



Dialogic[®] Brooktrout[®] SR140 Fax Software with Cisco[®] 2800 Series ISR with Super G3 Fax

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 **Cisco® 2800 Series ISR with Super G3 Fax** for use with Dialogic® Brooktrout® SR140 Fax over IP (FoIP) software platform. The interoperability includes SIP call control and T.38 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 **Cisco® 2800 Series ISR**.

The sample configuration shown and/or referred in the subsequent sections was used for lab validation testing by Dialogic. Therefore, it is quite possible that the sample configuration will not match an exact configuration or 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 and the **Cisco® 2800 Series ISR** will be denoted herein as **Cisco® 2800** or **Cisco® ISR** or some other form thereof. All references to the SDK herein refer to the Dialogic® Brooktrout® Fax Products SDK.

2. Configuration Details

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

2.1 Router

Vendor	Cisco®
Model	2821 Integrated Services Router
Software Version	Early Deployment IOS 15.1.1T
IP Device	Dialogic® Brooktrout® SR140 Fax Software
Protocol to Dialogic® Brooktrout® SR140 Fax Software	SIP
PSTN Device	Dialogic® Brooktrout® TR1034 Analog Fax Board
Protocol to PSTN Device	Analog Loop Start
Additional Notes	To enable Super G3 fax, set: fax protocol t38 version 3

2.2 Dialogic® Brooktrout® SR140 Fax Software

Vendor	Dialogic
Model	Dialogic® Brooktrout® SR140 Fax Software
Software Version	SDK 6.2.4
Protocol to Gateway or Call Manager	SIP
callctrl.cfg file	<p>In the callctrl.cfg file, the following parameters were changed:</p> <pre>t38_max_bit_rate=33600 t38_fax_version=3 media_renegotiate_delay_outbound=100</pre>

2.3 Network System Configuration

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

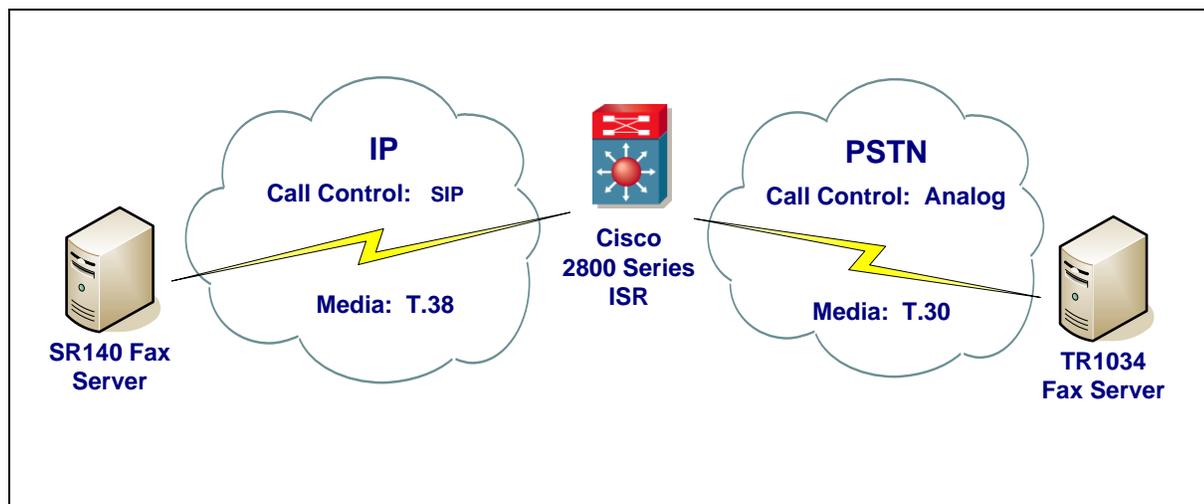


Diagram Notes:

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

3. Prerequisites

- For T.38 fax sessions to operate at SG3 speeds, all the endpoints involved must support T.38 Version 3 (v3) configuration and have negotiated T.38 v3.
- Beginning with Cisco IOS Release 15.1(1)T, full SG3 fax support is enabled on Cisco TDM-IP voice gateways and Cisco UBE platforms.
- Dialogic Brooktrout SR140 running SDK 6.2.4 or later.

4. Summary of Limitations

- None.

5. Gateway Setup Notes

5.1 Network Addresses

The following table lists the IP addresses and their descriptions used in subsequent sections.

