zone fax communication. It defaults to V.29, 7200bps.

The Intra-Zone Fax Profile defines the fax settings within each zone in the network.

- Profile 1 defines the settings for G.711 pass through communication.
- Profiles 2 to 64 define the settings for fax relay (T.38) fax communication.
- All zones default to G.711 pass through communication (Profile 1).

Two new Profiles were created for T.38 fax, the Inter-Zone Fax Profile and Intra-Zone Fax Profile, and are shown in the following set of screenshots.

For the Inter-Zone Fax Profile, select 14,400 (v.17, 14400bps) maximum Fax Rate and disable Error Correction Mode (ECM). Save profile.

 **Inter-Zone Fax Profile**

Maximum Fax Rate:

High Speed Redundancy:

Low Speed Redundancy:

Error Correction Mode (ECM):  Disabled  Enabled

Override Non-Standard Facilities (NSF)

Vendor Code Value:  [0 - 65535]

Country Code Value:  [0 - 65535]

Label: Inter-zone



📄 **Inter-Zone Fax Profile**

Maximum Fax Rate: 14400 (V.17, 14400bps)  
 High Speed Redundancy: 0  
 Low Speed Redundancy: 3  
 Error Correction Mode (ECM): Disabled

Override Non-Standard Facilities (NSF): Disabled

Label: Inter-zone

Previous
Page 1 of 7
Next


Go to:  value:  Go

Change Change Page Change All Clear

📄 **Intra-Zone Fax Profiles**

Profile	Maximum Fax Rate	High Speed Redundancy	Low Speed Redundancy	Error Correction Mode	NSF Override	NSF Vendor Code Value	NSF Country Code Value	Label
1	-	-	-	-	-	-	-	G.711
2	14400 (V.17, 14400bps)	0	3	Disabled	Disabled	.	.	T.38
3	.	.	.	.	.	.	.	
4	.	.	.	.	.	.	.	
5	.	.	.	.	.	.	.	
6	.	.	.	.	.	.	.	
7	.	.	.	.	.	.	.	
8	.	.	.	.	.	.	.	
9	.	.	.	.	.	.	.	
10	.	.	.	.	.	.	.	

For the Intra-Zone Fax Profile, select 14,400 (v.17, 14400bps) maximum Fax Rate. ECM (Error Correction Mode) is disabled by default. Save profile.

 **Intra-Zone Fax Profiles**

<b>Profile:</b>	2
<b>Maximum Fax Rate:</b>	14400 (v.17, 14400bps) ▼
<b>High Speed Redundancy:</b>	0 ▼
<b>Low Speed Redundancy:</b>	3 ▼
<b>Error Correction Mode:</b>	<input checked="" type="radio"/> Disabled <input type="radio"/> Enabled
<input type="checkbox"/> <b>Override Non-Standard Facilities (NSF)</b>	
<b>Vendor Code Value:</b>	0 [0 - 65535]
<b>Country Code Value:</b>	0 [0 - 65535]
<b>Label:</b>	T.38

Note: the equivalent parameter for the High Speed Redundancy in the Mitel configuration is the UDPTL\_redundancy\_depth\_image parameter in the Brooktrout configuration, and for the Low Speed Redundancy in the Mitel configuration is the UDPTL\_redundancy\_depth\_control parameter in the Brooktrout configuration.

### 5.3 Zone Assignment

By default, all zones are set to Intra-Zone Fax Profile 1. For the test configuration, the Intra-Zone Fax Profile was set to 2 and profile was saved.

#### Zone Assignment

Zone ID: 1  
Intra-zone Compression:  No  Yes  
Intra-zone Fax Profile: 1  
Label:

Save Cancel

#### Zone Assignment

Zone ID: 2  
Intra-zone Compression:  No  Yes  
Intra-zone Fax Profile: 2  
Label:

Save Cancel

## 6. Deployment Details

### 6.1 Network Addresses

Device #	Device Description	Device IP Address
1	Mitel 3300 MXe	10.1.0.2
2	Dialogic® Brooktrout® SR140 Fax Software	10.1.0.9

## 7. IP Endpoint Configuration

The screenshot below shows the Network Element Assignment for the Mitel 3300.

