Dialogic

Dialogic® Brooktrout® SR140 Fax Software Linux User Guide

Brooktrout SDK Release 5.2.0

Document Number 931-170-01
Released January 2008

Copyright and Legal Disclaimer

Copyright © 1998-2008 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 subject to change without notice and do not represent a commitment on the part of Dialogic Corporation or its subsidiaries. Reasonable effort is made to ensure the accuracy of the information contained in the document. However, due to ongoing product improvements and revisions, Dialogic Corporation and its subsidiaries do not warrant the accuracy of this information and cannot accept responsibility for errors 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 EXPLICITLY SET FORTH BELOW OR 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.

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 Corporation or its subsidiaries may infringe one or more patents or other intellectual property rights owned by third parties. Dialogic Corporation or its subsidiaries do 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 Corporation or its subsidiaries. More detailed information about such intellectual property is available from Dialogic Corporation's legal department at 9800 Cavendish Blvd., 5th Floor, Montreal, Quebec, Canada H4M 2V9. The software referred to in this document is provided under a Software License Agreement. Refer to the Software License Agreement for complete details governing the use of the software.

Dialogic Corporation 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, Cantata, SnowShore, Eicon, Eicon Networks, Eiconcard, Diva, SIPcontrol, Diva ISDN, TruFax, Realblocs, Realcomm 100, NetAccess, Instant ISDN, TRXStream, Exnet, Exnet Connect, EXS, ExchangePlus VSE, Switchkit, N20, Powering The Service-Ready Network, Vantage, Connecting People to Information, Connecting to Growth and Shiva, among others as well as related logos, are either registered trademarks or trademarks of Dialogic.

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.

International Notice

Due to differing national regulations and approval requirements, certain Dialogic® products are designed for use only in specific countries, and may not function properly in a country other than the country of designated use. As a user of these products, you are responsible for ensuring that the products are used only in the countries for which they were intended. For information on specific products, contact Dialogic Corporation on the web at ***www.dialogic.com*** or:

9800 Cavendish Blvd.

5th Floor

Montreal, Quebec, Canada

H4M 2V9

7814494100

Technical Support

For Technical Support, see ***Getting Technical Support on page xix*** and the web:

www.dialogic.com/support

Limited Warranty

Dialogic Corporation (“Dialogic”) warrants the hardware component of the product described in this documentation (the “Product”) to be free from defects in materials and workmanship under normal and proper use for the period specified in your signed agreement with Dialogic. In the event that you have no signed agreement setting out a warranty period, the period shall be the standard warranty period for such hardware component of the product set out on www.dialogic.com on the date of your purchase of the product. Dialogic also warrants the disk on which software and firmware are recorded to be free from defects in materials and workmanship under normal and proper use for a period of 90 days from the date of purchase from Dialogic. ***This warranty does not apply to the software and firmware themselves.*** This warranty also does not apply to any expendable components, any damage resulting from abuse of the Product, or normal wear and tear. In the event of a warranty claim, the item, if in the opinion of Dialogic it is proved to be defective, will be repaired or replaced with a functionally equivalent item, at Dialogic's sole option, upon delivery to Dialogic of the defective item, together with a dated proof of purchase and specification of the problem. Dialogic is not responsible for transportation and related charges in connection with shipment of items to Dialogic for warranty service. Dialogic reserves the right to charge for inspection at Dialogic's then prevailing rates of returned items if it is determined that the items were not defective within the terms of the warranty. To obtain warranty service return the Product, contact Dialogic Technical Support.

With respect to software and firmware, it should be understood that these components are complex works which may contain undiscovered defects. Although the software and firmware provided with the Product contain substantially the features described in the documentation, to the extent applicable to the product purchased, Dialogic does not warrant that the operation of such software and firmware will meet the user's requirements or be uninterrupted or free of errors.

No oral or written information or advice given by Dialogic or its authorized representatives will create a warranty or increase the scope of this warranty. No representative, agent, dealer or employee of Dialogic is authorized to give any other warranty or to assume for Dialogic any other liability in connection with the sale and service of the Product. ***Except as expressly agreed by Dialogic in writing, Dialogic makes no representations or warranties of any kind, express or implied, with respect to the Product or any hardware, software or firmware components thereof. In particular, but without limitation of the foregoing, Dialogic disclaims all implied warranties of merchantability or fitness for a particular purpose and there are no warranties that extend beyond the description or duration of this warranty.*** Some states or countries do not allow the exclusion of implied warranties so the above exclusion may not apply to you.

In no event shall Dialogic be liable for loss of profits or indirect, special, incidental, or consequential damages arising out of the use of or inability to use the Product. The sole and exclusive remedy, in contract, tort or otherwise, available for a breach of this warranty and for any and all claims arising out of or in any way connected with the purchase of the Product shall be limited to the repair or replacement of any defective item or, at Dialogic's sole option, the payment of actual direct damages not to exceed the payments made to Dialogic for the Product in question. Some states do not allow the limitation or exclusion of liability for incidental or consequential damages, so the above limitation

and exclusion may not apply to you.

This warranty gives you specific legal rights. You may also have other rights which vary from state-to-state or country-to-country. Any provision of this warranty that is prohibited or unenforceable in any jurisdiction shall, as to such jurisdiction, be ineffective to the extent of such prohibition or unenforceability without invalidating the remaining provisions hereof or affecting the validity of enforceability of such provision in any other jurisdiction.

END USER SOFTWARE LICENSE AGREEMENT

*** IMPORTANT ***

PLEASE READ CAREFULLY BEFORE USING THE SOFTWARE.

This End User License Agreement is a legal agreement between Dialogic Corporation and its subsidiaries (collectively, “Dialogic”) and you (either an individual or an entity) (“End User”). ***IF YOU HAVE A WRITTEN, SIGNED LICENSE AGREEMENT GOVERNING THE USE OF THE ACCOMPANYING SOFTWARE, THE TERMS AND CONDITIONS OF THAT AGREEMENT WILL APPLY TO YOUR USE OF THE SOFTWARE. IF YOU HAVE A WRITTEN, SIGNED SOFTWARE DEVELOPMENT LICENSE EXCLUSION GOVERNING THE USE OF THE SOFTWARE (“SPECIAL TERMS”), THOSE SPECIAL TERMS ARE HEREBY INCORPORATED INTO THIS AGREEMENT.*** Read the following terms and conditions carefully before using the accompanying software. They define your rights and obligations with respect to the enclosed Software. If you do not agree to the terms of this End User Software License Agreement, promptly destroy the Software and return the License Key that you purchased for the Software or the Dialogic® Hardware that you purchased for use with the Software, if any, to the place you obtained it for a full refund. USING THE DIALOGIC PRODUCT INDICATES YOUR AGREEMENT WITH AND ACCEPTANCE OF THE FOLLOWING TERMS AND CONDITIONS. AN INDIVIDUAL WHO DOES NOT HAVE AUTHORITY TO BIND THE ENTITY USING THE SOFTWARE SHOULD NOT USE THE SOFTWARE WITHOUT OBTAINING APPROVAL OF THIS AGREEMENT FROM A PERSON HAVING SUCH AUTHORITY.

YOU UNDERSTAND THAT, IF YOU PURCHASED THE PACKAGE FROM AN AUTHORIZED RESELLER OF DIALOGIC, THAT RESELLER IS NOT DIALOGIC'S AGENT AND IS NOT AUTHORIZED TO MAKE ANY REPRESENTATIONS, CONDITIONS OR WARRANTIES, STATUTORY OR OTHERWISE, ON DIALOGIC'S BEHALF NOR TO VARY ANY OF THE TERMS OR CONDITIONS OF THIS AGREEMENT. IN ADDITION, YOU ACKNOWLEDGE THAT, UNLESS OTHERWISE AGREED BY THAT RESELLER IN WRITING OR PROHIBITED BY LAW, THE LIMITATIONS OF CONDITIONS AND WARRANTIES, STATUTORY OR OTHERWISE, AND LIABILITY SET FORTH IN THIS AGREEMENT ALSO APPLY TO AND BENEFIT THAT RESELLER.