Device #	Device Make, Model, and Description	Device IP Address
1	Cisco 2821	10.128.30.17
2	SR140	10.128.30.45

5.2 Cisco Router Configuration

For this sample test configuration, Cisco IOS 15.1.1T with support for Super G3 Fax (V.34 T.38) was used. The Cisco configuration instructions for configuring SG3 Fax are available at the following site:

http://www.cisco.com/en/US/docs/ios/voice/fax/configuration/guide/vf_cfg_t38_fxrlx_ps10592_TSD_Products_Configuration_Guide_Chapter.html

In the Cisco IOS 15.1.1T, a new parameter, 'version', was added to the 'fax protocol t38' command. This parameter must be set to 3 in order to enable V.34 T.38 operation since the third version of the ITU-T's T.38 specification added V.34 support. This parameter can be set in the global configuration or an individual dial peer.

Global configuration example:

```
!  
voice service voip  
  fax protocol t38 version 3 ls-redundancy 0 hs-redundancy 0 fallback none  
  sip  
!
```

Dial peer configuration example:

```
!  
dial-peer voice 4443 voip  
  destination-pattern 4443  
  session protocol sipv2  
  session target ipv4:10.10.10.1
```

```
session transport udp
voice-class codec 1
fax protocol t38 version 3 ls-redundancy 0 hs-redundancy 0 fallback none
!
```

6. Dialogic® Brooktrout® SR140 Fax Software Setup Notes

For this sample test configuration, SDK 6.2.4 was used. The *Installation and Configuration Guides* used to setup the SR140 is available from the following site:

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

The SR140 default configuration is set for V.17 T.38 operation. To enable V.34 T.38 capability with the Cisco 2800, the following parameters must be changed:

- change `t38_max_bit_rate` to 33600 which is the maximum bit rate for V.34, the default is set to 14400 for V.17
- change `t38_fax_version` to 3 which adds V.34 support, the default is set to 0 for V.17.
- change `media_renegotiate_delay_outbound` to a value \geq zero to enable outbound V.34 T.38 calls (SR140 to Cisco GW) to succeed without falling back to V.17. This change implies that the SR140 will initiate a T.38 changeover. The `media_renegotiate_delay_outbound` parameter was set to -1 by default.

These parameters can be found in the Config Tool on the 'T.38 Parameters' tab of the 'IP Call Control Modules' section.

The SR140 `callctrl.cfg` file used in the sample test configuration is shown below for reference. The changes from the default settings are highlighted in yellow.

```
I314_trace=verbose
I413_trace=verbose
api_trace=verbose
internal_trace=verbose
host_module_trace=verbose
ip_stack_trace=warning
# Most of the time a path should be used for this file name.
trace_file=test_0004_ecc.log
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=33600
t38_fax_version=3
media_passthrough_timeout_inbound=1000
media_passthrough_timeout_outbound=4000
media_renegotiate_delay_inbound=1000
media_renegotiate_delay_outbound=100
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
sip_user_agent=Brktsip/6.2.0B5 (Dialogic)
[module.41]
model=SR140
virtual=1
exists=1
vb_firm=C:\interop kit SDK620 v1.2\fdtool-6.2.0\bin\bostvb.dll
channels=120
[module.41/ethernet.1]
ip_interface={7D57B541-A7F4-4674-9B2B-29AAE2E3A9A2}:0
media_port_min=56000
media_port_max=57000
[module.41/host_cc.1]
host_module=1
number_of_channels=120
```

7. Dialogic® Brooktrout® TR1034 Fax PSTN Setup Notes

For the sample test configuration, the TR1034 was configured using the default values. The Installation and Configuration Guides used to setup the TR1034 is available from the following site:

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

8. Frequently Asked Questions

- *"I'm configured as near as possible to this the sample configuration described in this document, but calls are still not successful; what is my next step?"*
 - ➔ Provide this document to your gateway support.
 - ➔ Ensure T.38 is enabled on the gateway.
 - ➔ Confirm that basic network access is possible by pinging the gateway.

- *"How do I obtain Wireshark traces?"*
 - ➔ The traces can be viewed using the Wireshark network analyzer program, which can be freely downloaded from <http://www.wireshark.org>.
 - ➔ To view the call flow in Wireshark, open the desired network trace file and select "Statistics->VoIP Calls" from the drop down menu. Then highlight the call and click on the "Graph" button.