The screenshot shows the 'Network Element Assignment' configuration window. The fields are as follows:

- Name: fax
- Type: Other
- FQDN or IP Address: 10.1.0.9
- Local: False
- Version: (empty)
- Zone: 2
- SIP Peer:
- SIP Peer Specific
  - SIP Peer Transport: UDP
  - SIP Peer Port: 5060
  - External SIP Proxy FQDN or IP Address: (empty)
  - External SIP Proxy Transport: (empty)
  - External SIP Proxy Port: 0
  - SIP Registrar FQDN or IP Address: (empty)
  - SIP Registrar Transport: (empty)
  - SIP Registrar Port: 0

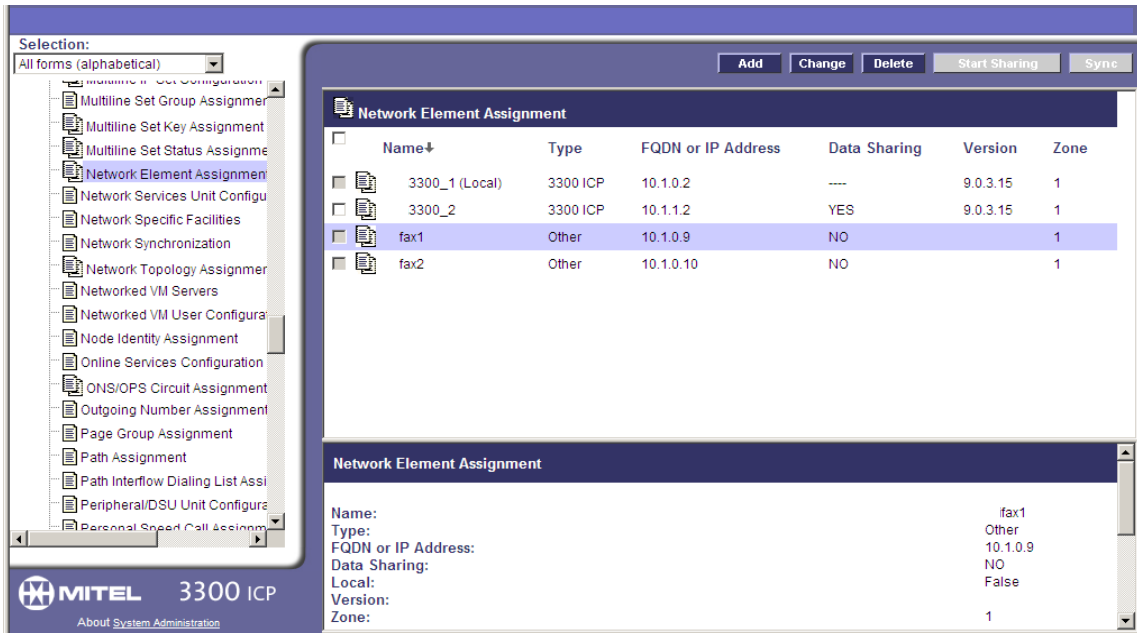
Buttons: Save, Cancel

For the test configuration with the Dialogic® Brooktrout® SR140 Fax Server endpoint, the following values were used:

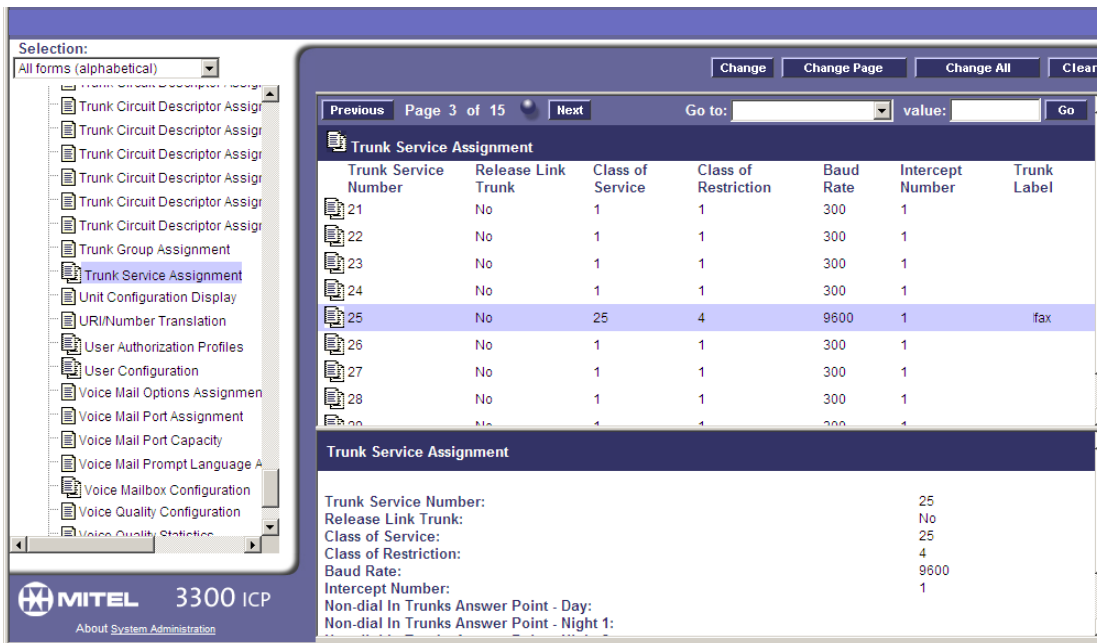
- Element Name: "fax"
- Type: Other
- IP address: 10.1.0.9
- SIP Peer: checked
- SIP Peer Transport: UDP
- SIP Peer Port: 5060

Configuration was saved.

