



Dialogic® Brooktrout® SR140 Fax Software with Linksys SPA8000 8-Port Telephony Gateway

Installation and Configuration Integration Note

IMPORTANT NOTE

This document is not to be shared with or disseminated to other third parties, in whole or in part, without prior written permission from Dialogic. To seek such permission, please contact your Dialogic Sales Representative.

Copyright and Legal Notice

Copyright © 2010 Dialogic Corporation. All Rights Reserved. You may not reproduce this document in whole or in part without permission in writing from Dialogic Corporation at the address provided below.

All contents of this document are furnished for informational use only and are subject to change without notice and do not represent a commitment on the part of Dialogic Corporation or its subsidiaries ("Dialogic"). Reasonable effort is made to ensure the accuracy of the information contained in the document. However, Dialogic does not warrant the accuracy of this information and cannot accept responsibility for errors, inaccuracies or omissions that may be contained in this document.

INFORMATION IN THIS DOCUMENT IS PROVIDED IN CONNECTION WITH DIALOGIC® PRODUCTS. NO LICENSE, EXPRESS OR IMPLIED, BY ESTOPPEL OR OTHERWISE, TO ANY INTELLECTUAL PROPERTY RIGHTS IS GRANTED BY THIS DOCUMENT. EXCEPT AS PROVIDED IN A SIGNED AGREEMENT BETWEEN YOU AND DIALOGIC, DIALOGIC ASSUMES NO LIABILITY WHATSOEVER, AND DIALOGIC DISCLAIMS ANY EXPRESS OR IMPLIED WARRANTY, RELATING TO SALE AND/OR USE OF DIALOGIC PRODUCTS INCLUDING LIABILITY OR WARRANTIES RELATING TO FITNESS FOR A PARTICULAR PURPOSE, MERCHANTABILITY, OR INFRINGEMENT OF ANY INTELLECTUAL PROPERTY RIGHT OF A THIRD PARTY.

Dialogic products are not intended for use in medical, life saving, life sustaining, critical control or safety systems, or in nuclear facility applications.

Due to differing national regulations and approval requirements, certain Dialogic products may be suitable for use only in specific countries, and thus may not function properly in other countries. You are responsible for ensuring that your use of such products occurs only in the countries where such use is suitable. For information on specific products, contact Dialogic Corporation at the address indicated below or on the web at www.dialogic.com.

It is possible that the use or implementation of any one of the concepts, applications, or ideas described in this document, in marketing collateral produced by or on web pages maintained by Dialogic may infringe one or more patents or other intellectual property rights owned by third parties. Dialogic does not provide any intellectual property licenses with the sale of Dialogic products other than a license to use such product in accordance with intellectual property owned or validly licensed by Dialogic and no such licenses are provided except pursuant to a signed agreement with Dialogic. More detailed information about such intellectual property is available from Dialogic's legal department at 9800 Cavendish Blvd., 5th Floor, Montreal, Quebec, Canada H4M 2V9. **Dialogic encourages all users of its products to procure all necessary intellectual property licenses required to implement any concepts or applications and does not condone or encourage any intellectual property infringement and disclaims any responsibility related thereto. These intellectual property licenses may differ from country to country and it is the responsibility of those who develop the concepts or applications to be aware of and comply with different national license requirements.**

Dialogic, Dialogic Pro, Brooktrout, Diva, Diva ISDN, Making Innovation Thrive, Video is the New Voice, Diastar, Cantata, TruFax, SwitchKit, SnowShore, Eicon, Eicon Networks, NMS Communications, NMS (stylized), Eiconcard, SIPcontrol, TrustedVideo, Exnet, EXS, Connecting to Growth, Fusion, Vision, PacketMedia, NaturalAccess, NaturalCallControl, NaturalConference, NaturalFax and Shiva, among others as well as related logos, are either registered trademarks or trademarks of Dialogic Corporation or its subsidiaries. Dialogic's trademarks may be used publicly only with permission from Dialogic. Such permission may only be granted by Dialogic's legal department at 9800 Cavendish Blvd., 5th Floor, Montreal, Quebec, Canada H4M 2V9. Any authorized use of Dialogic's trademarks will be subject to full respect of the trademark guidelines published by Dialogic from time to time and any use of Dialogic's trademarks requires proper acknowledgement.

