

Installation Guide Supplement for Cisco Fax Server

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Overview

This document is designed to assist and guide the reader through the deployment models and procedures required for the Cisco Fax server solution. The material in this document is provided in addition to the Cisco Fax Server documentation provided on CD with the product, also available online at

http://www.cisco.com/en/US/products/ps6178/tsd_products_support_series_home.html.

Product Overview

The Cisco Fax Server is a comprehensive network fax solution for creating, sending, receiving, and managing faxes directly from a user's desktop computer. Cisco Fax Server features and intuitive design make faxing as easy as printing to a network printer.

The Cisco Fax server solution consists of

- A Cisco Media Convergence Server
- Open Text Fax Server 9.4, SR2 or higher
- Dialogic® Brooktrout SR140 software-only FoIP
- Optional: An IP-enabled Dialogic® Brooktrout Fax PCI board.

The Cisco Fax Server manages network print queues assigned to faxing, converts outgoing faxes, schedules outgoing faxes, and routes incoming faxes. Routing can be optimized with Intelligent Least-cost Routing™ rules. The server consists of several services that run on one server computer or several networked computers to distribute heavy workloads.

The Cisco Fax Server also utilizes all three International Telecom Union (ITU) fax transmission protocols:

- T.30 – Faxing over the publicly switched telephone network (PSTN). Used to establish and maintain communication between two fax devices
- T.37 – Store and forward faxing using the internet. Uses email protocols like MIME or SMTP to translate faxes into emails.
- T.38 – Real-time faxing over the internet, delivered like a fax call. Encapsulates the T.30 protocol into T.38 data stream.

The primary configuration of the Cisco Fax Server will emphasize the T.38 real-time Fax over IP (FoIP) solution, using a software-only option (i.e., no physical hardware boards to install).

The Cisco Fax Server FoIP solution supports direct connection to Cisco gateways or routers and Cisco Unified Communications Manager via the T.38 real-time FoIP standard. The connection uses a minimal amount of server processing power and supports SIP and H.323. Cisco Fax Server currently supports Cisco IOS Gateway Series and Universal Gateway Series as well as Cisco Unified Communications Manager as follows:

- Cisco Unified Communications Manager
 - For H.323: release 4.2.3 or later (within the 4.2.x product line)
 - For SIP: release 5.0.4(a) or later (within the 5.0.x product line)
 - For SIP and H.323; Open Text Fax v9.4 supports v7
- Cisco IOS Gateway Series (those capable of supporting T.38)
 - SIP, H.323, MGCP
 - IOS version 12.3T or later

Server Selection

The Cisco Fax Server can be installed on any supported Cisco Media Convergence Server (MCS). The following table shows the number of available PCI slots in each MCS model. Currently up to four Brooktrout TR1034 cards can be deployed per server for a maximum of 120 channels (if four 30 channel E-1 cards are used).

MCS Model	Available PCI Slots
MCS-7815-I1-ECS1	5 x Full PCI Slots
MCS-7825-H1-ECS1	1 x Full @ 133Mhz/64
MCS-7835-H1-ECS1	2 x Full @ 133Mhz/64
MCS-7835-I1-ECS1	2 x Full @ 133Mhz/64
MCS-7845-H1-ECS1	1x Full @ 133, 2x100Mhz
MCS-7845-H1-ECS2	1x Full @ 133, 2x100Mhz
MCS-7845-I1-ECS1	2xFull @ 133Mhz
MCS-7845-I1-ECS2	2xFull @ 133Mhz

The fax server is licensed on a per-channel basis. The default service license ships with a single channel license. You will need additional channel licenses for each concurrent fax connection. This is in addition to the number of fax channels enabled in the firmware of any installed fax boards. There is no restriction on the number of users defined on one fax server.

Dialogic® Brooktrout® SR140 FoIP Software

SR140 is supported in Cisco Fax Server (RightFax) 9.3 Feature Pack 1 or later. The product eliminates the use of a hardware fax board. Many benefits are recognized with SR140 as it supports a fax-over-IP standard (FoIP) called T.38. FoIP allows media processing and call control functions that were traditionally performed by specialized digital signal processors (DSP) on fax boards, to be performed on general purpose host CPU's like a Cisco Fax Server.

SR140 is available for the Cisco Fax Server in a variety of densities from 2 to 60 channels. SIP and H.323 protocols are supported. Up to 120 channels can be configured licensed as two, sixty channel keys.

All SR140 channels require license key activation, however. The license key determines the number of concurrent fax channels that was ordered with the server. Do not attempt to setup and configure prior to activating the license key.

SR140 can be installed on the local Cisco Fax Server host CPU or remotely on other machines that are running a remote DocTransport service (discussed later in this document).

Dialogic® Brooktrout® Fax Boards

A fax board may be operated in TDM mode or IP mode, but not both. One fax server may contain a maximum of four boards operating in different modes.

Your fax board will have been shipped with either a T1 or E1 presentation; an Ethernet interface for IP operation; and 4,8,12,16,20,24, or 30 enabled fax channels.

When operating in IP mode the fax board may send and receive faxes from and to multiple T.38-enabled Cisco routers. The board firmware will be licensed for the ordered number of concurrent fax transmissions. The fax server must also have licensed fax channels to support all of the enabled channels across all accessible fax boards.

Fax boards may be locally installed in the fax server or installed in remote board servers. (Refer to fax server documentation for more information on remote board servers.) For fax board installation, refer to the documentation that accompanied your fax board.

Deployment Models

The Cisco Fax Server can be deployed and integrated into your network infrastructure in a variety of ways. However, just about all of the integrations and deployment solutions for the Cisco Fax Server are derivatives of one of the following models:

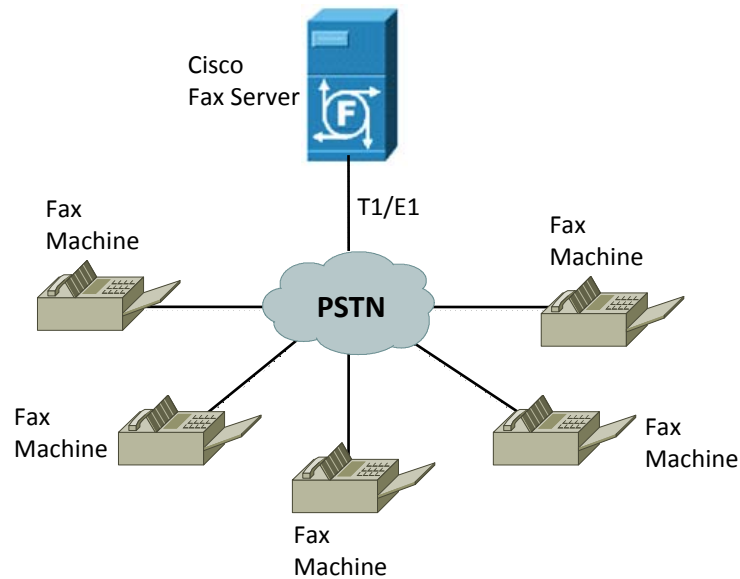
- TDM Connection
- Voice Gateway Integration
- Cisco Unified Communications Manager Integration

The TDM connection deployment model was used before FoIP became a practical alternative and it involves a T1 or E1 circuit connected straight into the Cisco Fax Server. This model is still used occasionally but the majority of the Cisco Fax Server deployments today use IP. The two IP-based deployment models involve the Cisco Fax Server communicating directly with Cisco voice gateways or communicating with Cisco Unified Communications Manager. These popular deployment models use IP to enable fax communications over your IP Telephony infrastructure. Each of these three deployment models will be discussed in further detail in the following sections.

TDM Connection

The Cisco Fax Server can be connected directly to a T1 or E1 TDM circuit. This type of deployment however requires a Dialogic Brooktrout fax board to be installed in the server itself to terminate the T1/E1 connection. With the other IP-based deployment models a fax board such as this is optional. An example of this type of deployment is shown in Figure 1.

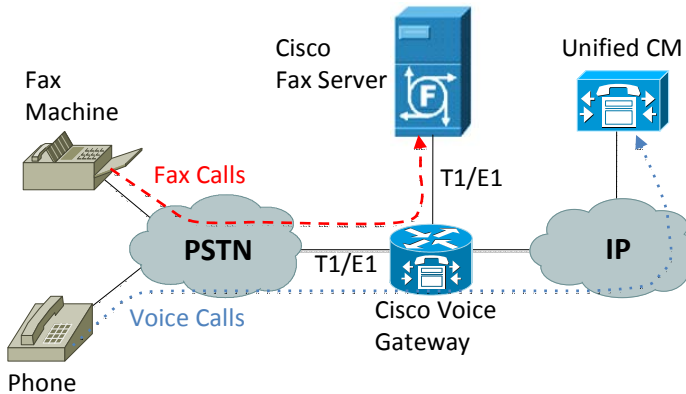
Figure 1: Cisco Fax Server Connecting Directly to the PSTN via a T1 or E1 Digital Circuit



One strategy that is often used is to initially implement a legacy deployment model with a TDM connection as shown in Figure 1. Then, when you are ready to migrate to FoIP, it is an easy transition as the current Dialogic Brooktrout fax boards can also be IP enabled. The advantage here is that the migration is simple because the same physical Cisco Fax Server can transition from a legacy fax server with a TDM connection to an IP fax server.

A variation of plugging the T1 or E1 circuit directly into Dialogic Brooktrout card of the fax server itself is to hairpin the fax calls between telephony ports on a voice gateway. As shown in Figure 2, fax calls are simply cross-connected between two ports on a voice gateway in what is commonly referred to as a "hairpin call".

Figure 2: Connecting the Cisco Fax Server to the PSTN Through an IOS Voice Gateway as a Hairpin Call



In Figure 2, both voice calls and fax calls use the same physical PSTN T1 connection that is terminated on a single T1 voice port on a Cisco IOS voice gateway. Another T1 circuit on a separate gateway voice port connects directly to the Cisco Fax Server. For calls coming into the voice gateway on the PSTN T1, the voice gateway distinguishes voice and fax calls by the DNIS number and then based on this DNIS information routes the voice and fax calls appropriately. In the case of Figure 2, voice calls received on the PSTN T1 circuit are converted to IP for interfacing with Cisco Unified Communications Manager. Fax calls coming in over the PSTN T1 are cross-connected to the T1 voice port going to the Cisco Fax Server.

When implementing a hairpin call scenario with the Cisco Fax Server and a Cisco IOS voice gateway, you want to make sure that the connection is “dsp-less”. In the optimum situation, the DSP drops out of the call path and the Cisco Fax Server has a direct connection to the PSTN circuit through the Cisco voice gateway. If the DSP stays involved in the call then it continues to

process and make slight changes to the TDM stream. To ensure that the DSP is able to drop out of the hairpin call, please follow these basic rules:

- The command `local-bypass` under the voice-card submenu is enabled by default on Cisco IOS voice gateways but you should make sure that it has not been inadvertently disabled.
- If the T1/E1 voice ports reside in separate module slots on the voice gateway, then make sure that the gateway has a TDM backplane (like in the 2800 and 3800 series of IOS voice gateways) and that both module slots are part of the backplane clocking scheme. This is accomplished using the `network-clock-participate` command.
- The DSPs involved in the hairpin call must be of the same type. For example, you could perform a hairpin call between a voice port using a c549 DSP and another voice port that is using a c5510 DSP.