The Software may include object code versions of third party software packages, including one or more of the following, which are subject to the terms and conditions of the applicable license agreements found at the websites identified below. Please refer to the attached Exhibit A to find out which, if any, licenses are applicable.

- ***ACE™ software and TAO™ software are copyrighted by Douglas C. Schmidt and his research group at Washington University, University of California, Irvine, and Vanderbilt University. Copyright (c) 1993-2003, all rights reserved. More information is available at:***
  http://www.cs.wustl.edu/~schmidt/ACE.html

- ***wxWindows software is copyrighted by Julian Smart, Robert Roebling et al. Copyright (c) 1998 Julian Smart, Robert Roebling et al. More information is available at:***
  http://www.wxWindows.org

- ***Portions of the Software are licensed under the Apache License, Version 2.0 (the "Apache License"); you may not use this file except in compliance with the Apache License. You may obtain a copy of the Apache License at:***
  http://www.apache.org/licenses/LICENSE-2.0

Unless required by applicable law or agreed to in writing, software distributed under the Apache License is distributed on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied. See the Apache License for the specific language governing permissions and limitations under the Apache License.

Unless required by applicable law or agreed to in writing, software distributed under the Apache License is distributed on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied. See the Apache License for the specific language governing permissions and limitations under the Apache License.

1. Definitions

1.1. "Dialogic Hardware" means voice and/or fax processing hardware and/or any other computer hardware manufactured by or for Dialogic which may (without limitation) be marketed under the brands Dialogic, Brooktrout, Excel, and/or Snowshore and purchased by the End User from Dialogic or one of its authorized resellers.

1.2. "License Key" means an access code or activation key provided by Dialogic or one of its authorized resellers to enable End User to use the Software.

1.3. "Software" means the software provided to you in the enclosed package or enabled by the enclosed License Key, together with any accompanying documentation.

2. License

2.1. Grant. Subject to the terms of this Agreement, Dialogic grants to End User a limited, non-exclusive, non-transferable license (without the right to sublicense), to use the Software in accordance with the following provisions: (a) if the Software is provided to End User for use with Dialogic Hardware, to use the Software solely in connection with Dialogic Hardware for End User's internal business purposes and (b) if the Software is provided as host-based media processing software, to use the Software solely in connection with End User's internal business purposes, provided that End User purchases a License Key. The Software is used in connection with Dialogic Hardware if it is operated only on the central processing unit of a computer served by one or more items of Dialogic Hardware and, where appropriate in connection with such use, it is downloaded into memory located on Dialogic Hardware.

2.2. Copies. End User shall not copy the Software, except as permitted under applicable law, and then only with the inclusion of all copyright, proprietary and other notices.

2.3. No Reverse Engineering. End User shall have no rights to any source code for the Software. End User agrees that it shall not cause or permit the disassembly, decompilation or reverse engineering of the Software or otherwise attempt to gain access to the source code to the Software. If applicable law requires access to source code for some purpose, such as inter-operability with other software, and End User desires access for that required purpose, End User shall notify Dialogic, and Dialogic shall have the option, in its discretion, to (i) perform the work to derive any required information at Dialogic's usual consulting rate, or (ii) allow End User access to source code solely for the legally required purpose.

2.4. Additional Restrictions. End User shall not, and shall not permit any third party to disclose the results of any benchmark test of the Software to a third party without the prior written approval of Dialogic.

2.5. Reservation of Rights. Dialogic and its licensors reserve all rights not otherwise expressly granted in this Section 2. Any use, modification, reproduction or distribution of the Software not expressly permitted under this Agreement is herby expressly prohibited.

2.6. License Keys. The use of the Software may require a License Key from Dialogic. End User shall not (a) use any access code or activation key other than the License Key (if any) provided by Dialogic or (c) develop or alter any access code for the Software or otherwise circumvent or attempt to circumvent the License Key.

2.7. Upgrades, Updates, Etc. Unless otherwise agreed to in a separate agreement, End User shall have no right to receive any corrections, enhancements, upgrades, maintenance releases or other modifications to the Software ("Changes"). For clarity, End User acknowledges that if it is a party to Dialogic's Software Developer License Agreement and/or Master Software Maintenance Agreement, and it receives Changes under either of those agreements, End User shall have no right to use those Changes under this End User Software License for its internal business purposes unless End User has entered into a separate maintenance agreement for the Software and has paid Dialogic the applicable maintenance fee.

3. Purchase of License Key

If the Software is distributed to End User as host-based media software, End User shall purchase a License Key from Dialogic or its authorized reseller.

4. Ownership

4.1. Dialogic or its licensors own and shall retain all proprietary rights, including all patent, copyright, trade secret, trademark and other intellectual property rights, in and to the Software and any modifications thereto made by any entity.

4.2. Unless End User enters into a separate agreement with Dialogic or its authorized reseller which entitles End User to receive maintenance and support services, End User shall have no right to receive any corrections, enhancements, upgrades or other modifications to the Software ("Changes").

4.3. End User acknowledges that the license granted under this Agreement does not provide End User with title to or ownership of the Software, but only a right of limited use under the terms and conditions of this Agreement. End User shall keep the Software free and clear of all claims, liens and encumbrances.

5. Limited Warranty

5.1. Scope of Limited Warranty

a. Dialogic warrants to End User that for a period of ninety (90) days from delivery of the Software to End User (the "Software Warranty Period"), the Software will substantially perform in accordance with its documentation. Dialogic's sole liability and End User's exclusive remedy under this limited warranty shall be (i) the repair or replacement of the non-conforming Software or, (ii) at Dialogic's option, in the case of Software licensed under Section 2.1(a) the refund of the price paid by End User for the Dialogic Hardware or, in the case of host-based media processing software licensed under Section 2.1(b), the refund of the price paid by End User for the License Key.

b. The remedies set forth in Section 5.1(a) are available only if Dialogic is promptly notified in writing, within the applicable warranty period, upon discovery of the non-conformity by End User, and Dialogic's examination of the Software and/or Dialogic Hardware discloses that such non-conformity exists. This limited warranty shall not apply if the Software or Dialogic Hardware has been: (i) altered or modified; (ii) subjected to negligence, computer or electrical malfunction; or (iii) used, adjusted, installed or operated other than in accordance with instructions furnished by Dialogic or with an application or in an environment other than that intended or recommended by Dialogic.

5.2. Disclaimer of Any Other Warranties. EXCEPT FOR THE EXPRESS, LIMITED WARRANTY PROVIDED IN SECTION 5.1, DIALOGIC MAKES NO WARRANTIES, EITHER EXPRESS OR IMPLIED, WITH RESPECT TO THE SOFTWARE, AND DIALOGIC DISCLAIMS ALL IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR

PURPOSE AND NONINFRINGEMENT. DIALOGIC DOES NOT WARRANT THAT THE SOFTWARE WILL BE UNINTERRUPTED OR ERROR-FREE, OR THAT IT WILL SATISFY END USER'S REQUIREMENTS.

6. Limitation of Liability

6.1. IN NO EVENT SHALL DIALOGIC'S OR ITS LICENSORS' AGGREGATE LIABILITY ARISING UNDER THIS AGREEMENT EXCEED THE AMOUNTS PAID BY END USER TO DIALOGIC HEREUNDER.

6.2. IN NO EVENT WILL DIALOGIC OR ITS LICENSORS BE LIABLE TO END USER FOR SPECIAL, INCIDENTAL, CONSEQUENTIAL, EXEMPLARY, PUNITIVE, MULTIPLE OR OTHER INDIRECT DAMAGES, OR FOR LOSS OF PROFITS, LOSS OF DATA OR LOSS OF USE DAMAGES, ARISING OUT OF THIS AGREEMENT, WHETHER BASED UPON WARRANTY, CONTRACT, TORT, STRICT LIABILITY OR OTHERWISE, EVEN IF DIALOGIC HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES OR LOSSES.

7. Term and Termination

7.1. Termination. Dialogic shall have the right to terminate this Agreement and the license granted herein in the event End User fails to comply with any of the terms and conditions of this Agreement and such default has not been cured within thirty (30) days after written notice of such default.

