# Brooktrout SR140 Fax Software with Cisco Unified Communications Manager 14.0

Installation and Configuration Integration

**IMPORTANT NOTE**

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Brooktrout-CUCM 14_v1
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## 1. Scope

This document is intended as a general guide for configuring a basic installation of the Cisco Unified Communications Manager Version 14.0 (CUCM 14.0) for use with Brooktrout SR140 Fax over IP (FoIP) software platform. The interoperability includes SIP call control and T.38/T.30 media.

The specific version of CUCM tested was 14.0.1.100000-20

For ease of reference, the Brooktrout SR140 Fax Software and Brooktrout TR1034 Fax Boards will sometimes be denoted herein, respectively, as SR140 and TR1034. The Cisco Unified Communications Manager will be denoted herein as CUCM 14.0 or Cisco CUCM 14.0, or some other form thereof. All references to the SDK herein refer to the Brooktrout Fax Products SDK.

This document is not intended to be comprehensive and thus does not replace the manufacturer's detailed configuration documentation. Users of this document should already have a general knowledge of how to install and configure the CUCM 14.0.

The sample configuration shown and/or referred in the subsequent sections was used for lab validation testing by Enghouse Interactive /Dialogic. As the lab system did not have an external PSTN or SIP trunk interface the testing was done between two different SR140 systems. Each system was configured with its own SIP trunk interface configured within the CUCM environment. The CUCM was then configured to route calls based on the numbers that were dialed to either of the two systems. Therefore, it is possible and even likely that the example configuration will not match the exact configuration and versions that would be present in a deployed environment. However, the sample configuration provides a possible starting point to work with the equipment vendor for configuring your device. Please consult the appropriate manufacturer's documentation for details on setting up your specific end user configuration.

## 2. Prerequisites

No special requirements to note.

## 3. Summary of Limitations

No special limitations to note.

# 4. SIP / SIP Configuration Details

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

## 4.1 Cisco Unified Communication Manager 14.0 –SIP / SIP Configuration

| | |
|---|---|
| **Vendor** | Cisco |
| **Model** | Cisco Unified Communication Manager |
| **Software Version** | 14.0.1.100000-20 |
| **Protocol to SR140 (1)** | SIP |
| **Protocol to SR140 (2)** | SIP |

## 4.2 Brooktrout SR140 Fax Software

| | |
|---|---|
| **Vendor** | Enghouse Interactive/Dialogic |
| **Model** | Brooktrout SR140 Fax Software |
| **Software Version** | SDK 6.15 |
| **Protocol to CUCM** | SIP |
| **callctrl.cfg file** | SDK 6.15 – with recommended settings for SIP_From and SIP_Contact |

# 5. Network System Configuration – SIP / SIP Configuration

The diagram below details the sample configuration used in connection with the SIP / SIP Configuration.

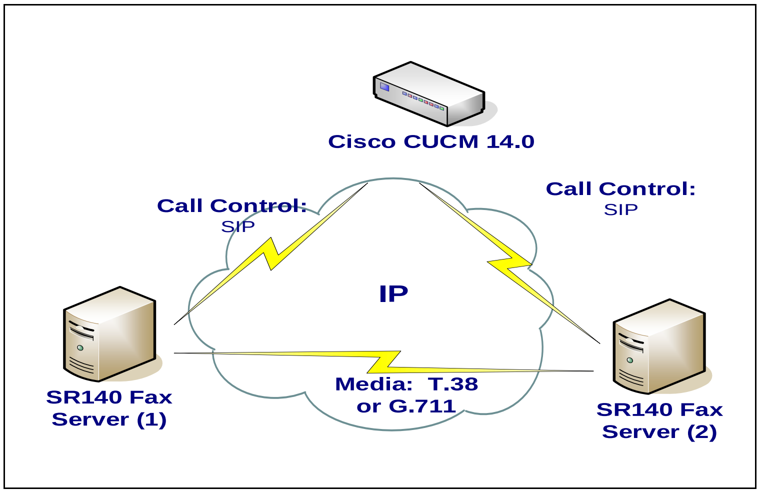



**Diagram Notes:**

- SR140 Fax Server = Fax Server including Brooktrout SR140 Fax Software and third party fax application. In this test, two different fax servers were used to route calls between them through the CUCM.

## 5.1 Network Addresses

| Device # | Device Make, Model, and Description | Device IP Address |
|---|---|---|
| 1 | Brooktrout SR140 (1) | 10.51.42.7 |
| 2 | Cisco Unified Communication Manager 14.0 | 10.51.53.177 |
| 3 | Brooktrout SR140 (2) | 10.51.42.8 |

## 5.2 Dialing Plan Overview

To call the SR140 (1) from SR140 (2), dial 21021XXX, where x is a number between 0 and 9.
To call the SR140 (2) from SR140 (1), dial 21022XXX, where x is a number between 0 and 9.