From a configuration perspective, hairpin calls are set up using an inbound and outbound POTS dial peer on the Cisco voice gateway. For more information on administering dial peers please see the following link on www.cisco.com:

http://www.cisco.com/en/US/docs/ios/voice/dialpeer/configuration/guide/vd_dp_feat_cfg_ps6350_TSD_Products_Configuration_Guide_Chapter.html

If you are going to implement this integration model, it is important to reemphasize the requirement for a Dialogic Brooktrout fax board to be installed in your server. Additionally, you will need a dedicated telephony circuit to the PSTN. This is typically a full T1/E1 digital circuit or at least dedicated fax channels residing on a T1/E1 circuit. Additionally, even though a Cisco voice gateway may be involved from a hairpin call perspective, this is a dedicated PSTN connection for the Cisco Fax Server and IP faxing is not part of this deployment model. For IP fax related deployment models involving the Cisco Fax Server, please see the next two sections.

Voice Gateway Integration

The Cisco Fax Server can communicate directly with Cisco voice gateways using the IP protocol. Any Cisco voice gateway that supports standards-based T.38 fax relay is compatible with the Cisco Fax Server. The T.38 fax relay standard is an ITU-T specification designed to efficiently and reliably transport fax communications over IP networks. IOS voice gateways with full T.38 fax relay support, such as the 2800 and 3800 series, are the most common Cisco gateways used with the Cisco Fax Server.

Communication between the Cisco Fax Server and Cisco voice gateways occurs using one of two call control protocols, H.323 or SIP. The H.323 or SIP call control protocol is responsible for setting up the T.38 connection between the Cisco Fax Server and the Cisco voice gateway. From a fax over IP functionality standpoint, no real advantages are gained from deploying one of these call control protocols over the other. Therefore, you should use the protocol that you are more familiar with and the one that is a better fit in your existing VoIP environment.

The simplest voice gateway integration model involves the Cisco Fax Server communicating with a single voice gateway. In some cases, this type of integration is all that is necessary but most voice gateway deployment models will integrate the Cisco Fax Server with multiple voice gateways. In Figure 3, you can see how a Cisco Fax Server can communicate with different voice gateways to perform functions such as least cost routing to a voice gateway that is local to the fax destination.

Figure 3: Voice Gateway Deployment Model for the Cisco Fax Server

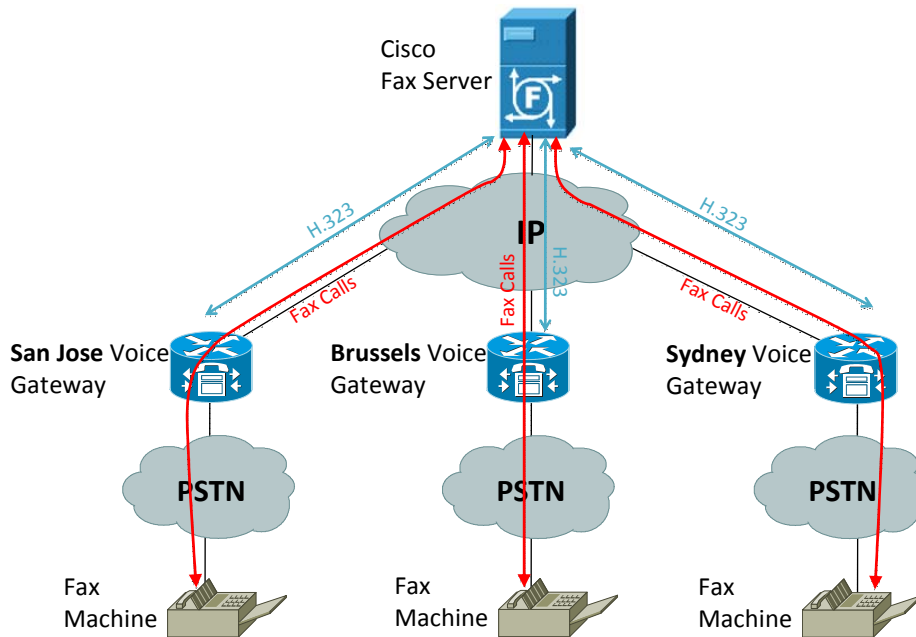


Figure 3 illustrates Cisco voice gateways at locations in San Jose, Brussels, and Sydney. An IP network provides connectivity between the Cisco Fax Server and the Cisco voice gateways in these geographically separate locations. In this example, communications between the Cisco Fax Server and the voice gateways occurs using the H.323 call control protocol but SIP could have just as easily been shown.

From a call routing perspective, the Cisco Fax Server can be configured with multiple dialing rules for sending outgoing faxes to a specific voice gateway. The same sort of configuration can be configured on the voice gateways as well using voice dial-peers in the inbound direction towards the Cisco Fax Server. A sample dial-peer configuration on a Cisco IOS voice gateway that is compatible with the Cisco Fax Server can be found below in Example 1.

Example 1: IOS Voice Gateway Dial Peer Configuration for Communicating with a Cisco Fax Server

```

!
dial-peer voice 6 voip
  incoming called-number .
  destination-pattern 6000
  codec g711ulaw
  session target ipv4:192.168.10.2
  fax protocol t38 ls-redundancy 0 hs-redundancy 0 fallback none
!
dial-peer voice 7 pots
  destination-pattern 7000
  port 0/0/0
!

```

Because every call in a Cisco IOS voice gateway requires two call legs, you will notice configurations for both a voip and a pots dial peer in Example 1. All fax over IP configurations

for H.323 and SIP on a Cisco IOS voice gateway occur on the voip dial peer. This explains why the voip dial peer in Example 1 contains more configuration commands than the pots dial peer. You should also be aware that the sample configuration in Example 1 changes from H.323 to SIP by simply adding the IOS configuration command `session protocol sipv2` to the voip dial peer.

The voip dial peer in Example 1 is a dial peer that is used for both inbound and outbound fax calls. Its destination pattern of 6000 routes calls that arrive from the PSTN to the Cisco Fax Server at IP address 192.168.10.2 and the command `incoming called-number` ensures that calls from the fax server to the PSTN also match this dial peer and inherit its properties.

Configured under the voip dial peer in Example 1 are two critical commands for interoperating with the Cisco Fax Server. The first is the command `codec g711ulaw`. The Cisco Fax Server only supports the G.711 codec so either G.711 a-law or u-law need to be configured under the voice dial peer. Alternatively, instead of configuring the G.711 codec directly under the dial peer you could also set up a voice class codec that includes G.711. By default, Cisco IOS voice gateways use the G.729 codec, which is not supported by the Cisco Fax Server, so explicitly configuring the G.711 codec for voip dial peer that will be used for calls involving a Cisco Fax Server is essential.

The second critical command is `fax protocol t38 ls-redundancy 0 hs-redundancy 0 fallback none`. While a Cisco IOS voice gateway can support a number of different fax transport protocols, the Cisco Fax Server only supports standards-based T.38 fax relay. Additionally, Cisco fax relay is the default fax transport mechanism so standards-based T.38 fax relay must be explicitly configured under the voip dial peer or globally under the voice service voip section of the IOS voice gateway configuration.

The voice gateway deployment model is reliable and the easiest way to integrate the Cisco Fax Server into a Cisco IP telephony environment. The only drawback of this solution is that it does not leverage Cisco Unified Communications Manager. While integrating the Cisco Fax Server with Cisco Unified Communications Manager can be a bit more complicated, at the same time it offers some pretty compelling advantages as well. The next section discusses in detail the deployment model for integrating the Cisco Fax Server with the Cisco Unified Communications Manager.

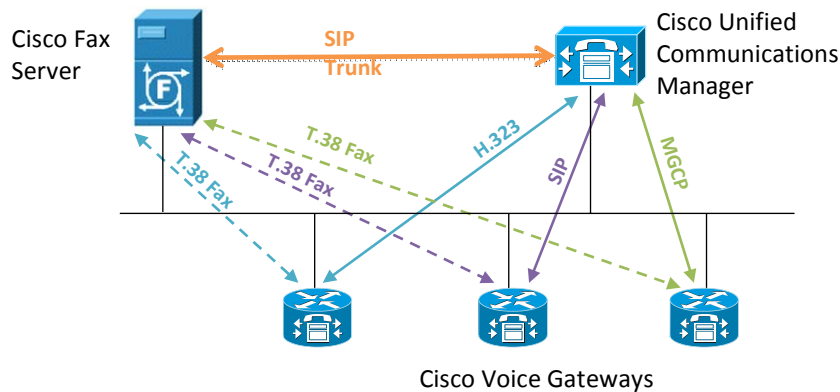
Cisco Unified Communications Manager Integration

Integrating the Cisco Fax Server with the Cisco Unified Communications Manager tends to be the most optimal solution. The two primary reasons why this integration is so compelling is the following:

- Cisco Unified Communications Manager handles all of the call routing for both voice and fax traffic. Instead of having the Cisco Fax Server maintain its own dialing rules and routing information, all outbound fax calls are sent to the Cisco Unified Communications Manager to be routed in the most efficient manner. After all, Cisco Unified Communications Manager already has knowledge of the whole network and is already making the same type of call routing decisions for voice calls. Conversely, all incoming fax calls are simply passed to the Cisco Fax Server from Cisco Unified Communications Manager for the appropriate delivery to the end user.
- Cisco Unified Communications Manager can provide the Cisco Fax Server access to MGCP controlled voice gateways. The Cisco Fax Server only supports H.323 and SIP as call control protocols and without Cisco Unified Communications Manager it cannot talk to MGCP voice gateways.

Cisco Unified Communications Manager supports both the H.323 and SIP call control protocols when communicating directly with the Cisco Fax Server. For H.323 integrations, the Cisco Fax Server is simply added as an H.323 Gateway. For SIP scenarios, you configure Cisco Unified Communications Manager for a SIP trunk connection to the Cisco Fax Server. Once the H.323 or SIP connection is established between Cisco Unified Communications Manager and the Cisco Fax Server, then the Cisco Fax Server has access to all of the H.323, SIP, and MGCP voice gateways that are also connected to Cisco Unified Communications Manager. Figure 4 highlights a Cisco Fax Server integration with the Cisco Unified Communications Manager.

Figure 4: Cisco Unified Communications Manager Deployment Model for the Cisco Fax Server



Compared to the voice gateway integration model that was previously discussed, the Cisco Fax Server in Figure 4 only needs to connect to Cisco Unified Communications Manager instead of separate connections and dialing rules for every gateway it needs to communicate with. This makes dial plan management much easier on the Cisco Fax Server and leverages the VoIP dial plan that is already in place.