The names of actual companies and products mentioned herein are the trademarks of their respective owners.

This document discusses one or more open source products, systems and/or releases. Dialogic is not responsible for your decision to use open source in connection with Dialogic products (including without limitation those referred to herein), nor is Dialogic responsible for any present or future effects such usage might have, including without limitation effects on your products, your business, or your intellectual property rights.

Any use case(s) shown and/or described herein represent one or more examples of the various ways, scenarios or environments in which Dialogic products can be used. Such use case(s) are non-limiting and do not represent recommendations of Dialogic as to whether or how to use Dialogic products.

1. Scope

This document is intended as a general guide for configuring a basic installation of the **Linksys SPA8000** 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 **Linksys SPA8000**.

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. All references to the SDK herein refer to the Dialogic® Brooktrout® Fax Products SDK. The Linksys SPA8000 will be denoted herein as Linksys SPA8000 and SPA8000, or some other form thereof.

2. Configuration Details

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

2.1 Gateway

Vendor	Linksys
Model	SPA8000
Software Version	5.1.10
Hardware Version	1.0.0
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
Additional Notes	N/A

2.2 Dialogic® Brooktrout® SR140 Fax Software

Vendor	Dialogic
Model	Dialogic® Brooktrout® SR140 Fax Software
Software Version	SDK 6.2.0
Protocol to Gateway or Call Manager	SIP
callctrl.cfg file	All defaults

2.3 Dialogic® Brooktrout® TR1034 Fax Board

Vendor	Dialogic
PSTN Device	Dialogic® Brooktrout® TR1034 Fax Board
Software Version	SDK 6.2.0
Protocol to PSTN Device	Analog
callctrl.cfg file	All defaults

2.4 Network System Configuration

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

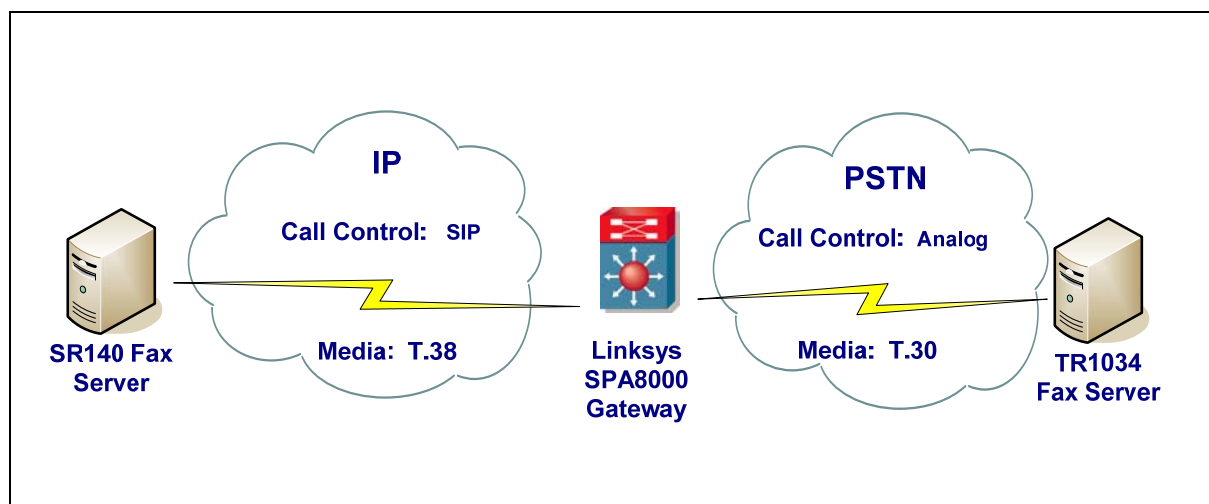


Diagram Notes:

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

3. Prerequisites

None.

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	Linksys ASP8000 Gateway	10.128.30.230 (WAN IP Address)
2	Linksys ASP8000 Gateway	192.168.0.1 (LAN IP Address)
3	SR140	10.128.30.100

5.2 Router Configuration

Follow the quick installation guide below which ships with the SPA8000 gateway to configure the IP address that will be used for voice and fax calls, which is known as the WAN IP address.

http://www.cisco.com/en/US/docs/voice_ip_comm/csbpvga/spa8000/quick_start/guide/spa8000_quick.pdf

By default, the gateway's web interface can be accessed by directing a web browser to URL <http://192.168.0.1>. 192.168.0.1 is the default LAN IP address. The WAN IP address can be configured in the 'Wan Setup' tab of the 'Router' menu. Click on the 'Submit All Changes' button once changes are made to the gateway's configuration.