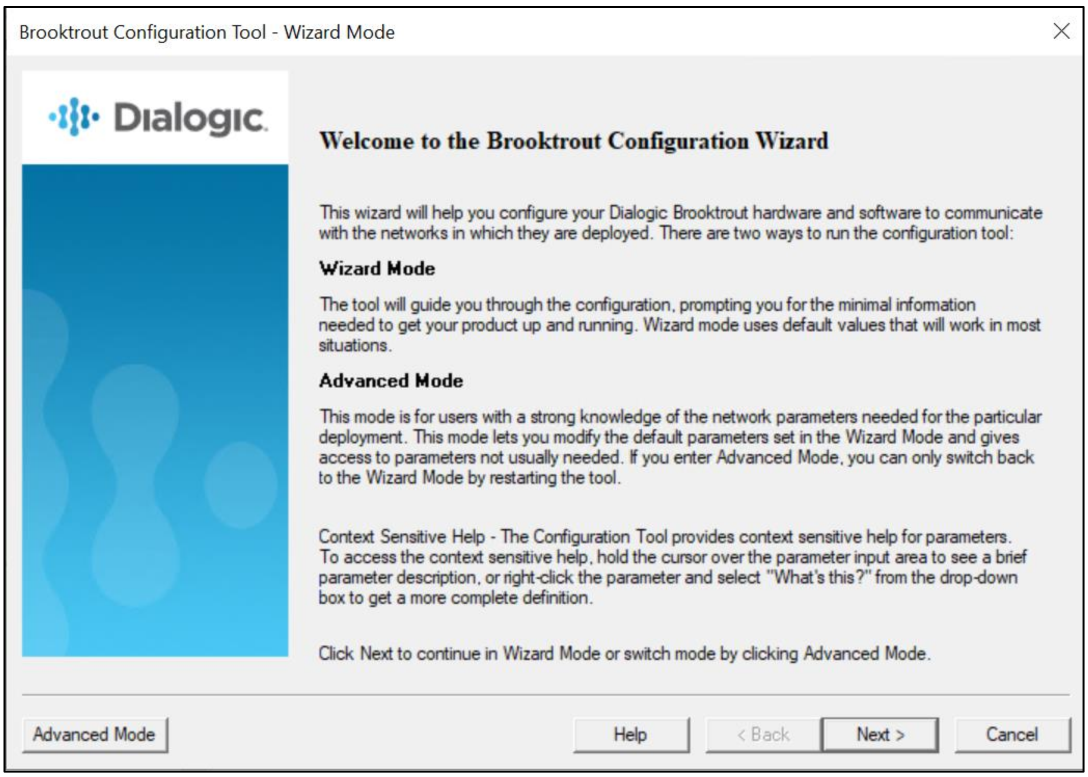
# 6. Brooktrout SR140 Fax Software Setup Notes

The manuals for the SR140 are available from the following site:
http://www.dialogic.com/manuals/brooktrout/default.htm

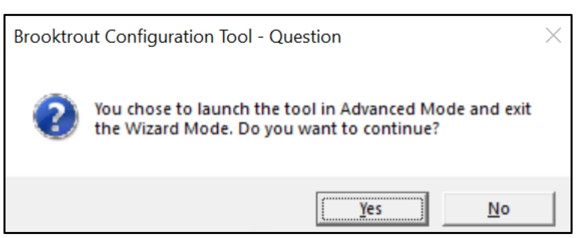
## 6.1 Test Configurations

The following SR140 Setup Wizard screen shots illustrate how the test configurations were set up to interop with the CUCM 14.0 system. Both of the SR140 servers were configured the same except for the IP address in the From Value filed.