You can see in Figure 4 that even though the connection between the Cisco Fax Server and Cisco Unified Communications Manager is SIP, this does not restrict T.38 fax calls from being set up with gateways that are using the H.323 and MGCP call control protocols. This is because Cisco Unified Communications Manager terminates the call control between the devices and can translate between SIP and H.323 and MGCP.

In older versions of Cisco Unified Communications Manager, T.38 support was not available for all call control protocols. Therefore, please refer to Table 1 to verify that Cisco Unified Communications Manager supports T.38 for the call control protocols that you will be using.

Table 1: T.38 Fax Relay Support in Cisco Unified Communications Manager

T.38 Signaling Protocol Support	Cisco Unified CM Software Release
H.323 Support for T.38	4.1(1), 4.2(3), 5.0(1), 6.0(1), and higher
H.323 and MGCP Support for T.38	4.2(3), 6.0(1), and higher
H.323 and SIP Support for T.38	5.0(1), 6.0(1), and higher
H.323, SIP, and MGCP Support for T.38	6.0(1) and higher

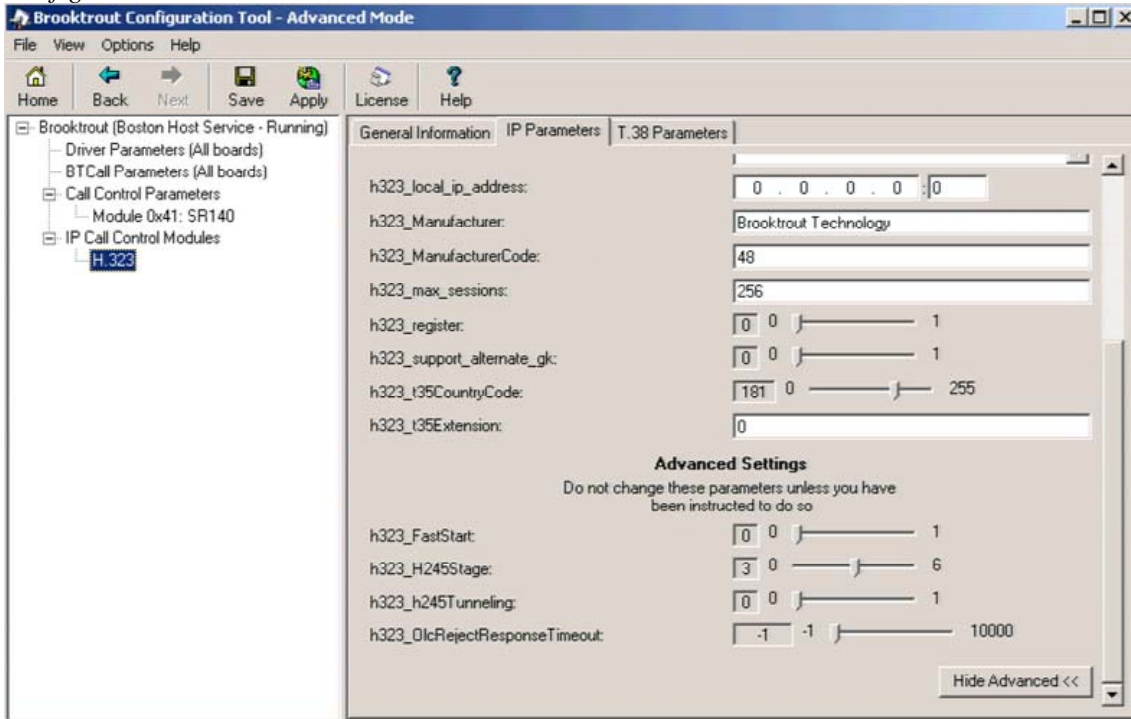
Referencing Table 1, the latest versions of Cisco Unified Communications Manager, including the 6.0, 6.1, and 7.0 branches, all have T.38 support for the H.323, SIP, and MGCP call control protocols. Therefore, these versions of Cisco Unified Communications Manager give you the most interoperability from a call control perspective and are the recommended software versions for integrating with a Cisco Fax Server.

Interoperability Issues

Depending on the version of Cisco Fax Server and Cisco Unified Communications Manager that are being deployed, you should be aware of the following two issues that may be encountered. The first involves the H.323 call control protocol and second involves SIP.

In the versions of Cisco Unified Communications Manager that lack support for H.323 fast start and H.245 tunneling, some tweaks must be made on the Cisco Fax Server using the Brooktrout Configuration Tool to ensure interoperability. Specifically, the h323_FastStart parameter must be set to 0, the h323_h245Tunneling parameter must be set to 0, and the h323_H245Stage parameter should be set to 3 as shown in Figure 5.

Figure 5: Setting the H.323 Fast Start and H245 Tunneling Parameters Using the Brooktrout Configuration Tool



The other issue that can be encountered is when integrating Cisco Fax Server version 9.3 with Cisco Unified Communications Manager 6.1 or 7.0 using the SIP protocol. SIP interoperability

problems are present in these specific releases and the workarounds are to use H.323 as the call control protocol or upgrade to Cisco Fax Server version 9.4 or higher. In fact, as a general rule of thumb you probably want to make sure that only Cisco Fax Server version 9.4 or later is used for SIP integrations with Cisco Unified Communications Manager.

Voice Gateways

For H.323 and SIP voice gateways connected to Cisco Unified Communications Manager that need to communicate via a T.38 with the Cisco Fax Server, the sample configuration in Example 1 can be used. The only difference is that the IP address specified by the session target ipv4 command needs to point to Cisco Unified Communications Manager instead of the Cisco Fax Server.

For example, if the Cisco Fax Server has an IP address of 192.168.10.2 as shown in Example 1 and Cisco Unified Communications Manager has an IP address of 192.168.10.3, then you must change point the voip dial peer to use session target ipv4:192.168.10.3. You must point the voip dial peers in your voice gateways directly to Cisco Unified Communications Manager to implement a Cisco Fax Server deployment model using Cisco Unified Communications Manager. Otherwise, the voice gateways will just talk directly to the Cisco Fax Server and you will be implementing a voice gateway integration deployment model.

In many cases, you may be adding the Cisco Fax Server into an existing VoIP network that already is using Cisco Unified Communications Manager. For these cases, the same H.323 and SIP VoIP dial peers that are already pointing to Cisco Unified Communications Manager can be used for fax communications as well. You will just need to make sure that the appropriate fax server related commands are added to these voip dial peers.

As mentioned previously, MGCP voice gateways are accessible to the Cisco Fax Server when it is integrated with Cisco Unified Communications Manager. However, MGCP voice gateways are configured differently than those using the H.323 and SIP call control protocols. MGCP commands necessary for T.38 fax relay are all configured globally and not under dial peers in the Cisco IOS voice gateways. These commands are highlighted in Example 2.

Example 2: IOS Gateway T.38 MGCP Configuration for Cisco Fax Server Integration

```

!
no mgcp fax t38 inhibit
mgcp package-capability fxr-package
mgcp default-package fxr-package
!

```

The first command in Example 2, **no mgcp fax t38 inhibit** enables T.38 fax relay on the MGCP voice gateway. The second and third commands, **mgcp package-capability fxr-package** and **mgcp default-package fxr-package** enable standards-based T.38 fax relay and ensure that the transition to T.38 fax relay occurs in the MGCP call control protocol. By default, Cisco MGCP voice gateways are configured for T.38 fax relay using a proprietary switchover mechanism that is not compatible with the Cisco Fax Server. You should also be aware that some of the commands in Example 2 may already be enabled by default and are therefore not present in the IOS configuration.

Once you have configured the MGCP commands in Example 2, you must reset the MGCP process running on the voice gateway for the commands to take effect. This is commonly accomplished through issuing the IOS configuration commands **no mgcp** and then **mgcp** or reloading the gateway.

If you use the MGCP “auto-configure” feature where the Cisco Unified Communications Manager creates and loads the MGCP configuration for IOS MGCP voice gateways, then you should be aware that the correct T.38 configuration might not be implemented with this feature. Once Cisco Unified Communications Manager has loaded the MGCP voice gateway configuration, then you should manually verify the MGCP gateway’s IOS configuration file. Usually you will need to manually add in the IOS configuration commands shown in Example 2.

Configuring Fax Server for FoIP Operation

Configuring Dialogic® Brooktrout® SR140

The list of tasks to operate the Cisco Fax Server with SR140 follow; the tasks are discussed in further detail in the sections following the task list:

1. Using the Fax Server’s DocTransport service, “ADD” an SR140 transport method.
2. Activate the SR140 license key.
 - a. Add an SR140 transport method to DocTransport (above).
 - b. Run the Dialogic (Brooktrout) Configuration Tool and License Manager.
 - i. Run the License Wizard.
 1. Choose from three methods to activate the license key.
3. Configure the transport’s global settings.
4. Configure SR140 transport to work with the Cisco Fax Server.
5. Configure Dialogic-related settings using the Brooktrout Configuration Tool.

1. Adding an SR 140 transport method

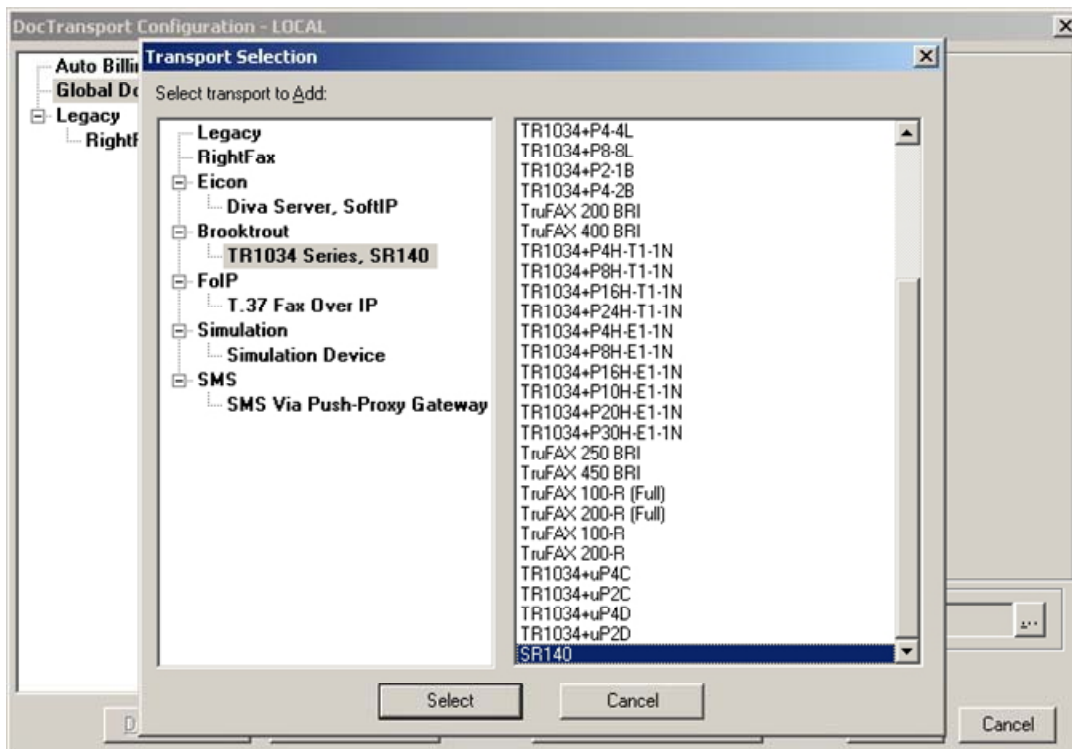
Note: This task can be accomplished at the same time as activating the SR140 license described in the next section.