7.2. Effect of Termination. Upon termination of this Agreement, all licenses and other rights granted under this Agreement will become null and void. Within five (5) days after termination of this Agreement, End User shall return to Dialogic or destroy, at End User's expense, the Software, including all copies thereof. Sections 2.2-2.6 and 4-10 shall survive termination of this Agreement.

8. U.S. Government Restricted Rights

If Software is acquired by or on behalf of a unit or agency of the United States government, the Software is provided as "commercial computer software" or "commercial computer software documentation" and, absent a written agreement to the contrary, the government's rights with respect to such Software are limited by the terms of this Agreement pursuant to FAR Paragraph 12.212(a) and/or DFARS Paragraph 227.7202-1(a), as applicable.

9. Export

End User shall comply with all export and re-export restrictions, laws and regulations of the U.S. Commerce Department and other U.S. agencies and authorities.

10. General

10.1. Assignment. This Agreement shall be binding upon and inure to the benefit of the parties hereto, and their respective successors and permitted assigns. End User shall not assign or otherwise transfer this Agreement or any rights or obligations hereunder, in whole or in part, whether by operation of law or otherwise, without Dialogic's prior written consent. Any purported transfer, assignment or delegation without such prior written consent will be null and void and of no force or effect.

10.2. Entire Agreement. This Agreement, together with any Special Terms, represents the entire agreement between the parties, and supersedes all prior agreements and understandings with respect to the matters covered by this Agreement. In the event of a conflict between this Agreement and the Special Terms, the Special Terms shall control. End User agrees that it has not entered in this Agreement based on any representations other than those contained herein. No modification of or amendment to this Agreement, nor any waiver of any rights under this Agreement, shall be effective unless in writing signed by the party to be charged.

10.3. Governing Law. This Agreement shall in all respects be governed by the laws of the Commonwealth of Massachusetts, excluding: (i) its conflicts of laws principles; (ii) the United Nations Convention on Contracts for the International Sale of Goods; (iii) the 1974 Convention on the Limitation Period in the International Sale of Goods; and (iv) the Protocol amending the 1974 Convention, done at Vienna April 11, 1980.

10.4. Severability. If any of the provisions of this Agreement is held by a court of competent jurisdiction to be invalid under any applicable statute or rule of law, such provision shall, to that extent, be deemed omitted, and the remaining portions of this Agreement shall remain in full force and effect.

10.5. Waiver. The waiver of one breach or default or any delay in exercising any rights shall not constitute a waiver of any subsequent breach or default.

10.6. Notices. All notices permitted or required under this Agreement shall be in writing and shall be delivered in person or mailed by first class, registered or certified mail, postage prepaid, to the address of the party specified on the first page of this Agreement or such other address as either party may specify in writing. Such notice shall be deemed to have been given upon receipt.

10.7. Headings. The headings are for convenience and shall not be used to construe this Agreement.

10.8. No Agency; Independent Contractors. Nothing contained in this Agreement shall be deemed to imply or constitute that either party is the agent or representative of the other party, or that both parties are joint ventures or partners for any purpose.

EXHIBIT A

THIRD PARTY SOFTWARE LICENSES

The Software includes object code versions of the following third party software packages, which are subject to the terms and conditions of the applicable license agreements found at the websites identified:

- ***ACE™ software and TAO™ software are copyrighted by Douglas C. Schmidt and his research group at Washington University, University of California, Irvine, and Vanderbilt University. Copyright (c) 1993-2003, all rights reserved. More information is available at: http://www.cs.wustl.edu/~schmidt/ACE.html***
- ***wxWindows software is copyrighted by Julian Smart, Robert Roebling et al. Copyright (c) 1998 Julian Smart, Robert Roebling et al. More information is available at: http://www.wxWindows.org***
- ***Portions of the Software are licensed under the Apache License, Version 2.0 (the "Apache License"); you may not use this file except in compliance with the Apache License. You may obtain a copy of the Apache License at: http://www.apache.org/licenses/LICENSE-2.0***

  Unless required by applicable law or agreed to in writing, software distributed under the Apache License is distributed on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied. See the Apache License for the specific language governing permissions and limitations under the Apache License.

Contents

About this Guide xv
Manual Conventions xv
Related Documents xvi
System Requirements for the Dialogic® Brooktrout® SR140 Fax Software xvii
Minimum System Requirements xvii
Requirements for Connecting to a Cisco Gateway xvii
Telephony Requirements xix
Supported Operating Systems xix
Getting Technical Support xix

Chapter 1 – Getting Started 1

Introduction 2
What is a Virtual Module? 2
What is a Software License? 2
What is Product Activation? 2
What is Configuration? 3
What is Involved in Getting it Working? 3
Quick Start Steps 4

Chapter 2 – Activating Dialogic® Brooktrout® Products 5

Preparing for Activation 7
Displaying Node IDs 7
Methods to Activate a License 7

Activating a License Using the Web 9
Activating a License Using Email or Fax 13
Installing Licenses 15
Managing License Files 16
Naming License Files 16
Backing Up Licenses 16
Removing Licenses 17
Replacing Lost or Unrecoverable Licenses 17
Re-Installing Your Product 17
Restoring License Files 18
Re-Hosting License Files 21

Chapter 3 – Configuring the SR140 27

Call Control Configuration File 28
Global Module Parameters 29
Configuring Ethernet Interface Parameters 31
Example of Call Control (callctrl.cfg) Files 32

Chapter 4 – Testing the SR140 35

fax 35
tfax 36

Chapter 5 – SR140 Specifications 37

Virtual Module Specifications 37
Call Control 38
Operating Systems 38
Models/Configurations 38

Preface

About this Guide

This Dialogic® Brooktrout® SR140 Fax Software User Guide contains the following:

- Chapter 1 explains getting started.
- Chapter 2 describes activating Dialogic® Brooktrout® products
- Chapter 3 describes configuring the Dialogic® Brooktrout® SR140 Fax Software.
- Chapter 4 explains testing the Dialogic® Brooktrout® SR140 Fax Software
- Chapter 5 provides virtual model specifications.

Note: Dialogic® Brooktrout® SR140 Fax Software is also referred to herein as the "SR140."

Manual Conventions

This manual uses the following conventions:

- ***Italics*** denote the names of variables in the prototype of a function, and file names, directory names, and program names within the general text.
- The **`Courier`** font in bold indicates a command sequence entered by the user at the system prompt, for example:

  ```
  cd /usr/sys/brooktrout/boston/bfv.api
  ```

- The `Courier` font not bolded indicates system output, for example:

  ```
  C:>Files installed.
  ```

- The `Courier` font also denotes programming code, such as C and C++. Programming code appears in program examples.
- ***Bold*** indicates the data type of the prototype of a function, Bfv API functions, dialog boxes, dialog box controls, windows, and menu items.
- Square brackets [ ] indicate that the information to be typed is optional.
- Angle brackets < > indicate that you must supply a value with the parameter.

The Caution icon is used to indicate an action that could cause harm to the software or hardware.

The Warning icon is used to indicate an action that could cause harm to the user.

Related Documents

For product information, white papers, FAQs, and more, access the Dialogic web site at ***www.dialogic.com***.

System Requirements for the Dialogic® Brooktrout® SR140 Fax Software

Minimum System Requirements

The minimum system requirements for running any number of SR140 channels is a Pentium P4 2.66 GHz with 512MB RAM. Refer to the ***Recommended System Configurations*** section of the SDK 5.2.0 Release Notes for a table describing the CPU utilization for this and other system types.

Requirements for Connecting to a Cisco Gateway

If you are interested in connecting to a Cisco gateway, see the Dialogic Technical Support Knowledge Base for White Paper 2120 "Connecting to IP Gateways/PBXs – example of a Cisco Gateway". You can access this white paper from the Dialogic Technical Support site for the Brooktrout product line at: http://www.cantata.com/support/btindex.cfm.