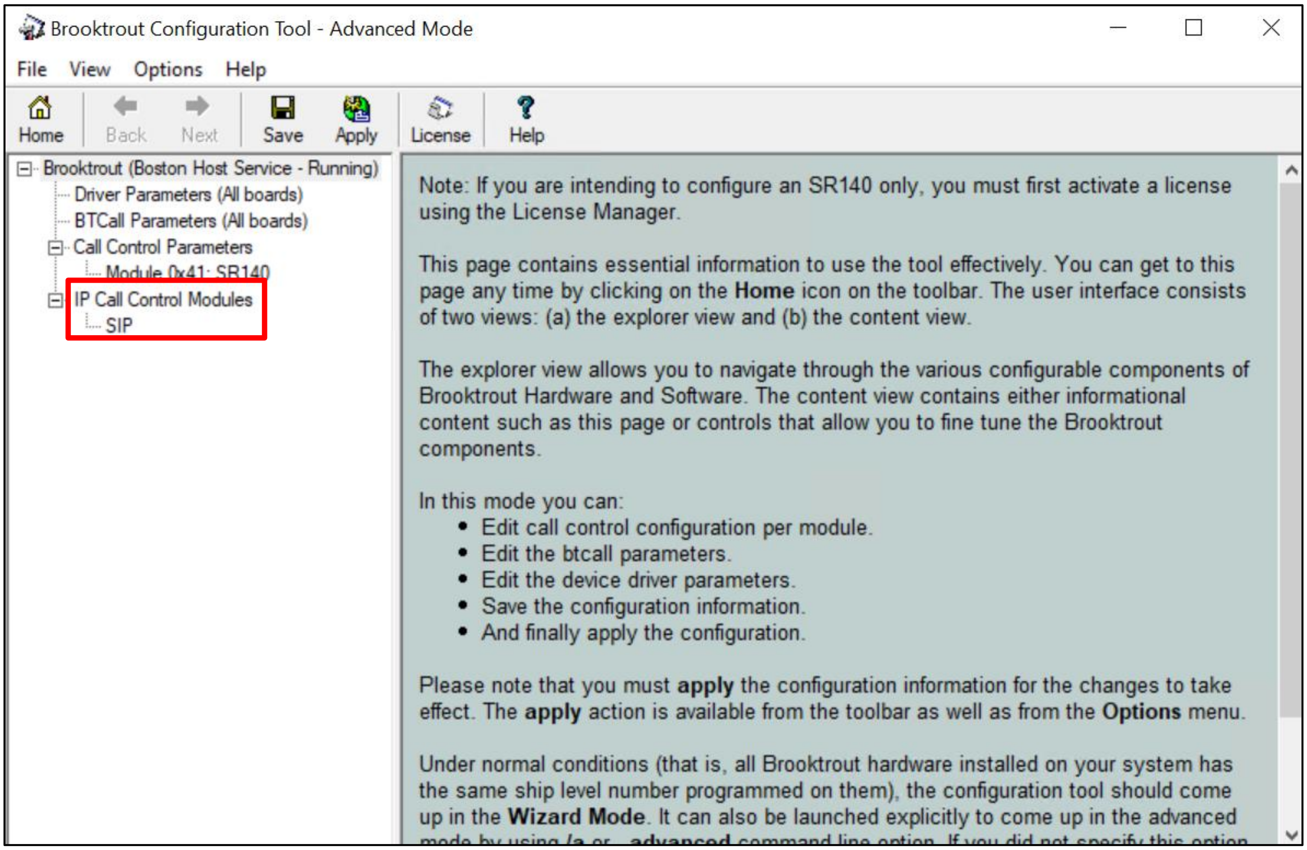
Launch the Config Tool (Start->Programs->Brooktrout->Brooktrout Configuration Tool