The IP Endpoint Configuration is shown in the following screenshot:



In the screenshot below, the test configuration is shown as Trunk Service Number 25.



This full SIP Peer Profile is shown below.

**SIP Peer Profile**

SIP Peer Profile Label:

Network Element:

Local Account Information

Registration User Name:

Address Type:  FQDN  IP  
Address: 10.1.0.2

Outbound Proxy Server:

Calling Line ID

Default CPN:

Restriction:

Policies

Trunk Service:

Interconnect Restriction:

Maximum Simultaneous Calls:

Session Timer:

Zone:

SMDR Tag:

NAT Keepalive:

Enable Mitel Proprietary SDP:  No  Yes

Use P-Asserted Identity Header:  No  Yes

Use Restricted Character Set For Authentication:  No  Yes

Disable Reliable Provisional Responses:  No  Yes

Use Alternate Destination Domain:  No  Yes

FQDN or IP Address:

Ignore Incoming Loose Routing Indication:  No  Yes

Suppress Use of SDP Inactive Media Streams:  No  Yes

Enable Special Re-Invite Collision Handling:  No  Yes

Enable sending '+' for E.164 numbers:  No  Yes

Force sending SDP in initial Invite message:  No  Yes

Use To Address in From Header on Outgoing Calls:  No  Yes

Force Answer - send SDP in initial Invite:  No  Yes

Prevent the Use of IP Address 0.0.0.0 in SDP Messages:  No  Yes

Use P-Preferred Identity Header:  No  Yes

Route Call Using To Header:  No  Yes

Private SIP Trunk:  No  Yes

Public Calling Party Number Passthrough:  No  Yes

Use Diverting Party Number as Calling Party Number:  No  Yes

Build Contact Using Request URI Address:  No  Yes

Renegotiate SDP To Enforce Symmetric Codec:  No  Yes

Repeat SDP Answer If Duplicate Offer Is Received:  No  Yes

Allow Peer To Use Multiple Active M-Lines:  No  Yes

Special handling of Offers in 2XX responses (INVITE):  No  Yes

Authentication

User Name:

Password:

Confirm Password:

Authentication Option for Incoming Calls:

Save Cancel

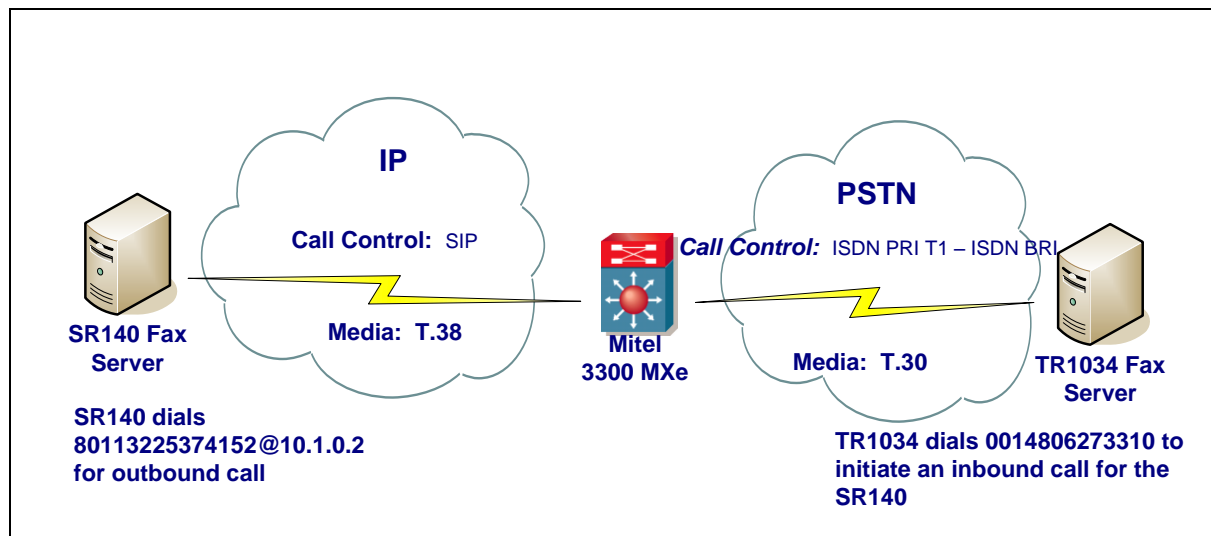
For the test configuration, the SIP Peer profile was configured with the following options:

- Network Element: the selected SIP Peer Profile was associated with the previously created “fax1” Network Element.
- Address Type: used the IP addresses in SIP messages
- Outbound Proxy Server: selected the Network Element previously configured for the Outbound Proxy Server
- Calling Line ID: the default CPN was applied to all calls
- Trunk Service Assignment: entered the trunk service assignment previously configured, #25
- SMDR: If Call Detail Records are required for SIP Trunking, the SMDR Tag should be configured (by default there is no SMDR and this field is left blank)
- The remaining SIP Peer Profile policy options are similar to the screen capture above.