1. Click on ***Knowledge Base*** in the ***Related Links*** section of the left-hand column.
2. Enter "2120" in the Article # box in the left-hand column.

Should you choose to connect to a Cisco Gateway, consult the following:

- Access to the white paper (see instructions above).
- Prior knowledge of Cisco router installation and configurations.
- A basic understanding of Cisco networking and router/gateway configurations.
- Familiarity with basic internet technology.
- Certified or experienced in Cisco IOS router/gateway technology.
- A thorough understanding of LAN/WANs, bridges, switches, protocols, and network management.

Any router listed in the above-mentioned white paper, that you are deploying, should be running Cisco IOS version 12.3 (7) T or higher.

If you do not have these pre-requisites, you should seek assistance either internally from your IP network personnel that performs these functions in your own network, or an external professional who is certified in Cisco router installations and configurations.

Telephony Requirements

Physical	*Media*	*Call Control*
Ethernet 10/100	T.38	H.323
		SIP

Supported Operating Systems

A supported operating system is one for which the Brooktrout software has been designed and tested.

- Enterprise Linux ES/AS 3.0
- Enterprise Linux ES/AS 4.0
- Enterprise Linux ES/AS 5.0

Getting Technical Support

Dialogic provides technical support for customers who have purchased hardware or software products from Dialogic. If you purchased products from a reseller, please contact that reseller for technical support.

To obtain technical support, please use the following web site:

www.dialogic.com/support/

1 - Getting Started

This chapter provides an introduction and quick start installation instructions for installing the Dialogic® Brooktrout® software.

Introduction

What is a Virtual Module?

Dialogic's intelligent fax board platform, the Dialogic® Brooktrout®TR1034 Fax Board, provides Dialogic ISV (Integrated Software Vendor) partner's fax application with the capability to communicate from their application to the telephone or IP network. For software-only systems using IP only, Dialogic has implemented the SR140 as a virtual module. Although it is software, the SR140 appears to the fax application just like a board. That helps simplify your fax application publisher to provide a single product that works for hardware and software.

What is a Software License?

The SR140 Virtual Module is delivered inside your fax application. The SR140 license is the right to use the software products in an entitlement purchased from Dialogic. The license is represented by the contents of a License File that is used by the software to restrict use to that entitlement. When you install the software, you acknowledge the License Agreement that governs SR140 licensing.

A License Key is delivered in paper form and shows you what your entitlement is and allows you to apply your entitlement to a computer system when you intall the SR140 fax software.

Make sure to keep your License Key certificate in a safe place, where you can find it easily.

What is Product Activation?

As well as helping you stay within your entitlement, your SR140 software product uses copy protection technology. Following installation of the software, Product Activation is a process for tying a license to a particular system, limiting use of that licensed software to one computer system. Product Activation is simple and may be completed via the Internet, email or by fax and involves

supplying your License Key shown on the License Key certificate and a unique identifier of the computer system that can be used to lock a license to a computer (known as node-locking).

What is Configuration?

All modules - virtual modules or real boards - need to know how to handle call control over the IP network. Once you have installed the software and activated your product, you need to enter settings that control how connections are made between the IP network and the virtual module. This process is called configuration.

What is Involved in Getting it Working?

- ***Supported Operating System***

  For a list of supported operating systems see ***Supported Operating Systems on page xix***.

- ***Product Activation***

  For more information see ***Using the License Manager to Activate Brooktrout Products on page 9***.

- ***SR140 Configuration***

  For more information see ***Configuring the SR140 on page 27***.

- ***Test***

  For more information see ***Testing the SR140 on page 35***.

Quick Start Steps

When doing the installation, you need:

- Root privileges for the server

and either of the following:

- Enterprise Linux ES/AS 3.0
- Enterprise Linux ES/AS 4.0
- Enterprise Linux ES/AS 5.0

Use the installation program provided with your application software to install the software for the SR140.

2 - Activating Dialogic® Brooktrout® Products

This chapter describes how to activate a license for the SR140.

The SR140 functionality is protected against piracy and abuse by licensing technology that uses product activation. A License Key is sold to the user who exchanges the key for a license file during or after installing the software. The license file is tied to the system during activation by imprinting a unique system signature (a node ID) on the license file, and is based on the machine's MAC address.

The License Key can either be a unique, paid-for license key that provides a perpetual license or a demo license key that results in software that provides limited support for a limited time. Both types of product - licensed as demo or paid-for - require activation. You have several ways to activate the product.

The licensing software also verifies the following:

- ***The signature of the license is not broken.***
- ***The license is not expired.***
- ***The node ID of the license matches the node ID of the compute (sometimes referred to as the "Node Lock" of the computer).***

Please contact Technical Support if you are unable to use the license. See ***Getting Technical Support on page xix***.

Preparing for Activation

Because Dialogic® Brooktrout® Host Based Fax is an IP-based technology, Dialogic uses the IP network and the Internet to perform Product Activation. Ideally, the system you are installing on should be connected to an IP Network and to the Internet.

Archive the License Key Certificate and the License File once the product has been activated.

Note: Because the license software verifies if the system clock has been set back, you should ensure that the system date is set correctly.

Displaying Node IDs

You can run the listnodeid utility to print out the node ID. You need root privileges run the utility.

The following is an example of the output:

```
$ listnodeid
ID value (vendor defined): UYPWK6XWO1BGEKODJO4MLQ
```

The following is the default installation location for the listnodeid:

```
/usr/sys/brooktrout/boston/fw
```

To execute the lisnodeid you have to enter the following:

```
./listnodeid
```

Methods to Activate a License

- Using the interactive web method

  Activates licenses using the Dialogic License Activation website. After successfully processing activation information, you can choose to download the file immediately or have the license emailed to you. Within a couple of minutes Dialogic sends an email containing a license file, if you select the email option. See ***Activating a License Using the Web on page 9***.

- Create a request for email or fax

See ***Activating a License Using Email or Fax on page 13***. After successfully processing activation information, Dialogic sends an email containing a license file. Dialogic sends a license in about one working day.

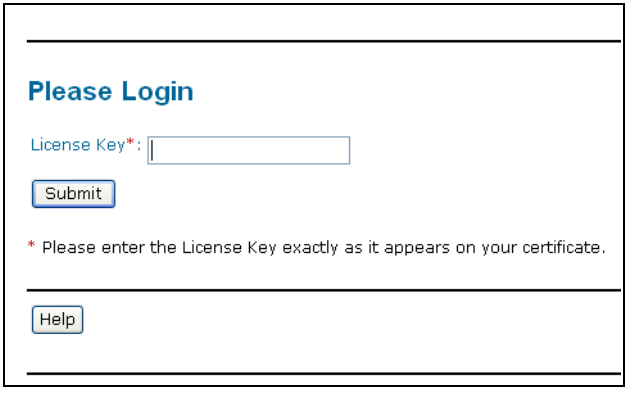
Activating a License Using the Web

You can activate your Dialogic® Brooktrout® license on the web using a computer that has web access. This can be a different computer than the server on which you are installing the SR140 virtual module.

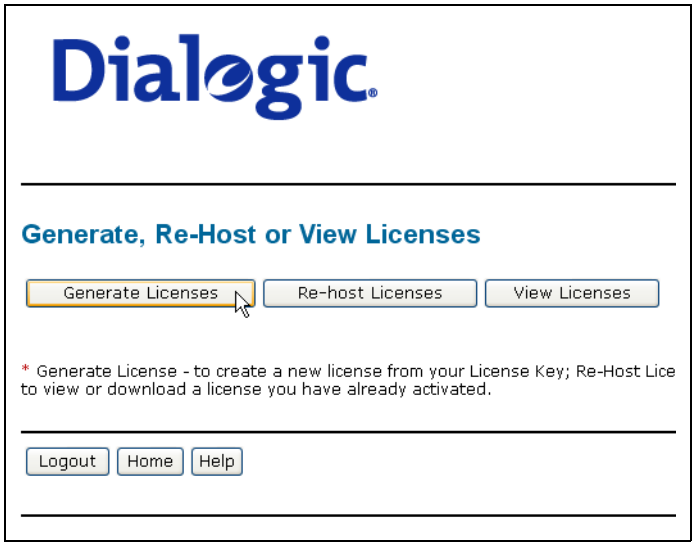
It is critical that you enter the node ID information on the website without errors. The software generates an unusable license when you enter incorrect node ID information. The second attempt to obtain the license using the corrected node ID information is considered a re-hosting. In this case, you to refer to ***Re-Hosting License Files on page 21***.