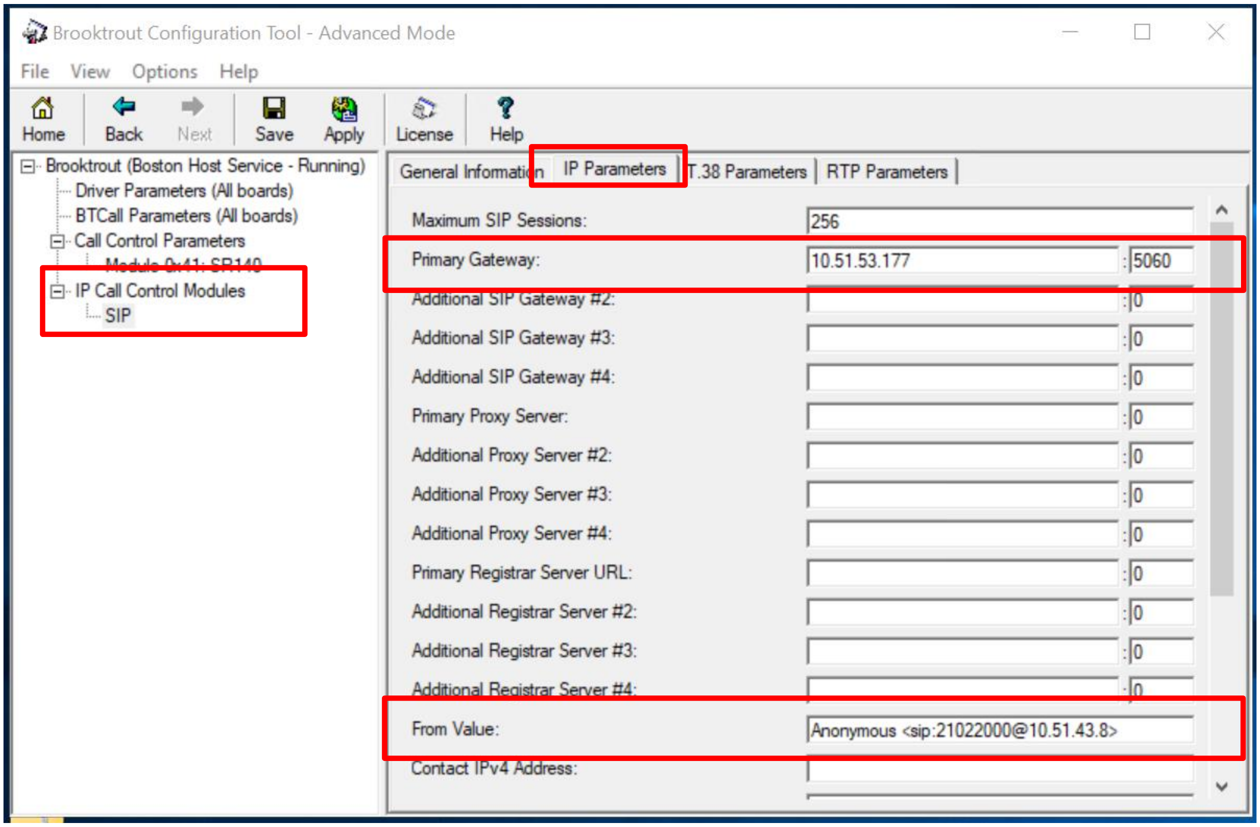

Select **Advanced Mode.**



Select **Yes** to enter Advanced Mode.