## 8. Dialing Plan Overview

This section provides an overview of the dialing plan used for this document.

4 last digits place a call on SIP peer (Dialogic® Brooktrout® SR140 Fax Software)  
8 + phone number places a call on T1 ISDN to the external PSTN network



## 9. Dialogic® Brooktrout® SR140 Fax Software Setup Notes

The Installation and Configuration Guides for SDK 5.2.x, SDK 6.0.x and SDK 6.1.x are available from the site:

<http://www.dialogic.com/manuals/brooktrout/default.htm>

For the sample test configuration, the SR140 was configured using the default values from SDK 6.1.1 and is shown below for reference.

```
l3l4_trace=none
l4l3_trace=none
api_trace=none
internal_trace=none
host_module_trace=none
ip_stack_trace=none
# Most of the time a path should be used for this file name.
trace_file=
max_trace_files=1
max_trace_file_size=10
[host_module.1]
module_library=brktsip.dll
enabled=true
[host_module.1/t38parameters]
t38_fax_rate_management=transferredTCF
fax_transport_protocol=t38_only
t38_fax_udp_ec=t38UDPRedundancy
rtp_ced_enable=true
t38_max_bit_rate=14400
t38_fax_version=0
media_renegotiate_delay_inbound=1000
media_renegotiate_delay_outbound=-1
t38_fax_fill_bit_removal=false
t38_fax_transcoding_jbig=false
t38_fax_transcoding_mmr=false
t38_t30_fastnotify=false
t38_type_of_service=0
t38_UDPTL_redundancy_depth_control=5
t38_UDPTL_redundancy_depth_image=2
[host_module.1/rtp]
rtp_frame_duration=20
rtp_jitter_buffer_depth=100
rtp_codec=pcmu pcma
rtp_silence_control=inband
rtp_type_of_service=0
rtp_voice_frame_replacement=0
[host_module.1/parameters]
sip_max_sessions=256
sip_default_gateway=0.0.0.0:0
sip_proxy_server1=
sip_proxy_server2=
sip_proxy_server3=
sip_proxy_server4=
sip_registration_server1=
sip_registration_server1_aor=
sip_registration_server1_username=
sip_registration_server1_password=
```



```
sip_registration_server1_expires=3600
sip_registration_server2=
sip_registration_server2_aor=
sip_registration_server2_username=
sip_registration_server2_password=
sip_registration_server2_expires=3600
sip_registration_server3=
sip_registration_server3_aor=
sip_registration_server3_username=
sip_registration_server3_password=
sip_registration_server3_expires=3600
sip_registration_server4=
sip_registration_server4_aor=
sip_registration_server4_username=
sip_registration_server4_password=
sip_registration_server4_expires=3600
sip_registration_interval=60
sip_Max-Forwards=70
sip_From=Anonymous <sip:no_from_info@anonymous.invalid>
sip_Contact=0.0.0.0:0
sip_username=-
sip_session_name=no_session_name
sip_session_description=
sip_description_URI=
sip_email=
sip_phone=
sip_Route=
sip_session_timer_session_expires=0
sip_session_timer_minse=-1
sip_session_timer_refresh_method=0
sip_ip_interface=
sip_ip_interface_port=5060
sip_redirect_as_calling_party=0
sip_redirect_as_called_party=0
[module.41]
model=SR140
virtual=1
exists=1
vb_firm=C:\fdtool-6.1.1\bin\bostvb.dll
channels=6
[module.41/ethernet.1]
ip_interface={567CDC61-517C-4CD5-8F10-3DF5CB9CCDEC};0
media_port_min=56000
media_port_max=57000
[module.41/host_cc.1]
host_module=1
number_of_channels=6
```

No sip\_default\_gateway was filled in since the IP address of the gateway was specified in the dial string in the application. The following dial string was used for the outbound calls: 80113225374152@10.1.0.2. However, when the application does not allow specifying the gateway's IP address, make sure to fill in the IP address in the sip\_default\_gateway field. In our test scenario, this would be: sip\_default\_gateway=10.1.0.2:5060