The Cisco Fax Server uses a series of services to manage all aspects of network faxing. One service, called the DocTransport module, allows the administrator to configure the methods by which the Fax Server will be able to transmit documents. When preparing to use SR140, a new transport “method” must be added.

Note: SR140 can be configured anywhere a DocTransport is installed. When not installed on the primary Cisco Fax Server host CPU , they are called “remote DocTransports”.

To add an SR140 Transport Method

- a. Click the Add Transport button. This opens the Transport Selection dialog box.



- b. Expand the tree in the left pane and select the transport method to add.
- c. When selecting SR140, you must also select it in the right pane.
- d. Click Select to add the new transport method.

2. SR140 License key activation

The Brooktrout License Manager, provided by Dialogic® allows you to self-activate your SR140 license key. Instructions and an activation wizard are included with this tool.

SR140 is able to be licensed for the Cisco Fax Server in a variety of densities from 2 to 60 channels as follows:

- SR140-2F; 2 Channel T.38 (V.17); SIP; H.323; Host Based Fax License
- SR140-4F; 4 Channel T.38 (V.17); SIP; H.323; Host Based Fax License
- SR140-8F; 8 Channel T.38 (V.17); SIP; H.323; Host Based Fax License
- SR140-12F; 12 Channel T.38 (V.17); SIP; H.323; Host Based Fax License
- SR140-24F; 24 Channel T.38 (V.17); SIP; H.323; Host Based Fax License
- SR140-30F; 30 Channel T.38 (V.17); SIP; H.323; Host Based Fax License
- SR140-48F; 48 Channel T.38 (V.17); SIP; H.323; Host Based Fax License
- SR140-60F; 60 Channel T.38 (V.17); SIP; H.323; Host Based Fax License

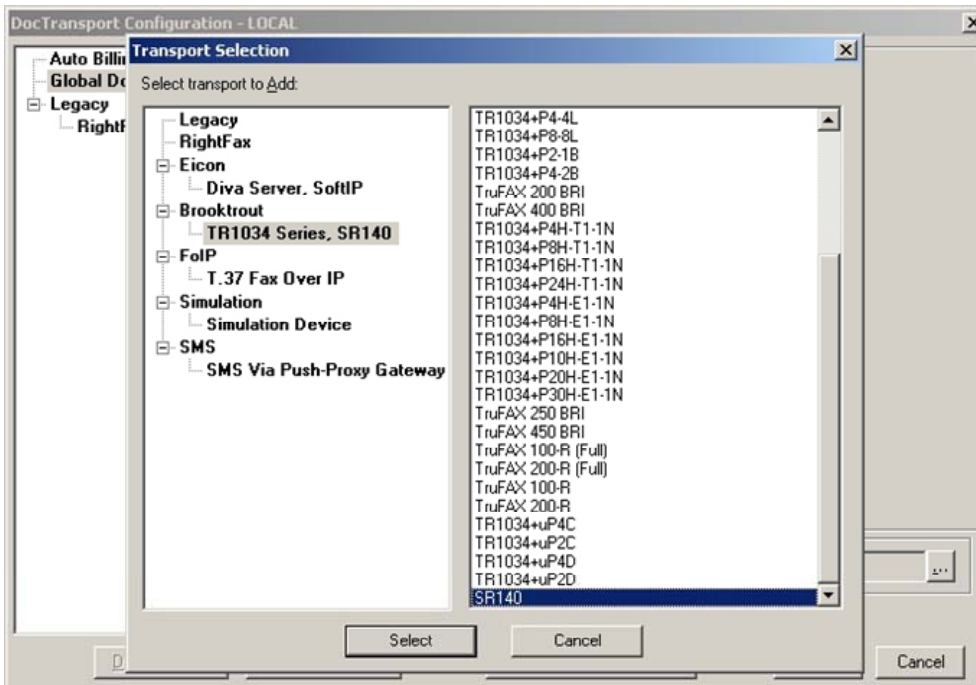
Note: Cisco Fax Server can support up to 120 channels, by activating two (2) 60 channel licenses. In all instances of activation, two key pieces of information are required:

- License number (called the “LAC”)
- Node Lock ID: This is a unique identifier that created by a proprietary algorithm. In order to generate this number, it must be generated from the same server that is running DocTransport. This computer must be the Cisco Fax Server or a remote DocTransport computer used by the Cisco Fax Server.

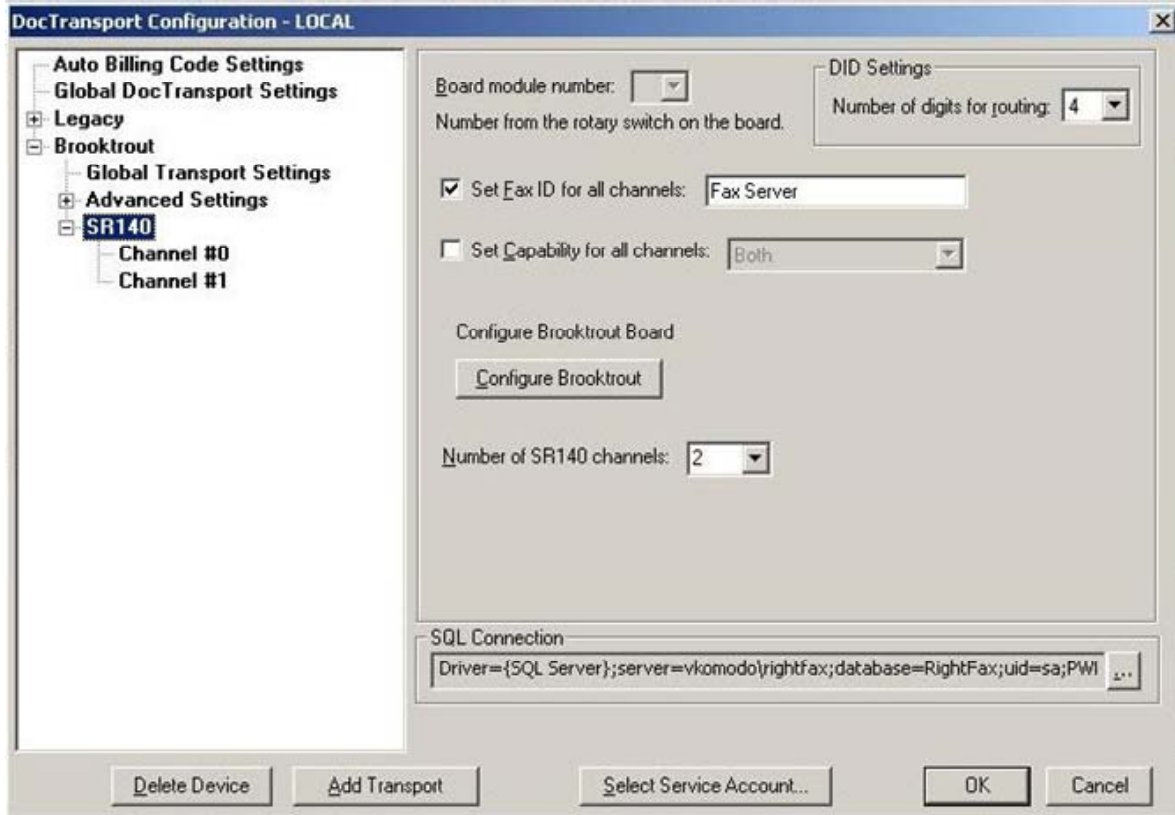
2a. Adding an SR140 Transport method

Note: Although discussed in the previous section, adding an SR140 Transport can be done at the same time as activating the license.

- a. Open the DocTransport Module
 - 1) On the Cisco Fax Server, select Start > Programs > Captaris > Enterprise Fax Manager.
 - 2) In the Enterprise Fax Manager application, click the name of the Cisco Fax Server to configure in the tree in the left pane. A list of services appears at the lower-right pane of the window.
 - 3) In the Service Name list, double-click DocTransport Module. The DocTransport Configuration dialog box opens.
- b. From the DocTransport Configuration, select Add Transport. The screen below will appear.

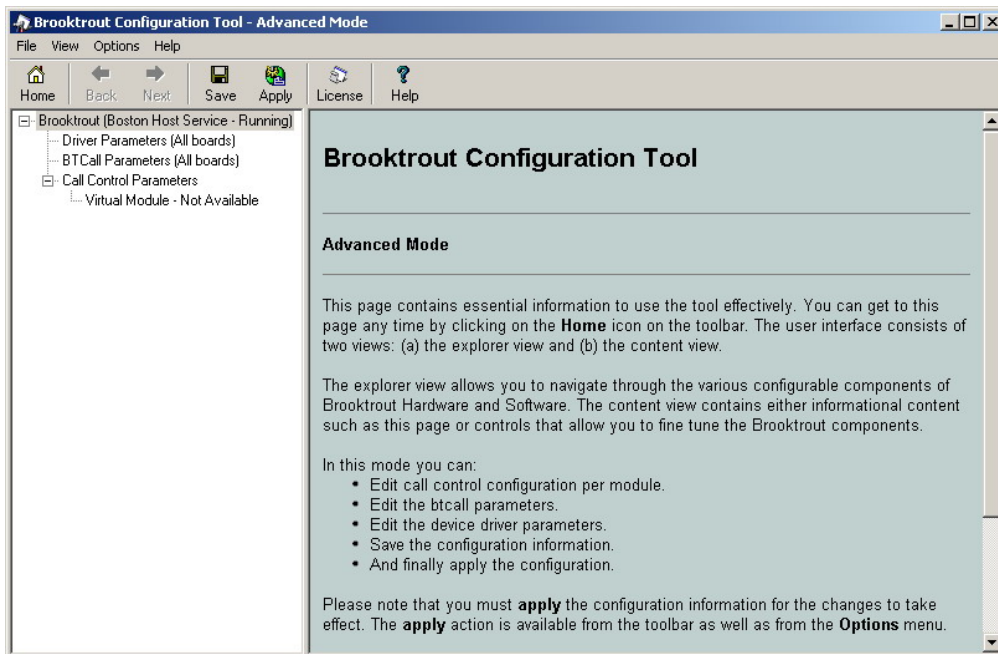


- c. In the left pane of the window, select “TR1034 Series, SR140” from the Brooktrout tree item.
- d. On the right hand side, scroll to find “SR140” and “double-click” it with your mouse or click “select”. Brooktrout will be added to the DocTransport Configuration screen. If needed, expand the Brooktrout item in the tree, then select SR140. By default, 2 SR140 channels are added to Cisco Fax Server This may need to be adjusted as the customer may have purchased more licenses. **Note:** 2 channels is a default setting in Cisco Fax Server.