➢ ***Follow the steps below:***

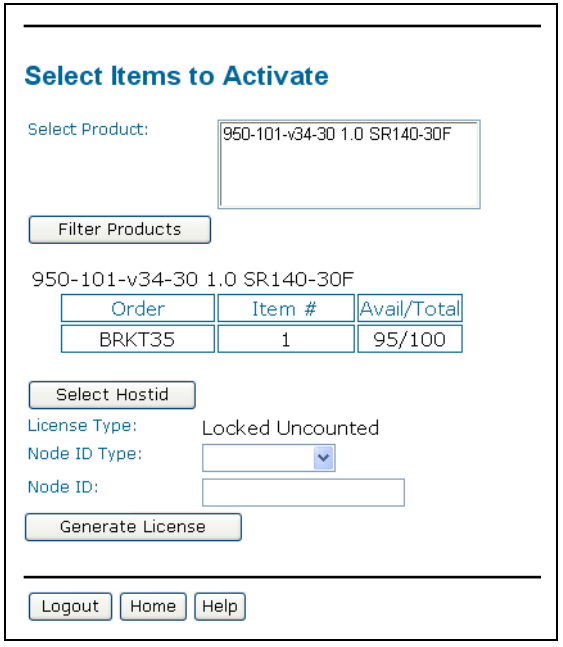
1. On a computer that has Internet Access, enter the web address ***www.dialogic.com/activation***, which directs you to a secure server. The following screen appears.



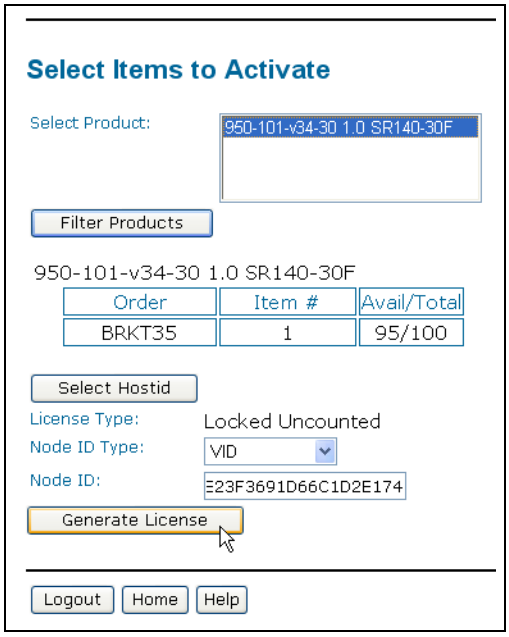
2. Enter your original License Key (this can be found on your License Key certificate) and click Submit. The following screen appears.



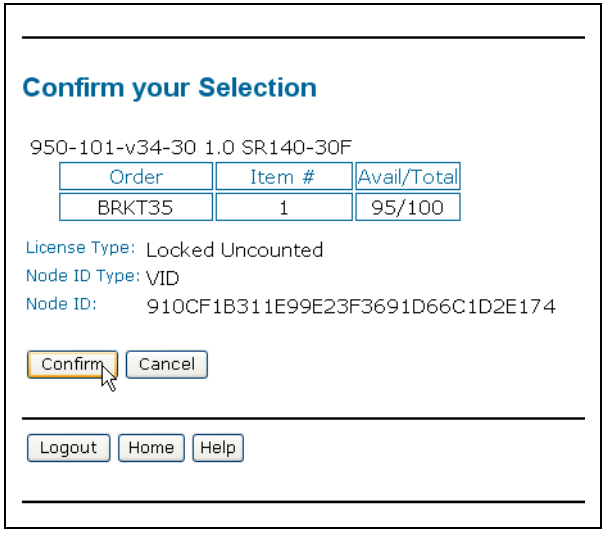
3. Click Generate Licenses. The following screen appears.



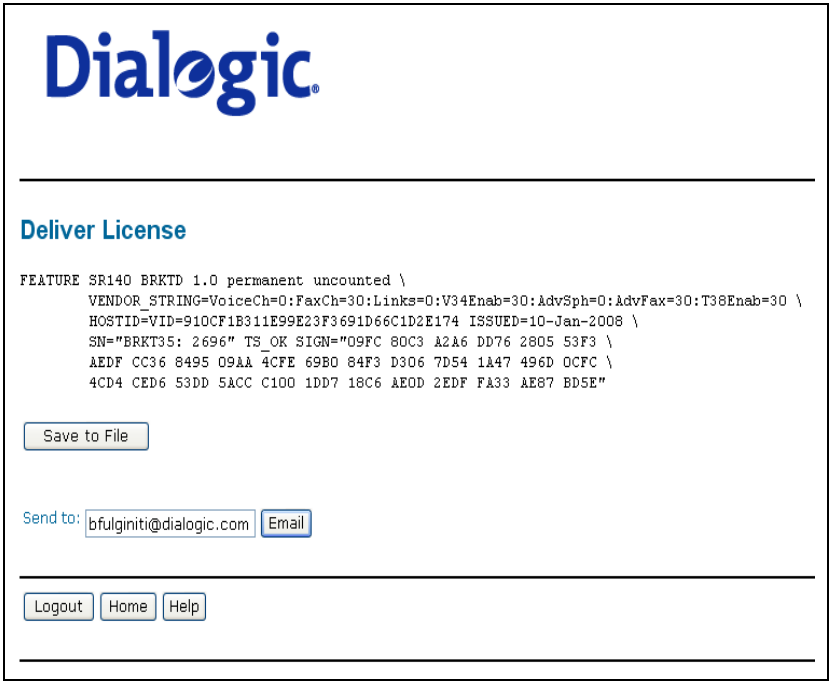
4. Select the Product you are activating. Select the Node ID Type and enter the Node ID.



5. Click Generate License.



6. Verify that the information on this screen is correct and click Confirm. The following screen appears.



7. Click Save to File or enter your email address and click Email to have the License emailed to you.
8. Follow the instructions ***Installing Licenses on page 15*** to install the license file.

Activating a License Using Email or Fax

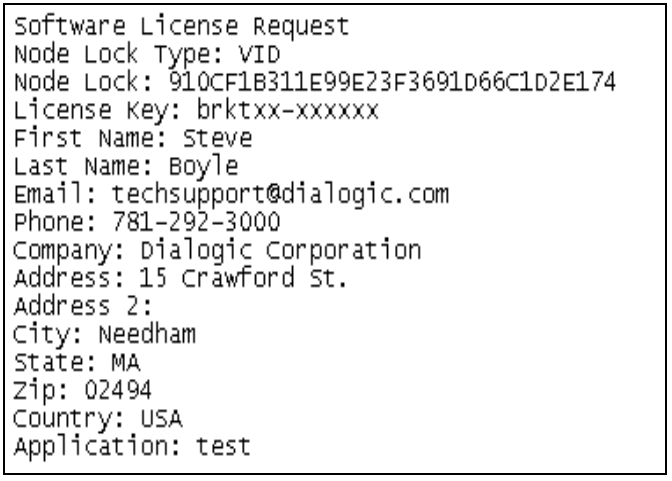
When your system cannot support the previous options (for example, you have no Internet connections) you can activate your license by sending the information to Dialogic using email or fax.

Note: If you activate your license by email or fax, Dialogic will send you the license file in about one business day.

➢ ***To activate a Brooktrout license by Email or Fax, follow the steps below:***

1. Create a Software License Request text file with the following information.
   - Node ID Type
   - Node ID
   - License Key
   - First Name
   - Last Name
   - Email
   - Phone
   - Company
   - Address
   - City
   - State
   - Zip
   - Country
   - Application
2. Email the saved file to activation@dialogic.com as an attachment, or fax this information to 781-433-2350 at the Dialogic License Activation Center for processing.
3. When you receive the license file from Dialogic, go to ***Installing Licenses on page 15*** to install it in the correct location. The following is a sample Software License Request file that you can use as a guide.