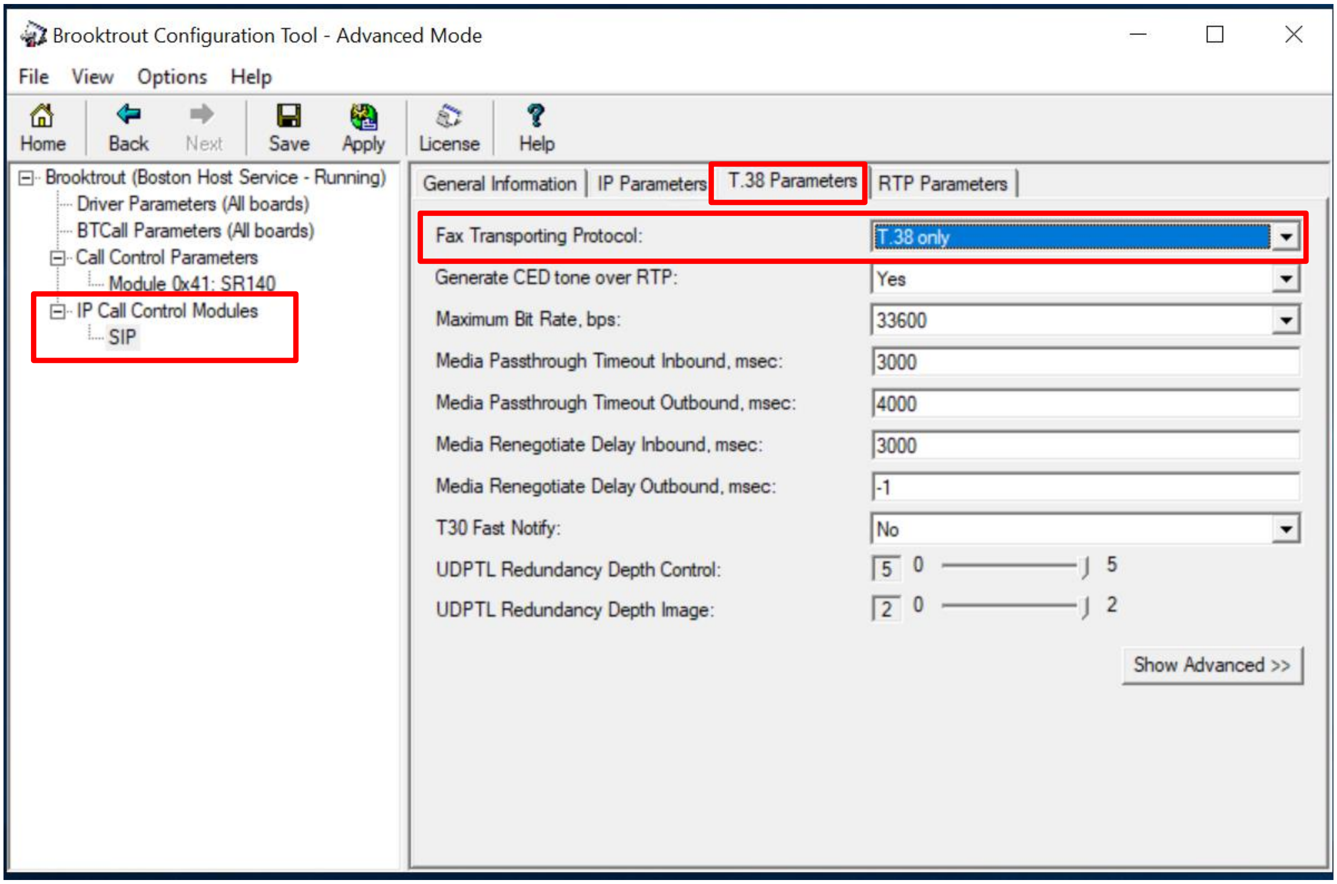



Select **SIP** under **IP Call Control Modules** and open the **IP Parameters** tab.




- In the **Primary Gateway** parameter enter the **IP address** and **signaling Port** of the Cisco UCM signaling port received from the Cisco administrator.
- Change **From Value** to **Anonymous <sip:PhoneNumber@SR140 server IP>** where the "**PhoneNumbe**r" is either specified by your Cisco Administrator, or one of the valid phone numbers in your inbound fax numbers. The **SR140 server IP** is the internal IP address of the SR140 server. For example: Anonymous sip:21021xxx@10.51.43.8 Note. This is the IP address that changes between the two SR140 servers used in this test scenario.

Select **SIP** under **IP Call Control Modules** and open the **T.38 Parameters** tab




- Confirm that **Fax Transporting Protocol** is set to **T.38 only**

Click **Save** then **Apply**. After the Apply is done, close the Configuration Tool.