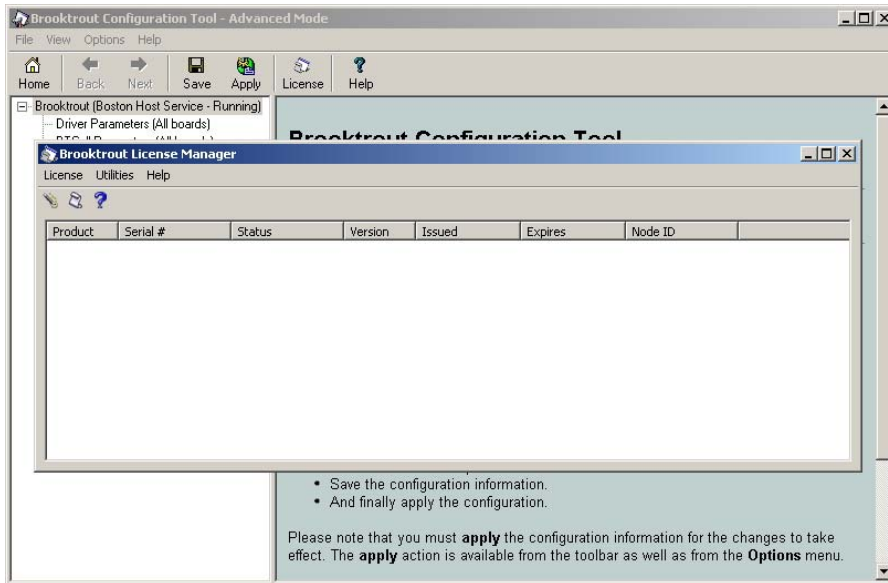


2b. Run the Brooktrout Configuration Tool and Activate the License Manager

As seen on the screen shot above, select the “Configure Brooktrout” button found on the center of the screen. This will generate the screen below.

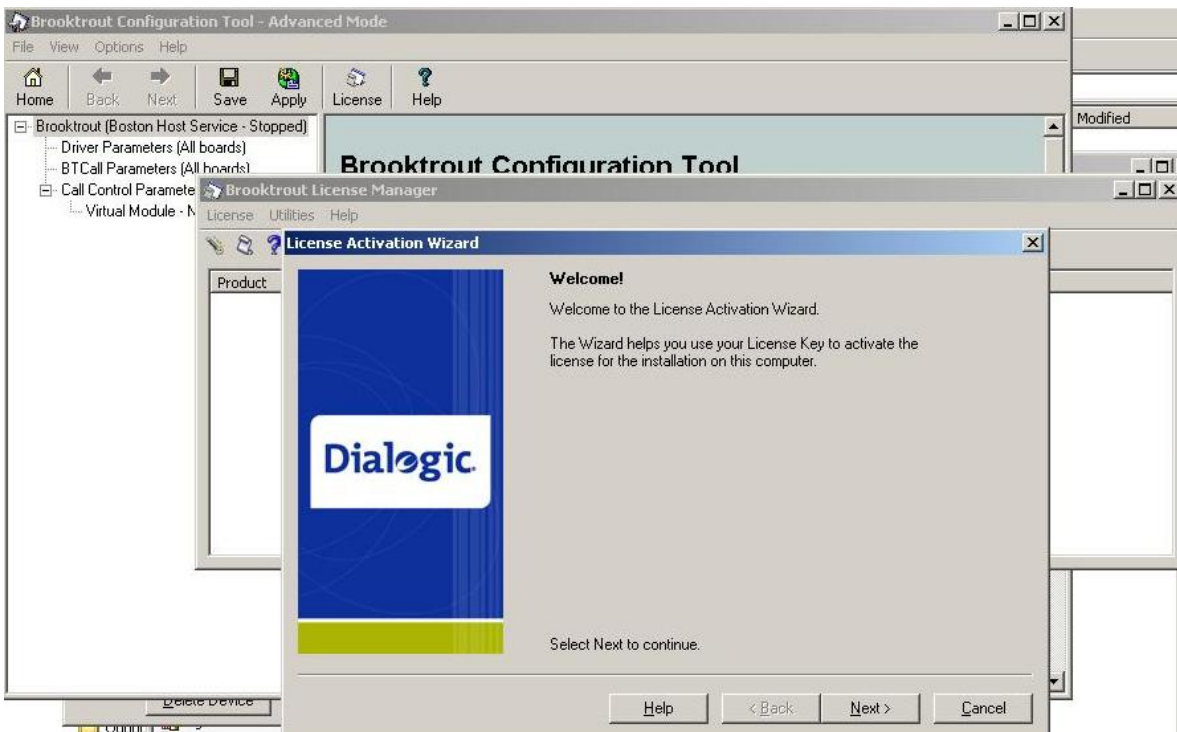


On the tool bar click the License icon. The Brooktrout License Manager will open.



2bi. Activating the License Wizard

As seen on the menu bar above, select "License" followed by "Activate License". The License Activation Wizard will open (shown below).

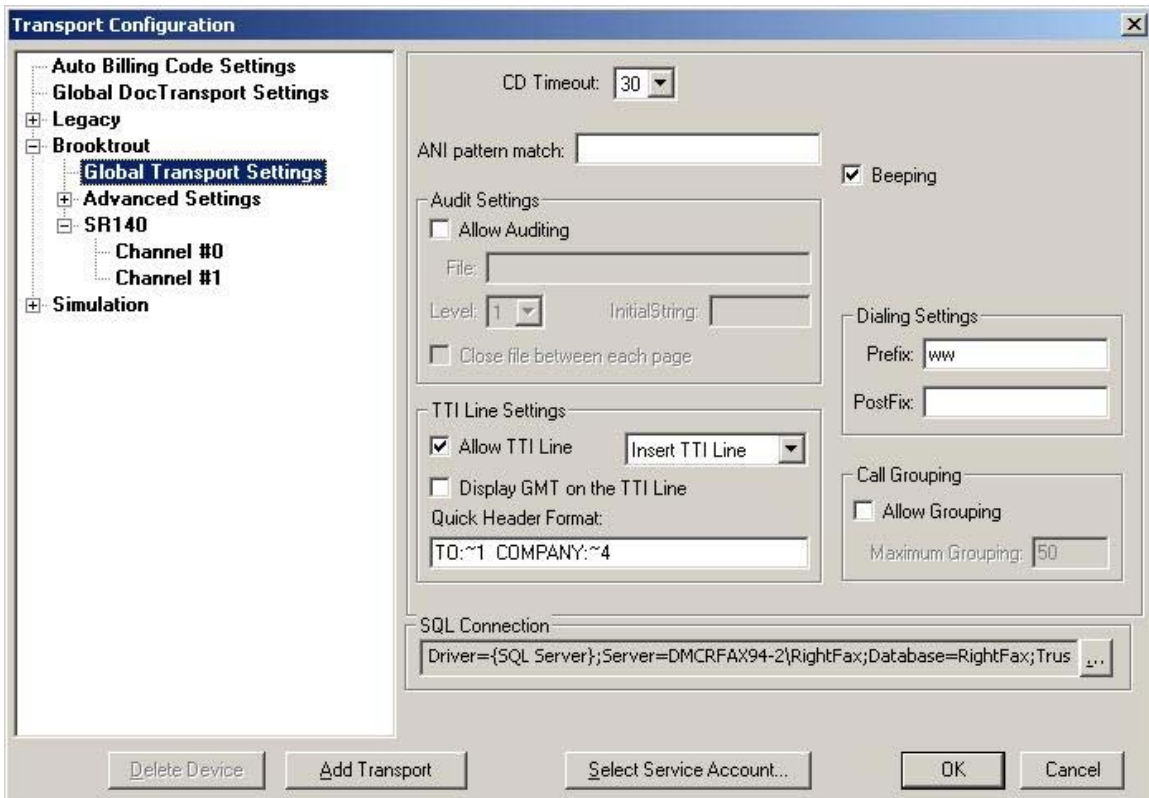


There are 3 methods in which to activate the license; an interactive web method, a machine-to-machine automatic process, and a manual process via fax or email. **Note:** The remainder of the activation steps takes place inside the Wizard and the process is documented in Open Text

Knowledge Base Article 16219666, titled “Activating Cantata Brooktrout SR140.” See section, “Activation Methods.”

2bi1. Configure SR140 Global Settings

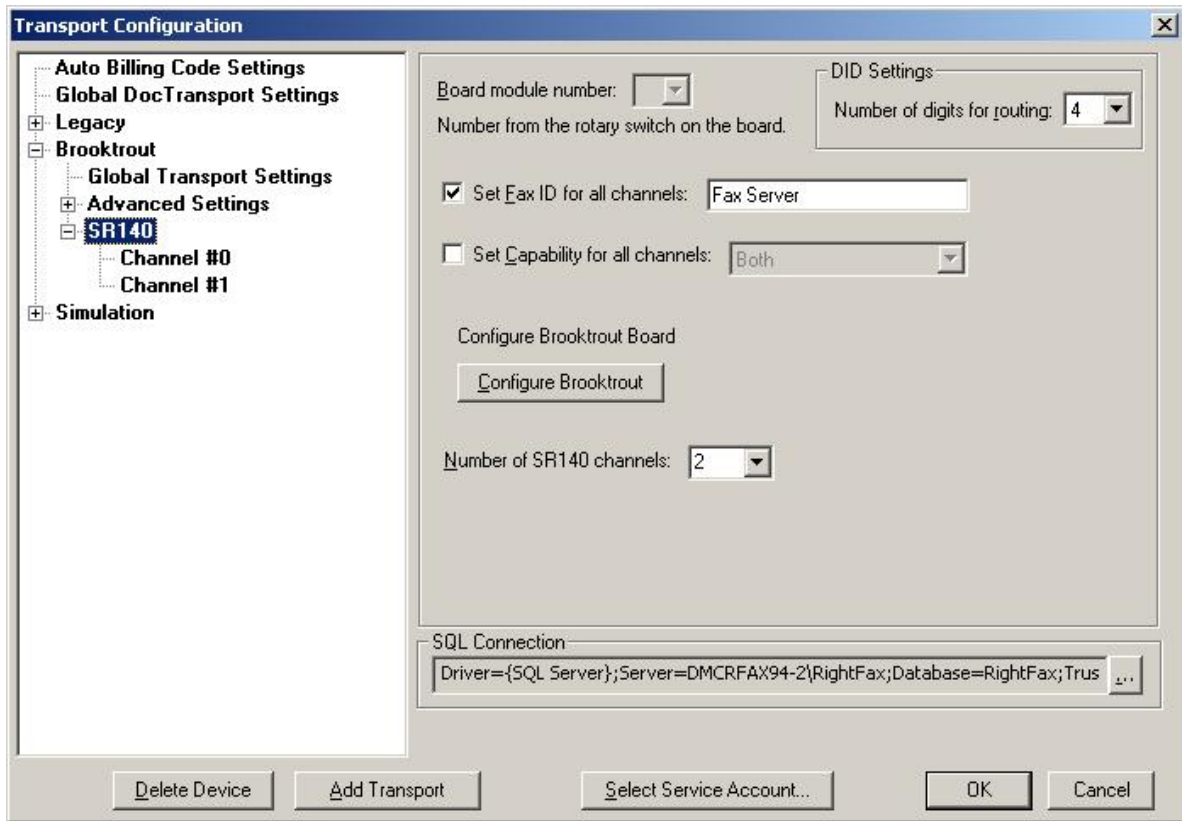
SR140 Global Transport Settings in the DocTransport module are global settings that apply to all Brooktrout SR140 channels configured in the DocTransport module. Cisco Fax Server will use these settings regardless of the fax channel in use. To configure global transport settings, select Global Transport Settings in the left pane.