Figure 2-1 Sample Software License Request



Installing Licenses

The following environment variable must be set to the directory where the license files are located.

```
BRKTD_LICENSE_FILE
```

You can set the environment variable to point to any directory. Place a copy of your license files in the directory that you have chosen. The licensing software will automatically use the licenses when required.

Managing License Files

The section contains the following instructions to manage the license files:

- ***Naming License Files on page 16***
- ***Backing Up Licenses on page 16***
- ***Removing Licenses on page 17***
- ***Replacing Lost or Unrecoverable Licenses on page 17***
- ***Re-Installing Your Product on page 17***
- ***Restoring License Files on page 18***
- ***Re-Hosting License Files on page 21***

If you remove or add Ethernet network cards to your system, the license files may become invalid. To activate the products, re-host the licenses (see *Re-Hosting License Files on page 21*).

Naming License Files

All license files end with the ***.lic*** extension. One file can contain one or more licenses. The license filename is usually in either form:

dd-mmm-yyyy.lic

dd-mmm-yyyy-x.lic (next available number)

However, the license filename can be any filename with a ***.lic*** extension.

Backing Up Licenses

To back up licenses, copy all ****.lic*** files from the directory into a safe location. Copying the license files back to the same directory restores the licenses.

The path to the directory containing the license files can be found in the environment variable:
`BRKTD_LICENSE_FILE`

Removing Licenses

To remove a license follow the steps below. (You need to know the license serial number.)

1. You can find the path to ***.lic*** file in the environment variable:

   `BRKTD_LICENSE_FILE`

2. Open each ***.lic*** file until you find the file that includes the one with the serial number in it.
3. Delete the license containing that serial number.

   If there are no more entries in the ***.lic*** file, you can delete the file.

Replacing Lost or Unrecoverable Licenses

When a license is lost or not recoverable, get a new copy by going through the web activation process again. See ***Activating a License Using the Web on page 9***.

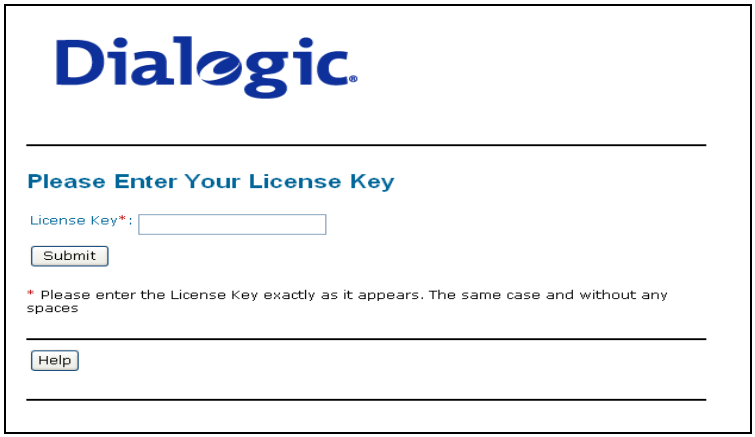
Re-Installing Your Product

If you want to simply re-install your product on the same computer system after upgrading or replacing your hard disk or any other upgrade that maintains the your network card's MAC address, you can use the same license file without having to re-activate your product.

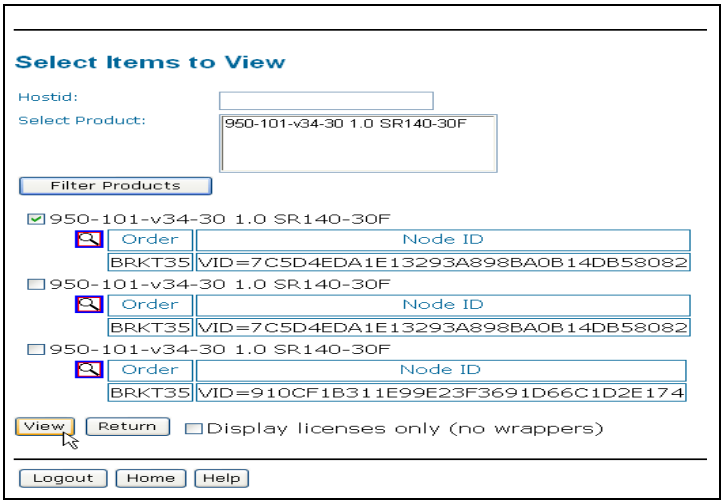
Restoring License Files

If anything ever happens to your computer that leads to corruption of your software and the License File, retrieving another copy is a simple procedure. To retrieve another copy of your License File, follow the steps below:

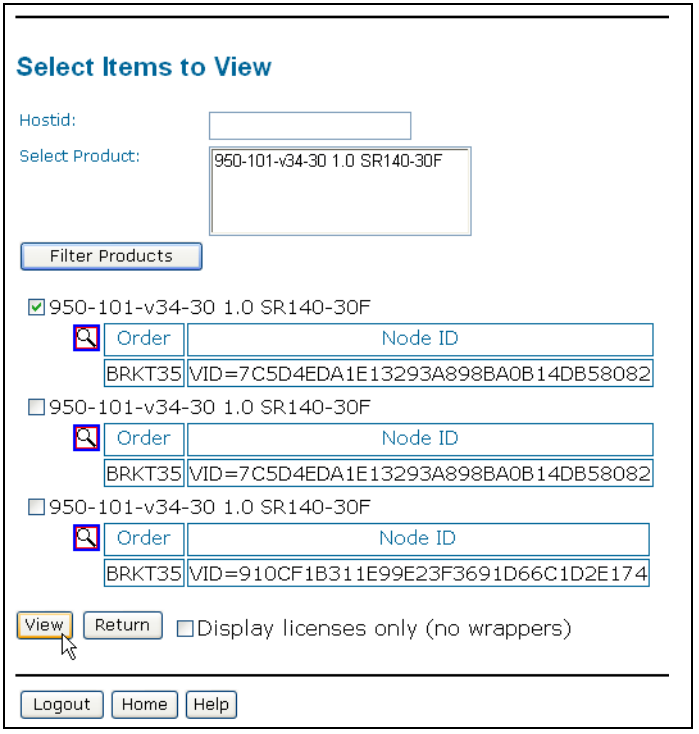
1. Visit the Dialogic activation website at: www.dialogic.com/activation. The following screen appears.



2. Enter your original License Key (this can be found on your License Key certificate) and click Submit. The following screen appears.



3. Click View Licenses. The following screen appears.



4. In the Select Product window, select your product and then select the appropriate Node ID. Click View. The following screen appears.

5. Click Save to File or enter your email address and click Email to have the License emailed to you.
6. Follow the instructions ***Installing Licenses on page 15*** to install the license file.

Re-Hosting License Files

To allow you to upgrade your computer to a new system or recover from a network card failure, Dialogic allows you to "re-host" your licensed software from one computer system to another. This process involves returning your current license and receiving another one.

The activation center web site allows you to automatically re-host your licensed software one time without technical support. For subsequent re-hosts you will need to contact Dialogic Technical Support.