## 6.2 SR140 callctrl.cfg File

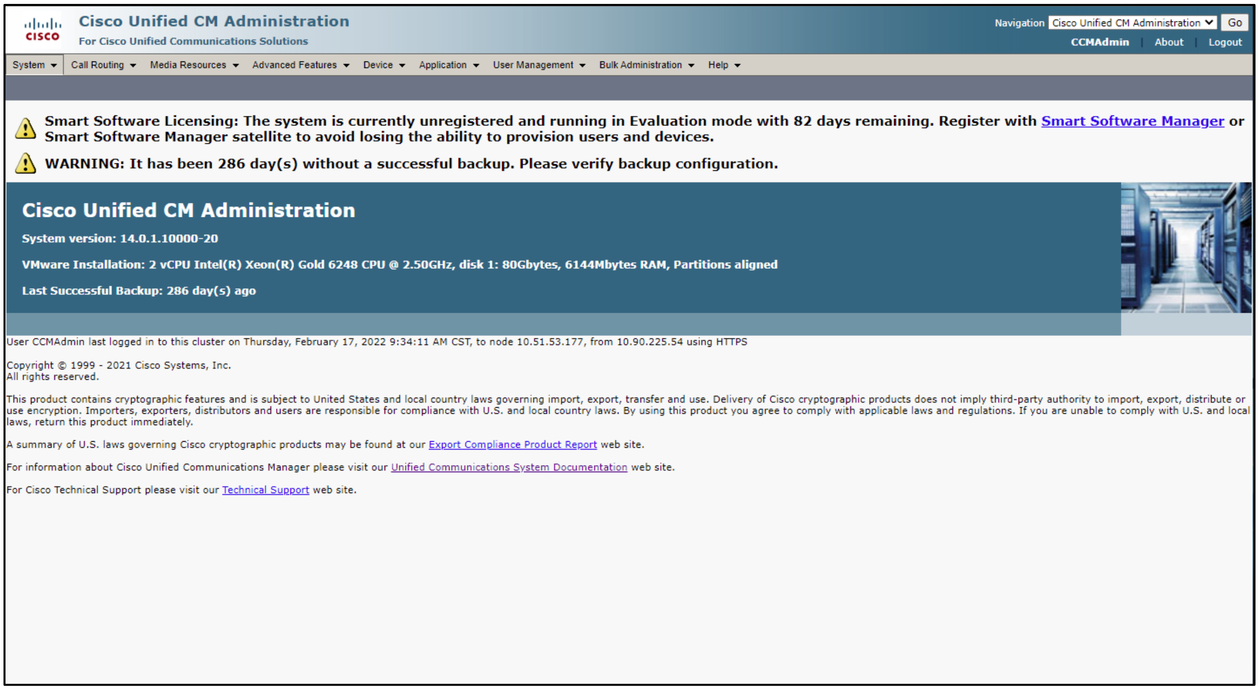
The SR140 callctrl.cfg file used in the sample test configuration is shown below for reference.

```
 l3l4_trace=none
 l4l3_trace=none
 api_trace=none
 internal_trace=none
 host_module_trace=none
 ip_stack_trace=none
# Most of the time a path should be used for this file name.
 trace_file=..\logs\ecc.log
 max_trace_files=1
 max_trace_file_size=10
[module.41]
 model=SR140
 virtual=1
 exists=1
 vb_firm=C:\Users\Administrator\Desktop\FDTOOL_PACKAGE 6.15-GA\FDTOOL_PACKAGE\bin\bostvb.dll
 channels=2
[module.41/ethernet.1]
 ip_preference=ipv4_only
 ip_interface={A961EF98-A943-4706-92B5-F2FBDE015011}:0
 ip_interfaceV6=
 ip_address=0.0.0.0
 ip_addressV6=
 media_port_min=56000
 media_port_max=56999
[module.41/host_cc.1]
 host_module=1
 number_of_channels=2
[host_module.1]
 module_library=brktsip.dll
 enabled=true
[host_module.1/t38parameters]
 t38_fax_rate_management=transferredTCF
 fax_transport_protocol=t38_only
 t38_fax_udp_ec=t38UDPRedundancy
 rtp_ced_enable=true
 t38_max_bit_rate=33600
 t38_fax_version=3
 media_passthrough_timeout_inbound=3000
 media_passthrough_timeout_outbound=4000
 media_renegotiate_delay_inbound=3000
 media_renegotiate_delay_outbound=-1
 t38_fax_fill_bit_removal=false
 t38_fax_transcoding_jbig=false
 t38_fax_transcoding_mmr=false
```

```
 g711_fallback_rtp_reinvite=false
 t38_stream_renegotiation=single
 t38_t30_fastnotify=false
 t38_UDPTL_redundancy_depth_control=5
 t38_UDPTL_redundancy_depth_image=2
 t38_fax_max_buffer=200
 t38_fax_max_datagram_send=72
 t38_fax_max_datagram_recv=125
[host_module.1/rtp]
 rtp_frame_duration=20
 rtp_jitter_buffer_depth=100
 rtp_codec=pcmu
 rtp_silence_control=inband
 t38_offer_as_ced=true
 rtp_voice_frame_replacement=0
[host_module.1/parameters]
 sip_max_sessions=256
 sip_default_gateway=10.51.53.177:5060
 sip_gateway2=
 sip_gateway3=
 sip_gateway4=
 sip_proxy_server1=
 sip_proxy_server2=
 sip_proxy_server3=
 sip_proxy_server4=
 sip_registration_server1=
 sip_registration_server1_aor=
 sip_registration_server1_username=
 sip_registration_server1_password=
 sip_registration_server1_expires=3600
 sip_registration_server2=
 sip_registration_server2_aor=
 sip_registration_server2_username=
 sip_registration_server2_password=
 sip_registration_server2_expires=3600
 sip_registration_server3=
 sip_registration_server3_aor=
 sip_registration_server3_username=
 sip_registration_server3_password=
 sip_registration_server3_expires=3600
 sip_registration_server4=
 sip_registration_server4_aor=
 sip_registration_server4_username=
 sip_registration_server4_password=
 sip_registration_server4_expires=3600
 sip_registration_interval=60
 sip_registration_interval_delta=5
 sip_registration_proxied=false
 sip_Max-Forwards=70
```

```
sip_From=Anonymous <sip:21022000@10.51.43.8>
sip_Contact=
sip_ContactV6=
sip_username=-
sip_session_name=no_session_name
sip_session_description=
sip_description_URI=
sip_email=
sip_phone=
sip_Route=
sip_session_timer_session_expires=0
sip_session_timer_minse=-1
sip_session_timer_refresh_method=0
sip_ip_preference=ipv4_only
sip_ip_interface=
sip_ip_interfaceV6=
sip_ip_interface_port=5060
sip_ip_interface_portV6=5060
sip_redirect_as_calling_party=0
sip_T1_timeout=500
sip_max_invite_retransmissions=7
sip_redirect_as_called_party=0
sip_tcp_enable=false
sip_user_agent=Brktsip/6.15.0B2 (Dialogic)
sip_RFC3325_Identity=0
sip_transport_protocol=udp
sip_reject_call_not_answered=486
sip_reject_unsupported_media=488
sip_reject_t38_renegotiation=488
sip_100_call_not_answered=true
sip_RFC6913_enable=false
sip_options_up_interval=120
sip_options_down_interval=60
sip_tls_enabled=false
tls_config_filename=siptls.cfg
sip_tls_port=5061
block_udp_port=true
block_tcp_port=true
srtp_enabled=false
srtp_config_filename=srtp.cfg
fips_enable=false
sip_use_any_reg_contact_expire=true
ignore_non_initial_record_route=false
sips_sip_uri_scheme=sips
nat_sip_address=
nat_media_address=
```