Many settings can be configured at this point. For in-depth detail about each setting, please consult the Open Text Fax Server (RightFax) 9.4 Administrator’s Guide, Chapter 5, section entitled, “Configuring Brooktrout SR140 Global Transport Settings”.

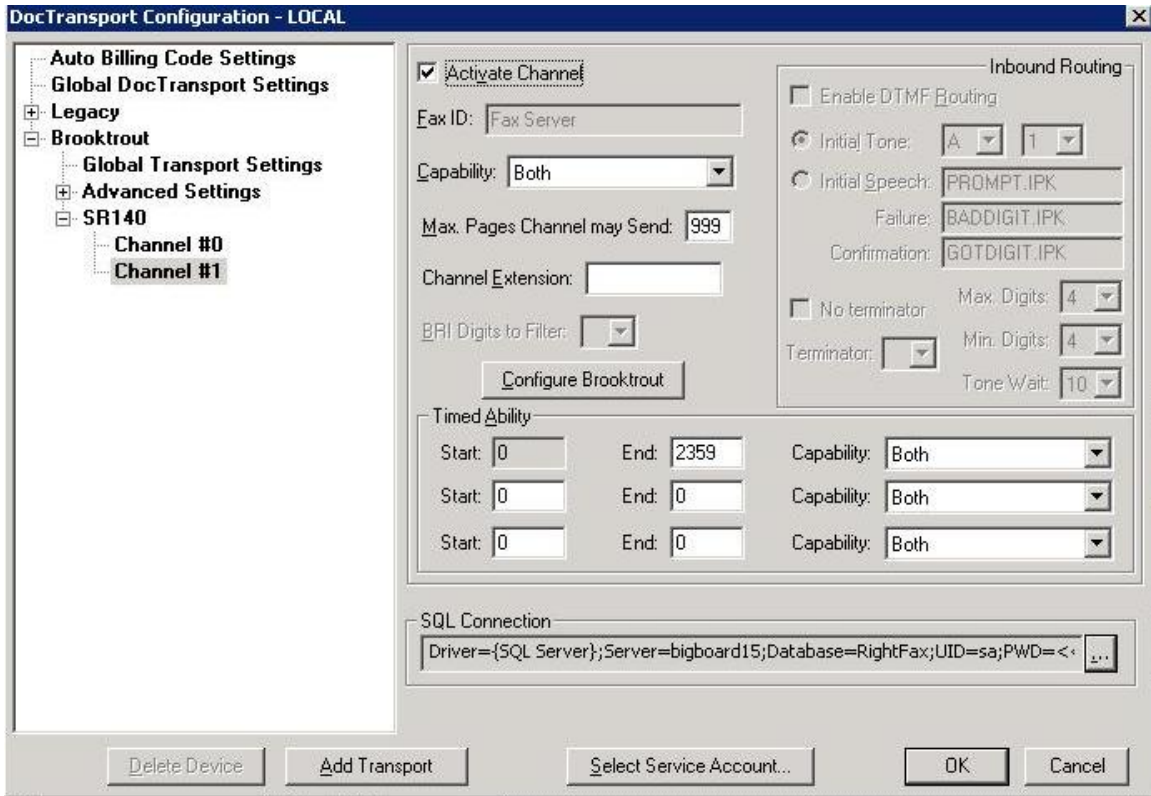
4. Configure the SR140 transport to work with the Cisco Fax Server

After you have added a SR140 Transport, it must be configured to work with Cisco Fax Server. To configure SR140, expand Brooktrout and click SR140 in the Board/Channel list in the left pane.



At this point, parameters like the board model number DID settings and setting of the fax ID for all channels can be set. For specific information about each item please refer to the Administrator’s Guide, Chapter 5, section titled, “Configuring Brooktrout SR140”. Furthermore, it is here where you can configure Dialogic related settings by opening the Brooktrout Configuration tool.

Configuring Brooktrout SR140 channels: Each SR140 fax channel can be individually configured. To configure a channel, click the channel number in the Board/Channel list.



For more detailed information, please refer to the Administrator’s Guide, Chapter 5, section titled, “Configuring Brooktrout SR140 Channels”

5. Configure Dialogic-related settings using the Brooktrout Configuration Tool

After you have configured SR140 to work with the Cisco Fax Server, you must configure Dialogic (Brooktrout)-related settings using the Brooktrout Configuration Tool. For more information about the settings within this tool, please see Dialogic documentation.

Follow these steps to open the Configuration Tool (**Note:** This procedure is also outlined in the previous section on license activation.):

- a. In the DocTransport Configuration program, click the SR140 transport.
- b. Click the Configure Brooktrout button located on the right side of the DocTransport configuration program. The Configuration Tool opens.

Note: The Brooktrout Configuration Tool can also be opened from the Windows Programs list (Start > Programs > Captaris > Brooktrout > Brooktrout Configuration Tool)



Configuring SR140 FoIP for Failover

Fax over IP environments with a multi-router topology may configure Cisco Fax Server (via dialing rules) for real-time FoIP fail-over. When the primary FoIP router or gateway is unavailable or times out, faxes are automatically routed to a secondary router or gateway. For more information about configuring for failover, please consult the Administrator's Guide, Chapter 5, section titled, "Configuring FoIP Failover"

Configuring IP-Enabled Fax Boards

T.38-compatible fax boards require the same hardware configuration procedure for non-T.38 boards prior to installation in the computer chassis. Information on configuring the fax boards is located in the 9.4 Fax Board Guide. When you have one or more T.38-compatible fax boards installed, or any combination of T.38 and non-T.38 TR1034 fax boards, and you intend to use these fax boards for fax over IP, you must run a Brooktrout configuration program in the RightFax DocTransport module.

After you have installed the fax boards, you must configure each in the RightFax DocTransport module (described in the Administrator's Guide). Run the DocTransport module from the Windows Control Panel or from within Enterprise Fax Manager. For each installed fax board, highlight the board name in the pane on the left and click Configure Brooktrout. This runs a board configuration program provided by Dialogic. For information on completing the configuration options, refer to the documentation provided with your Brooktrout hardware.

The following section supplements the Cisco Fax Server Fax Board Guide at http://www.cisco.com/en/US/products/ps6178/products_installation_and_configuration_guides_list.html.

For all ISDN (E1 and T1 modes) configurations, refer to the fax board guide. For FoIP (T.38 mode) use the following instructions:

Guidelines for Configuring DocTransport with a T.38-Enabled TR1034 Board

1. T.38 Fax Over IP (FOIP) capability is supported on Cisco Fax Server version 9.3 and higher.
2. If you are using a hardware-based T.38 solution, then you must use a supported Brooktrout TR1034 series digital board. (See list of compatible boards below.)
3. T.38 Fax Over IP uses the Ethernet network interface of the fax board and the Ethernet network interface of the host server (used for SIP - Session Initiation Protocol call setup and teardown).
4. When a T.38 compatible fax board is added to the DocTransport configuration, you must use the Brooktrout Configuration Tool to configure the board. (See procedures below.)
5. The TR1034 Ethernet network interface must be configured to use static IP information (address, subnet, broadcast address & gateway). This is configured in the Brooktrout configuration tool. The Brooktrout network interface and the Cisco Gateway must be on the same subnet.
6. The IP-PSTN Gateway (Cisco router) must have firmware compatible with the T.38 protocol, and the router must be correctly configured to send and receive FoIP traffic to the TR1034 fax board on the RightFax Server. (See list of Brooktrout-compatible IP-PSTN Gateway routers below.)
7. Any RightFax features requiring the playing of voice files (e.g. Human Answered Fax, Docs-On-Demand) are not supported with the TR1034 configured for T.38 FOIP.

T.38 Compatible Boards:

- TR1034+P4H-T1-1N
- TR1034+P8H-E1-1N
- TR1034+P8H-T1-1N
- TR1034+P10H-E1-1N
- TR1034+P16H-E1-1N
- TR1034+P16H-T1-1N
- TR1034+P20H-E1-1N TR1034+P24H-T1-1N TR1034+P30H-E1-1N