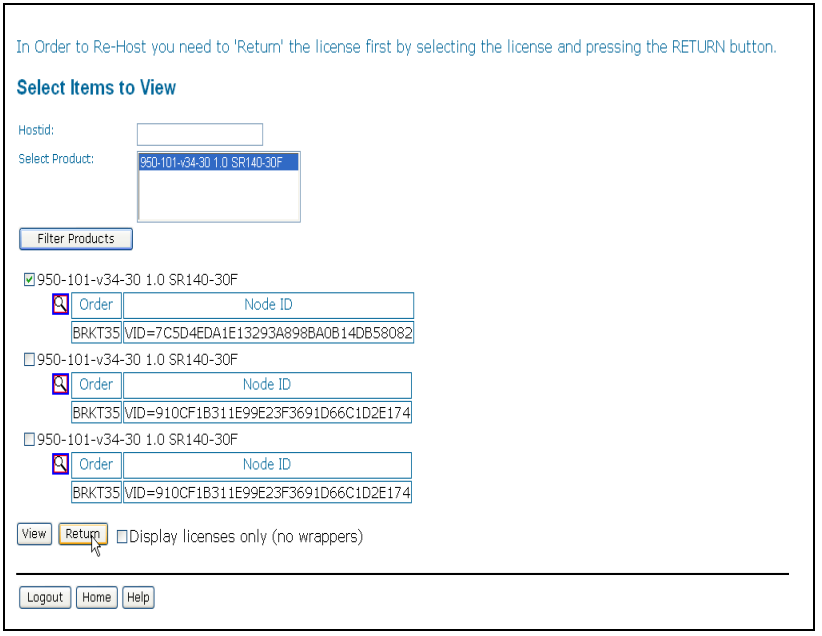
➢ ***Follow the steps below:***

1. Visit the Dialogic activation website at: www.dialogic.com/activation

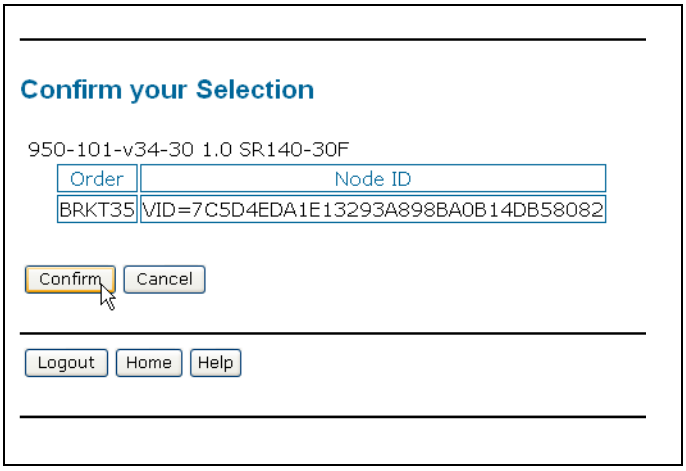
   The following screen appears.

2. Enter your original License Key (this can be found on your License Key certificate) and click Submit. The following screen appears

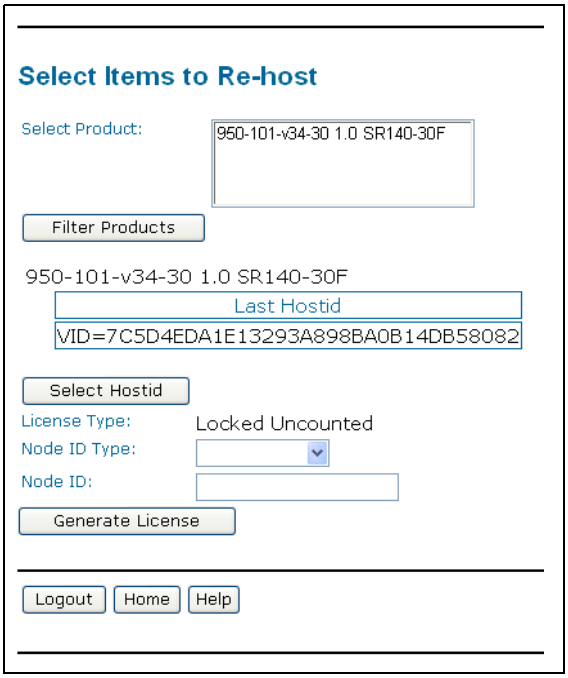
3. Click Re-host Licenses. The following screen appears.



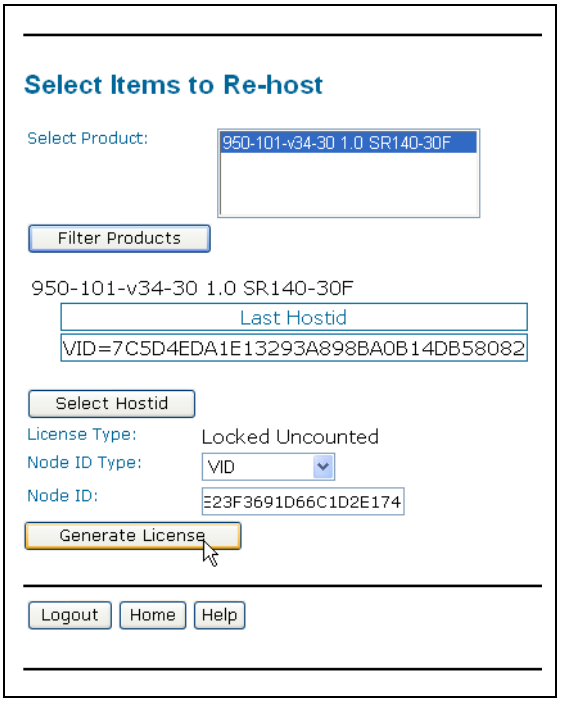
4. Select your product and click Return to return the license to Dialogic. The following screen appears.



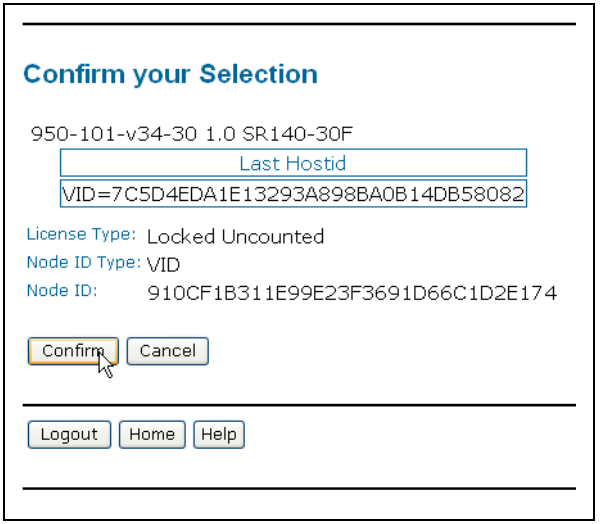
5. Verify that the information on this screen is correct and click Confirm. The following screen appears.



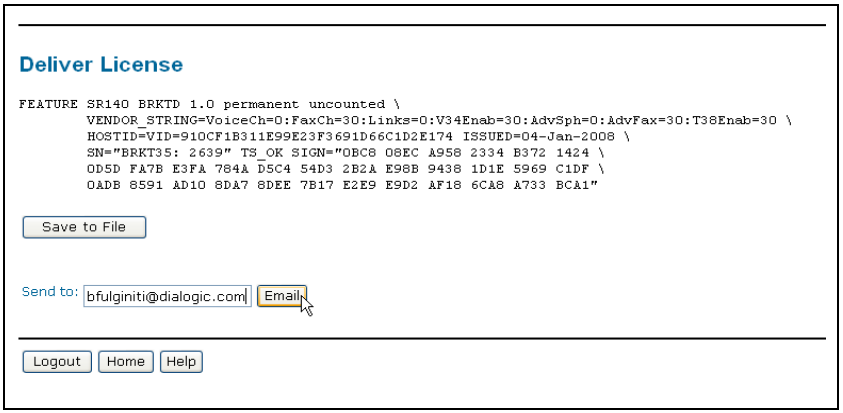
6. In the Select Product box click the product for which you are re-hosting. Select the Node ID Type and enter the Node ID. The Node ID Type must be VID (Vendor Defined Node ID).



7. Click Generate License. The following screen appears.



8. Click Confirm. The following license appears.



9. Click Save to File or enter your email address and click Email to have the License emailed to you.
10. Follow the instructions ***Installing Licenses on page 15*** to install the license file.

3 - Configuring the SR140

This chapter describes how to configure the software for your virtual modules.

Call Control Configuration File

The call control configuration file, which contains telephony and IP configuration parameters contains several keywords which are used to identify and configure an SR140 virtual module.

This chapter contains the Global Module Parameters and the Internet Protocol (IP) Call Control Configuration Parameter that you need to configure.