LINKSYS[®]
A Division of Cisco Systems, Inc.

Linksys Phone Adapter Configuration

Router Voice

Status **Wan Setup** [User Login](#) basic | [advanced](#)

Internet Connection Settings
Connection Type: Static IP ▾

Static IP Settings
Static IP: 10.128.30.230 NetMask: 255.255.252.0
Gateway: 10.128.28.1

PPPoE Settings
PPPOE Login Name: PPPOE Login Password:

Optional Settings
HostName: Domain:
Primary DNS: Secondary DNS:
DNS Query Mode: Parallel ▾

Undo All Changes **Submit All Changes**

[User Login](#) basic | [advanced](#)

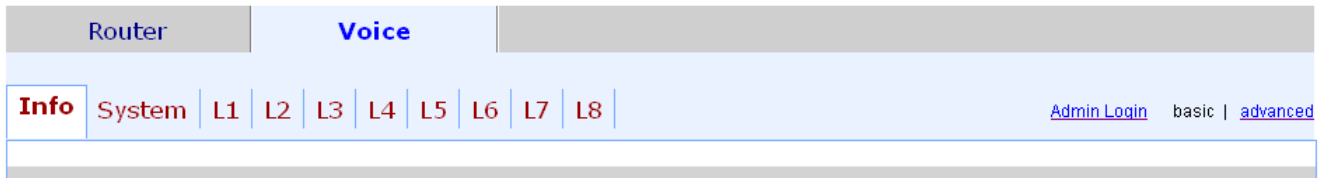
Copyright © 1992-2006 Cisco Systems, Inc. All Rights Reserved.

For a detailed explanation of all Router settings, see the SPA8000 Administration Guide below:

http://www.cisco.com/en/US/docs/voice_ip_comm/csbpvga/ata/administration/guide/ATA_AG_v3_NC-WEB.pdf

5.3 SIP Proxy and Registration Configuration

Once the WAN IP address is configured, click on the 'Voice' tab and obtain administrative privileges by clicking on the 'Admin Login' hyperlink on the right side of the web page. Click on the 'advanced' hyperlink next to expose all telephony configuration options.



Click of the 'L1' tab and scroll down to the 'Proxy and Registration' section to configure the first analog line. Each 'L#' tab configures a corresponding analog line.

If the SPA8000 is required to register with a Proxy Server, the 'Proxy' field needs to be filled in with the IP address or FQDN of the Proxy Server and the 'Register' drop-down list needs to be set to 'yes'. If a Proxy Server is not required, the 'Proxy' field can be filled in with the IP address or FQDN of the server that will receive all outgoing calls originating from the first analog line and the 'Register' drop-down list should be set to 'no'. In the following screenshot, the 'Proxy' field contains the IP address of the SR140 Fax Server that was used to perform interoperability testing. The 'Make Call Without Reg:' and 'Ans Call Without Reg' drop down lists are set to 'yes' since a Proxy Server was not used.

Proxy and Registration			
Proxy:	10.128.30.100		
Outbound Proxy:			
Use Outbound Proxy:	no	Use OB Proxy In Dialog:	no
Register:	no	Make Call Without Reg:	yes
Register Expires:	3600	Ans Call Without Reg:	yes
Use DNS SRV:	no	DNS SRV Auto Prefix:	no
Proxy Fallback Intvl:	3600	Proxy Redundancy Method:	Normal
Voice Mail Server:		Mailbox Subscribe Expires:	2147483647

If the SPA8000 is required to provide a user id and password to the Proxy Server, the 'User ID' and 'Password' fields of the 'Subscriber Information' section fields need to be filled in. The 'User ID' field also represents the user part of the SIP URI, which is used by the gateway to route incoming VoIP calls. For example, if the 'User ID' field of the first analog line is filled in with the text 'joe' and an IP call destined for sip:joe@gatewayaddr.com is received by the SPA8000 gateway, the first analog line will ring. If a Proxy Server is not used, only the 'User ID' field is needed to route SIP calls to the appropriate analog line.