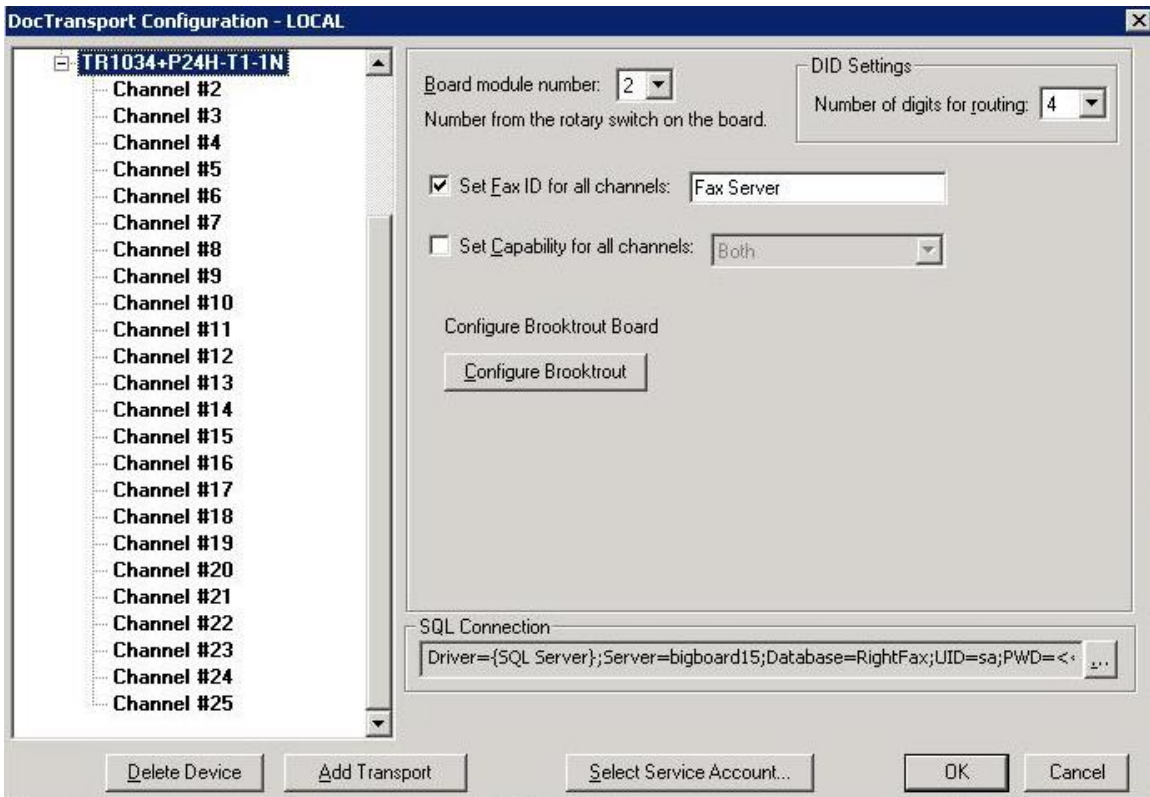
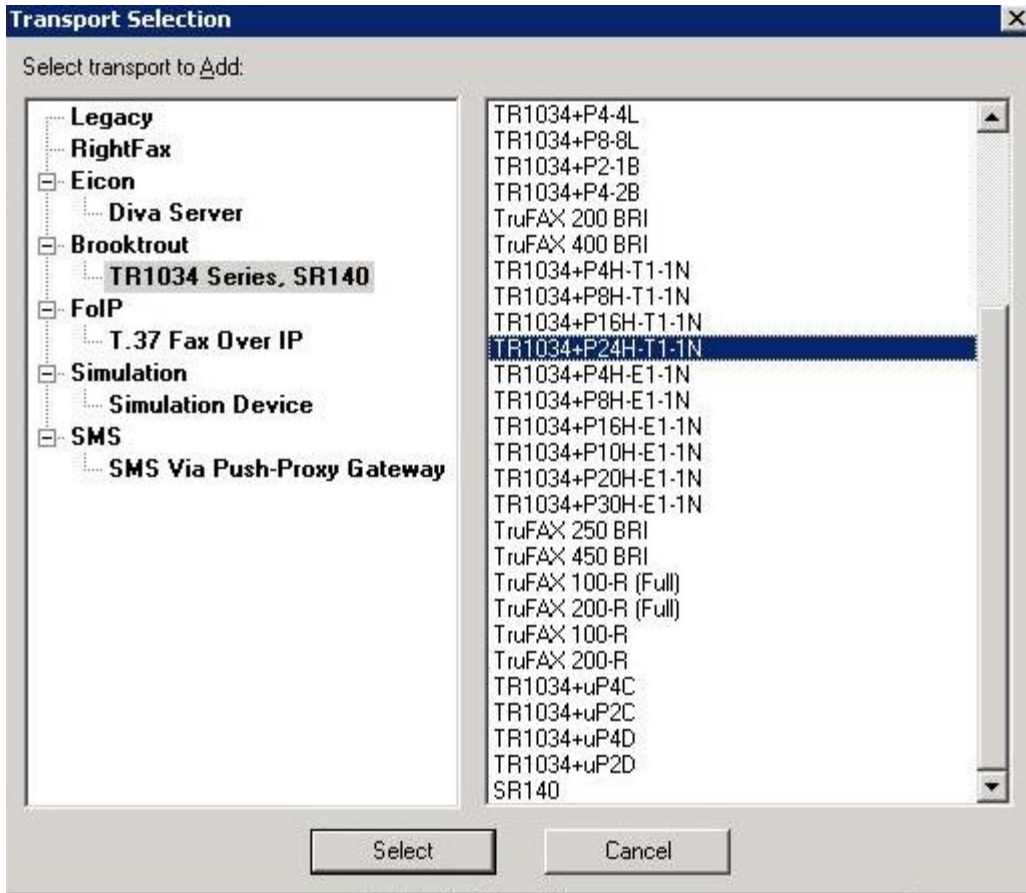
Note: Any digital TR1034 board which is listed as '0N' instead of '1N' (e.g. TR1034- P24H-T1-0N) can be upgraded to '1N' by contacting Captaris Sales and purchasing a TECUPDATE license.

The TECUPDATE procedure is currently available via the Open Text Knowledge Base. Contact your Open Text representative for access.

TR1034 series without '0N' (e.g. TR1034-P24H-T1) cannot be updated to support T.38 protocol.

Installation Procedures

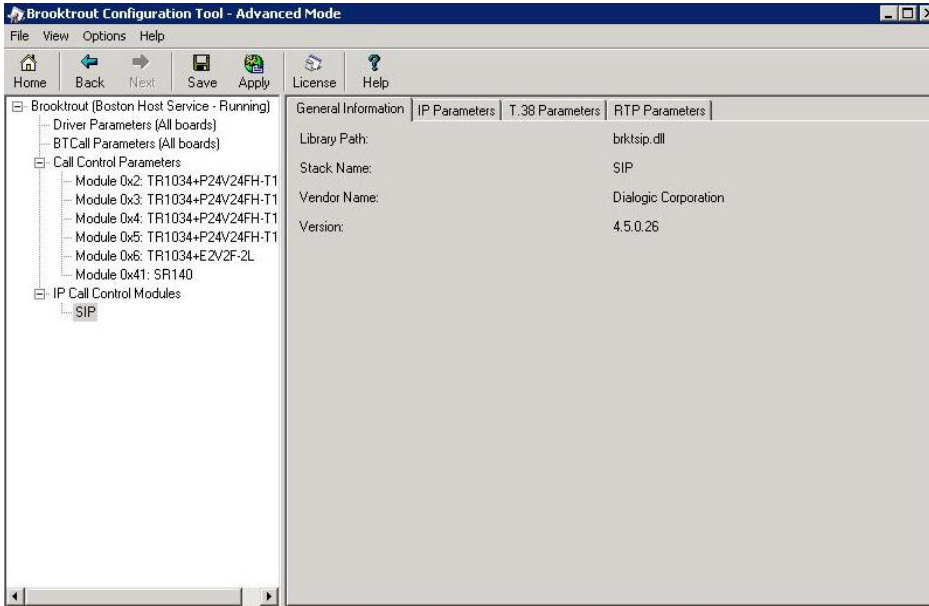
1. Install the fax board drivers and the fax board according to the RightFax version 9.4Fax Board Guide. This is available as "Fax Board Guide.pdf" on the \rightfax\docs folder on the RightFax Server, or on the RightFax 9.4 media.
2. Open the RightFax DocTransport Module from Enterprise Fax Manager and click **Configure DocTransport**.
3. Select a new Brooktrout board from the Fax Board Selection dialog box in the DocTransport Control Panel.



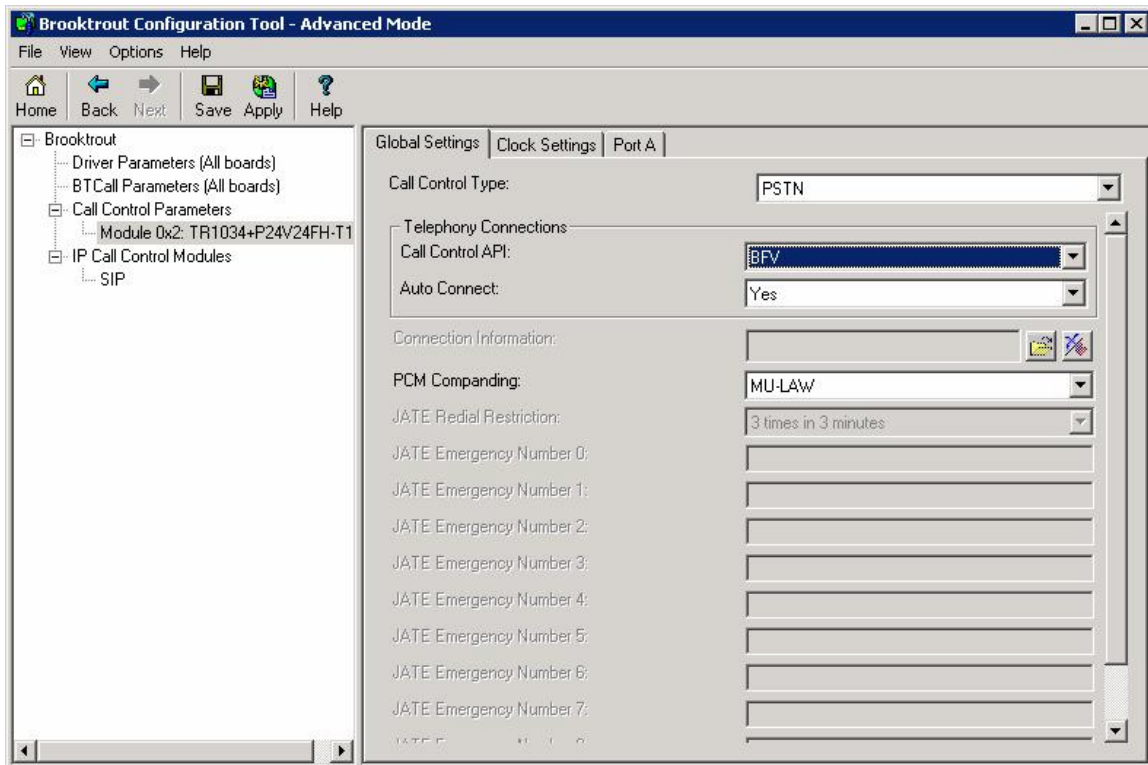
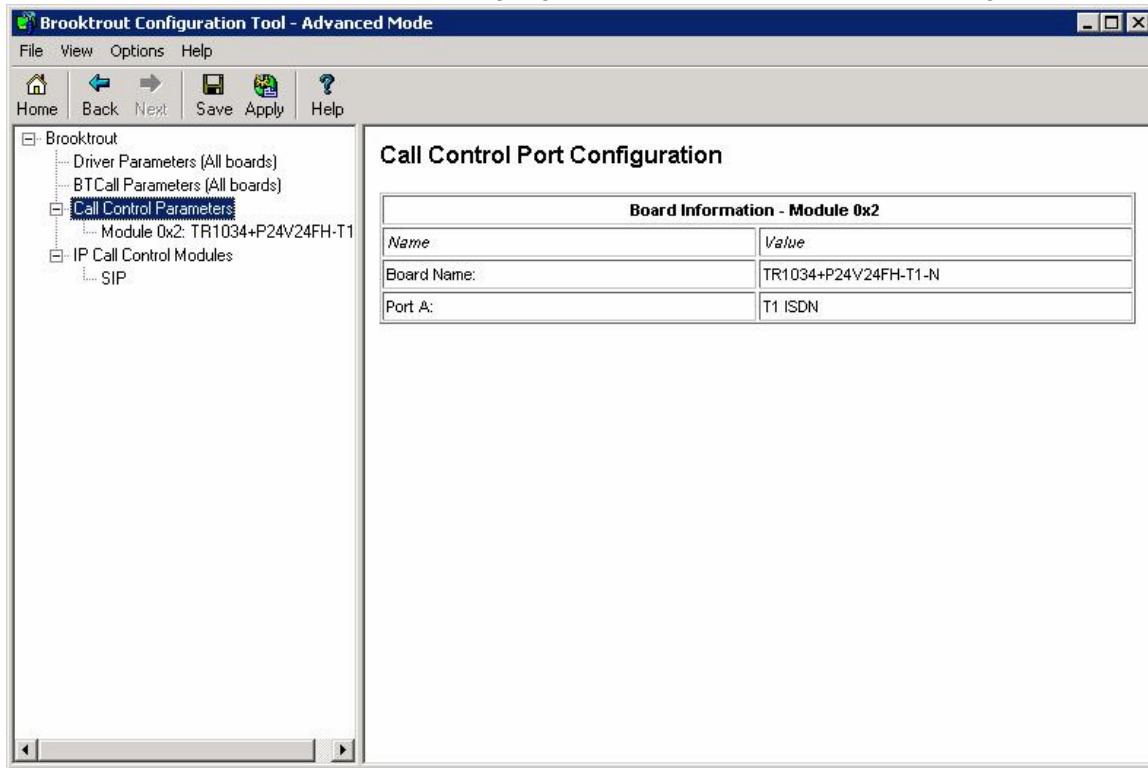
4. Click **Configure Brooktrout**. This launches the Brooktrout Configuration Tool.