# 7. CUCM 14.0 Setup Notes – SIP / SIP Configuration



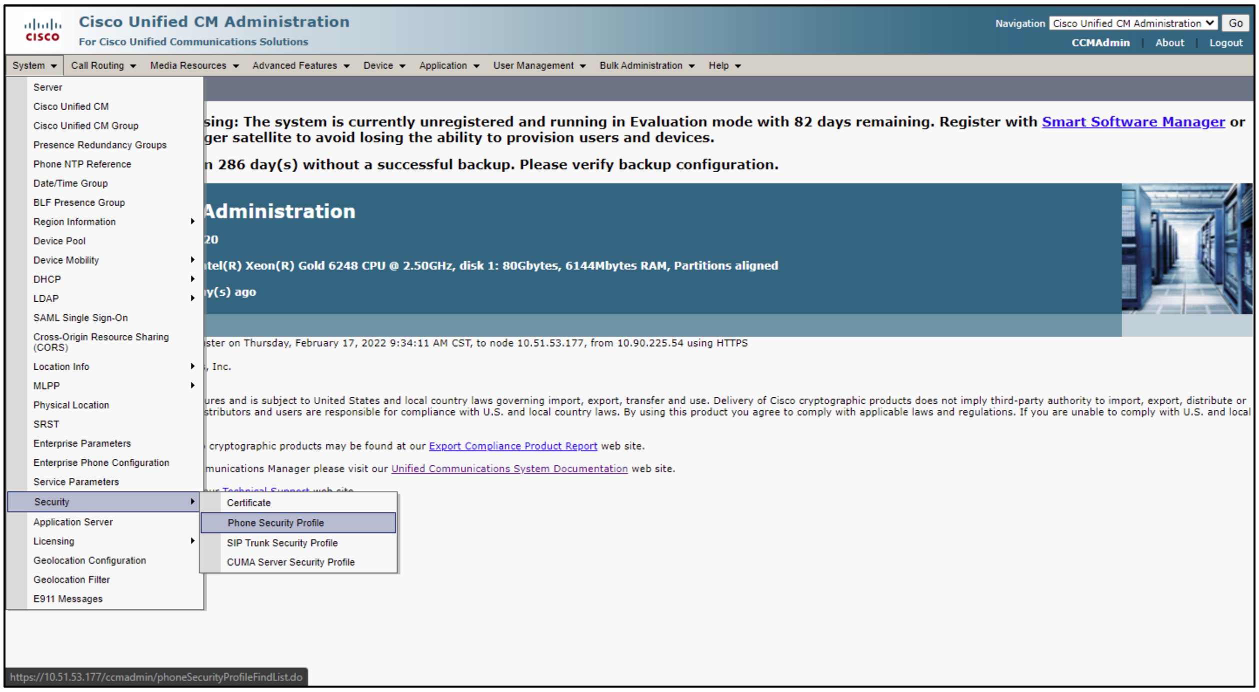

The CUCM 14.0 configuration values that were used in the sample configuration involve configuring the following items:

- Configure SIP Trunk Security Profile
- Configure SR140 (1) Trunk
- Configure SR140 (2) Trunk
- Configure Call Routing