5.4 Dialing Plan Overview

5.4.1 VoIP to POTS

The 'User ID' field of the 'L#' tab represents the user part of the SIP URI, which is used by the gateway to route incoming VoIP calls. For example, if the 'User ID' field of the first analog line is filled in with the text 'joe' and an IP call destined for sip:joe@gatewayaddr.com is received by the SPA8000 gateway, the first analog line will ring.

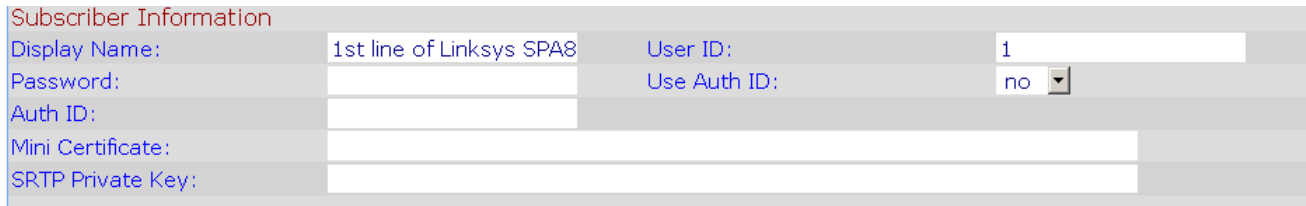
5.4.2 POTS to VoIP

The 'Dial Plan' field of the of the 'L#' tab has to be filled in to make outbound VoIP calls. The 'Enable IP Dialing' drop down list also has to be set to 'yes' to allow outbound VoIP calls. For example, setting this field to the text '11' of the 'L1' tab will make the SPA8000 gateway generate a SIP call using SIP URI sip:11@proxyaddr.com after the first analog line dials the number 11. For all allowed dial plan patterns, see the SPA8000 Administration Guide.

5.5 Call Routing Configuration

5.5.1 VoIP to POTS

The following screenshot uses the text '1' as the 'User ID' of 'L1' tab; thus, a SIP call destined for sip:1@10.128.30.230 rings the first analog line.

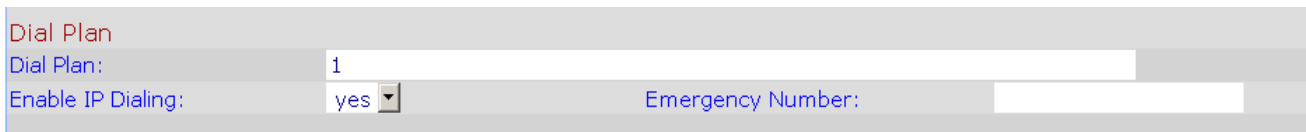


Subscriber Information

Display Name:	1st line of Linksys SPA8	User ID:	1
Password:		Use Auth ID:	no
Auth ID:			
Mini Certificate:			
SRTP Private Key:			

5.5.2 POTS to VoIP

The following screenshot uses the text '1' as the 'Dial Plan' of the 'L1' tab; thus, when the first analog line dials the number 1, an outbound SIP call is generated using SIP URI sip:1@10.128.30.100.



Dial Plan

Dial Plan:	1		
Enable IP Dialing:	yes	Emergency Number:	

6. Dialogic® Brooktrout® SR140 Fax Software Setup Notes

The Installation and Configuration Guides used to setup the SR140 is available from the site:

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

The default setup for SR140 and the callctrl.cfg file used in the sample test configuration is shown below for reference.

```
api_trace=verbose
internal_trace=verbose
l3l4_trace=verbose
l4l3_trace=verbose
host_module_trace=verbose
ip_stack_trace=warning
vty_trace=true
max_trace_files=1
max_trace_file_size=100
```



```
trace_file=test_0004_ecc.log
[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_passthrough_timeout_inbound=1000
media_passthrough_timeout_outbound=4000
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
sip_user_agent=Brksip/6.2.0B5 (Dialogic)
[module.41]
model=SR140
virtual=1
exists=1
vb_firm=C:\fdtool-6.2.0\bin\bostvb.dll
channels=120
[module.41/ethernet.1]
ip_interface={22EE3B90-BC80-4F06-9076-E64284265B67}: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, consult the *Dialogic® Brooktrout® Fax Products Installation and Configuration Guide* for details.

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.