Note: In the event of a previous installation, the DocTransport Module must be stopped before launching the Brooktrout Configuration Tool. Launching the Brooktrout Configuration Tool while the DocTransport is running will result in an error similar to the following: Error 01/17/05 15:27:19: BfvSessionAttach for module 0x2 failed (Misc error: Resource busy.)

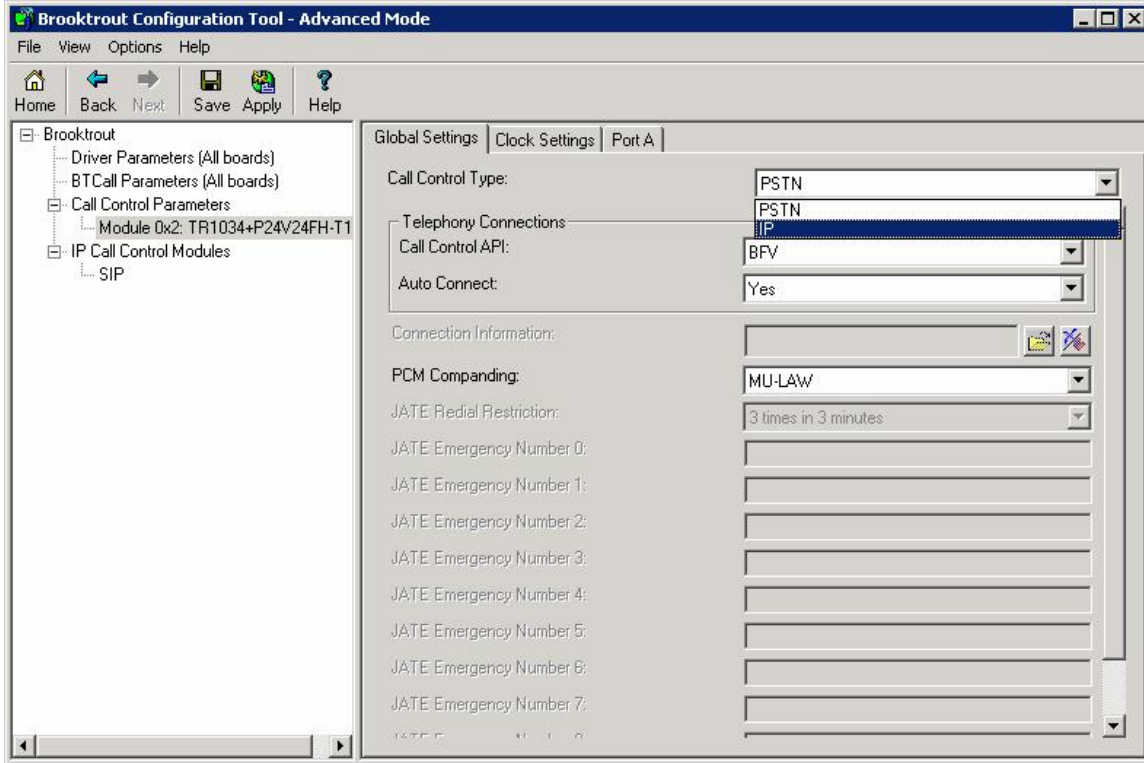
Note: When a Brooktrout IP-enabled board is added to a machine and being used for T.38 Fax over IP, the Brooktrout Configuration Tool must be used. All IP configurations are adjusted using the Brooktrout Configuration Tool. In addition, all non-IP (PSTN) boards located in the same computer must be configured using the Brooktrout tool.



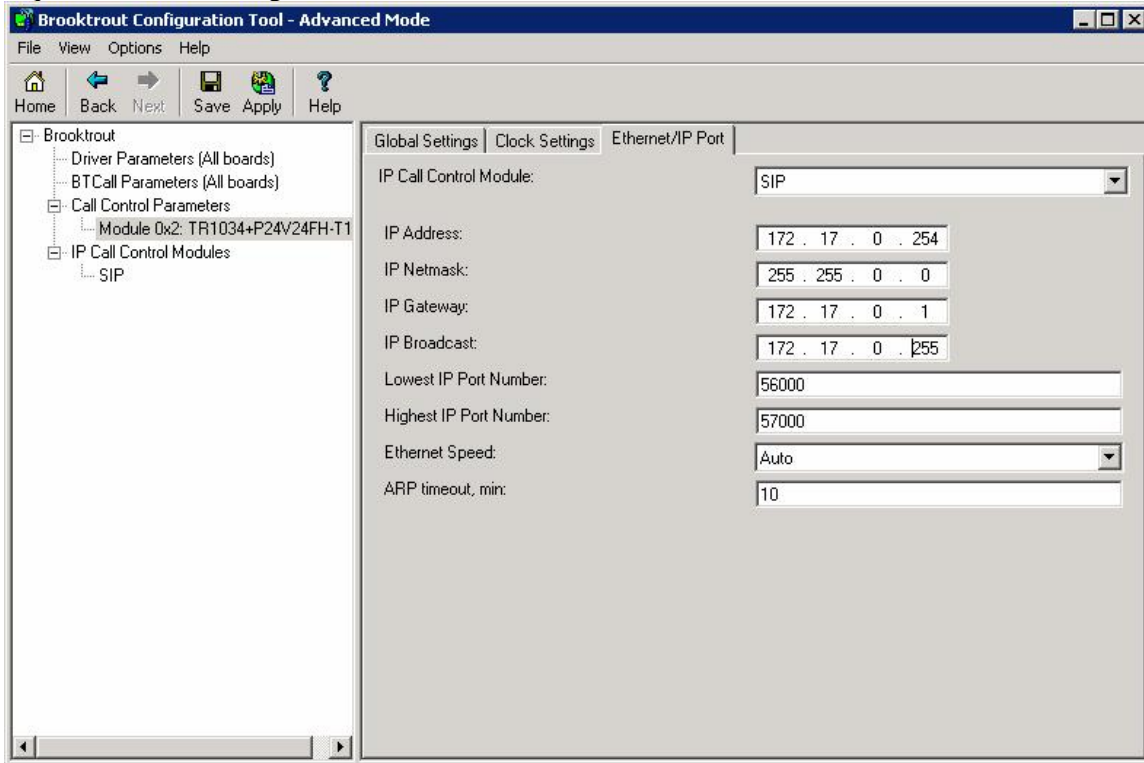
5. Under Call Control Parameters, highlight the board module number to configure.



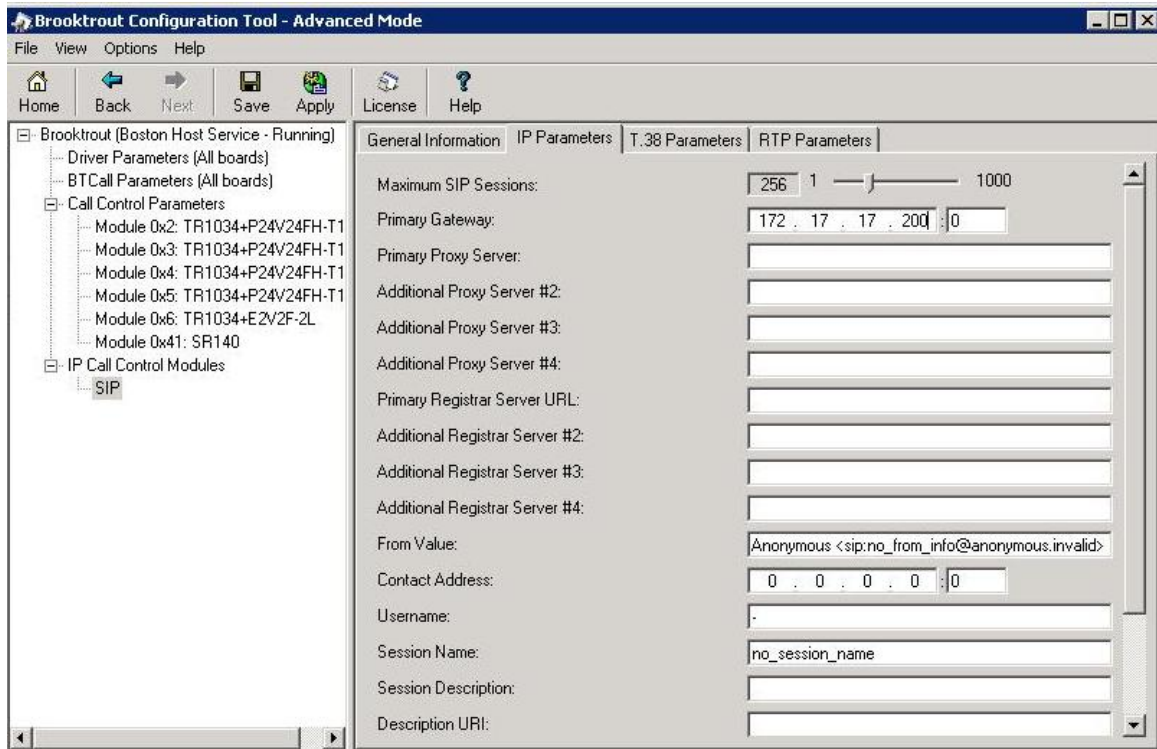
6. Enable IP Call Control (see below).



When Call Control Type is set to “IP”, the Ethernet/IP Port tab is displayed. The TR1034 board requires static IP configuration for the IP address, netmask, and broadcast address.



- Under **IP Call Control Modules > SIP Parameters**, accept the defaults, or modify as necessary. By selecting the **IP Parameters** tab, you can set the IP gateway.



- Open DocTransport, and select Global Board Settings. Remove the dialing prefix “ww”. The “ww” digits cannot be processed by the IP board.