Note: Refer to the following two sample configuration files for complete files which can be copied and customized to suit your needs

```
callctrl_sip_hbf.cfg
callctrl_h323_hbf.cfg
```

Refer to the appendix ***Configuration Files*** in the Dialogic® Brooktrout® Bfv APIs Reference Manual for general instructions on creating configuration files.

Global Module Parameters

Set the following parameters to define configuration information that applies to the whole module (`module.#`). Set values for these parameters when you begin to define the configuration of a module.

Parameter **Value**

channels

Specifies the number of channels on either a hardware or virtual module configured to receive a firmware download.

Note: This parameter only applies when using the Boston Host Service (Bostsrv). If you use the service, you must start it before you start any applications (see your installation and configuration guide for instructions).

When the firmware is downloaded to a module for the first time, the assigned ordinal channel numbers start wherever the assignment left off on the previous module. As the system initializes the modules, this numbering process creates a continuous ordering of the channel assignments across all the modules in the system. On later downloads, each module's ordinals begin at the same location, regardless of any decrease or increase in the channel count of a lower-numbered module. Therefore, if you decrease the channel count for a lower numbered module, the process creates gaps in the channel numbering assignments, possibly affecting your application. If you attempt to increase the channel count above any module's initial channel count, the system ignores the added channels.

For the following situations, restart the driver whenever you want to:

1. Get a continuous assignment of channel numbers after decreasing the channel count on any module.
2. Increase the number of channels above a module's initial channel count.

Set this parameter as follows:

`0`	Specifies downloading the firmware to the default value of the number of channels on the module.
`1 – 1024`	Specifies a value defining the number of channels on the module configured to receive a firmware download.
Range:	`1 – 1024` (not to exceed the maximum number of available channels on the module).
Value Type:	decimal
Default:	`0`

vb_firm

Indicates that the module is a virtual module and specifies the filename of the shared library that contains the loadable firmware for the virtual module.

Note: This parameter only applies when using the Boston Host Service (Bostsrv). If you use the service, you must start it before you start any applications (see your installation and configuration guide for instructions).

Default: No default. Absence of the parameter indicates that the module is not a virtual module.

Configuring Ethernet Interface Parameters

In the module.#/`ethernet.#` section of the configuration file, identify the module's interface `x` using the 1-based index of the Ethernet interface. This index allows an application to configure modules with multiple interfaces. Set the following parameter for a module configured to use an Ethernet interface.

Parameter	Value
ip_interface	Specifies the identity of the device on the PC with the IP interface that the virtual module can use for sending IP messages. **Note:** This parameter only applies to host-based fax applications using a virtual module. Set the value of this parameter to the name of any device in the PC with an IP interface. If you do not provide a value (blank string), the virtual module chooses the first interface in the PC to send its messages. **Note:** The format for the value provided by this parameter is operating system dependent. The Linux format is the ethernet device name. For example: `ip_interface=eth0` ***Value Type:*** character string (up to 256 characters) ***Default:*** `<blank>` (the virtual module uses the first interface in the PC for sending IP messages)

Example of Call Control (callctrl.cfg) Files

This section provides example settings in a call control configuration file for the Single Virtual Module, Single Stack configuration:

```
[module.41]
# This parameter should be modified to point to the correct location of the
# bostvb.so
    vb_firm=/usr/sys/brooktrout/boston/fw/bostvb.so
# This parameter should be set to the number of channels licensed for the
# SR140 product
    channels=4


[module.41/ethernet.1]
       ip_interface=
       media_port_min=56000
       media_port_max=57000
[module.41/host_cc.1]
       host_module=1
       number_of_channels=4
[host_module.1]
    module_library=brktsip_mt.so
    enabled=true
[host_module.1/t38parameters]
    t38_fax_rate_management=transferredTCF
    t38_fax_version=0
    t38_max_bit_rate=14400
    t38_fax_udp_ec=t38UDPRedundancy
    media_renegotiate_delay_inbound=4000
    media_renegotiate_delay_outbound=-1
    t38_fax_fill_bit_removal=false
    t38_fax_transcoding_jbig=false
    t38_fax_transcoding_mmr=false
    t38_t30_fastnotify=true
    t38_UDPTL_redundancy_depth_control=5
    t38_UDPTL_redundancy_depth_image=2

[host_module.1/parameters]
    sip_Contact=0.0.0.0:0
    sip_description_URI=http:www.dialogic.com
    sip_default_gateway=0.0.0.0:0
    sip_email=
    sip_From=from@brooktrout.com
    sip_Max-Forwards=70
    sip_max_sessions=256
```

```
sip_phone=+1-4085551212
sip_proxy_server1=
sip_proxy_server2=
sip_proxy_server3=
sip_registration_interval=60
sip_registration_server1=
sip_registration_server2=
sip_registration_server3=
sip_session_description=description_brooktrout
sip_session_name=session_brooktrout
sip_username=brooktrout
```

4 - Testing the SR140

Dialogic includes a large collection of sample application programs and utilities with the Bfv API modules.

Sources for the sample applications are located in either ***boston/bfv.api/app.src*** or ***boston/bfv.api/bapp.src***

The following two sample applications allow you to test your configuration.

fax

- fax
- tfax

If you do not have access to these sample applications you can request them from your software supplier.

fax

The ***fax*** program uses the highest level infopkt file fax sending and receiving routines to send or receive facsimiles. The local ID is specified from the command line. (This application is very similar to ***faxhl.c***.)

API debug mode is turned on. The ***btcall.cfg*** file is the user configuration file. The ***fax*** program is found in the ***app.src*** directory.

Command Syntax

`fax [options] <infopktfile>`

Arguments

`<infopktfile>`	Name of the file to send or receive.
`-l <string>`	Set local ID.
`-L`	Loop for testing.
`-r`	Receive a fax.
`-s <num>`	Send to given phone number.
`-u <unitnum>`	Use specific channel number.
`-w`	On receive, do not wait for ring.

Requires one `-s` or `-r` argument.

tfax

The ***tfax*** program uses the low-level TIFF-F file fax sending and receiving routines to send and receive facsimiles.

Turn on the API ***debug*** program from the command line. The ***btcall.cfg*** file is the configuration file. The ***tfax*** program is found in the ***app.src*** directory.

Command Syntax

`tfax [-u <unitno>] [-v] -s <phoneno> <tiff_file>`

or

`tfax [-u <unitno>] [-v] -r <tiff_file>`

Arguments

`-r`	Receive mode.
`-s <phoneno>`	Send mode.
`<tiff_file>`	Name of the file to send or receive.
`-u <unitno>`	Channel number.
`-v`	Turn on API debug mode.

5 - SR140 Specifications

Virtual Module Specifications

Fax

- ITU T.30; ITU T.38; Group 3
- ASN.1 (2002)
- V.17, V.23, V.29, V.27ter, V.21, V.34 modulation
- Up to 33.6 Kbps with auto fallback
- Normal and fine resolution: 100x200, 200x200
- MH, MR, MMR compression
- Transparent image conversion
- A4, A3 and B4 page sizes with scaling
- A4 and B4 TIFF F file widths
- Enhanced ASCII conversion support with headers
- Error Correction Mode (ECM)
- Line error detection/repeat good line

Call Control

- H.323
- SIP

Operating Systems

- Enterprise Linux ES/AS 3.0
- Enterprise Linux ES/AS 4.0
- Enterprise Linux ES/AS 5.0

Models/Configurations

Model Name	***Description***
SR140-DEMO (1)	1 port T.38 HBF Demo license w/ 30 day time limit
SR140-DEMO (2)	2 port T.38 HBF Demo license w/ 30 day time limit
SR140-2F	2 port T.38 HBF
SR140-4F	4 port T.38 HBF
SR140-8F	8 port T.38 HBF
SR140-12F	12 port T.38 HBF
SR140-24F	24 port T.38 HBF
SR140-30F	30 port T.38 HBF
SR140-48F	48 port T.38 HBF
SR140-60F	60 port T.38 HBF
SR140-DEV	60 port T.38 HBF for Customer Development