## 7.1 Configure SIP Trunk Security Profile

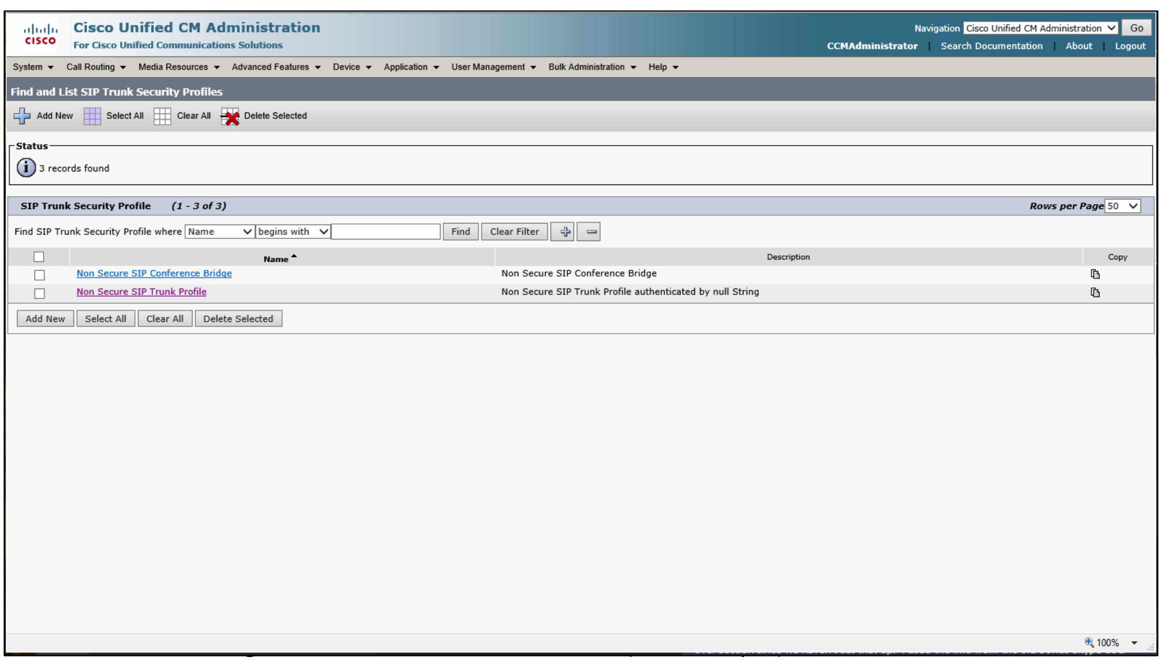
Using a web browser, log into CUCM 14.0. The following Cisco Unified CM Administration screen appears.

From the menu select System | Security | SIP Trunk Security Profile

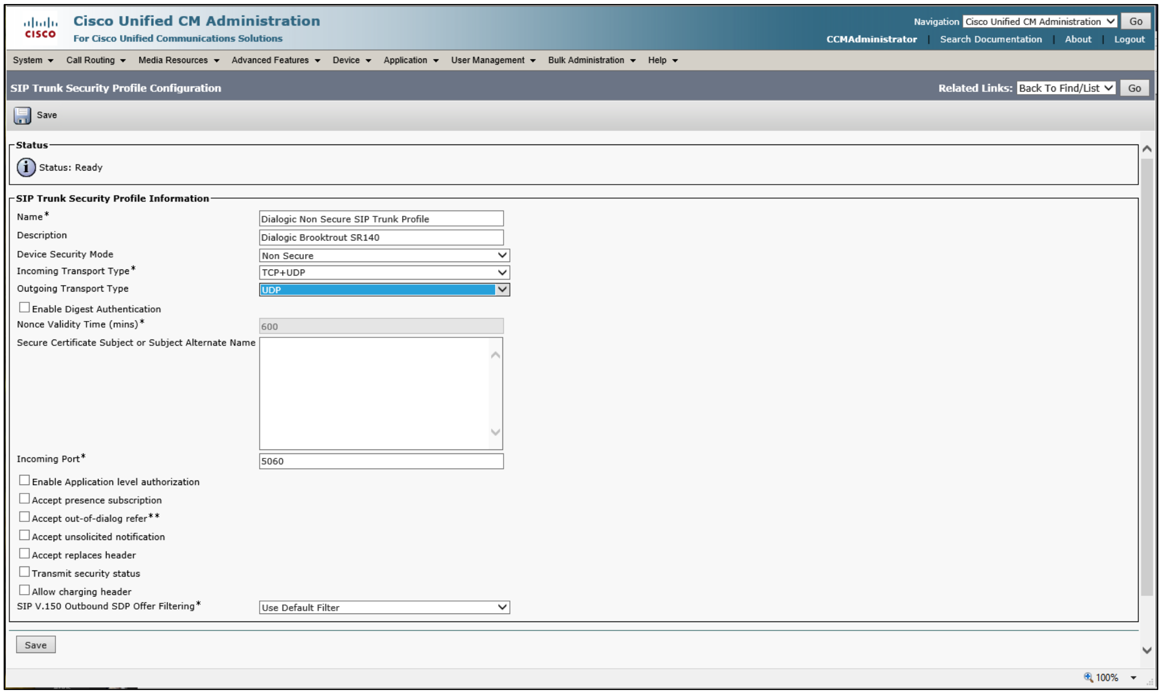



The following screen will appear.

Click **Add New**.




Enter a Description: Dialogic Brooktrout SR140 (for example)
Change **Outgoing Transport Type** to **UDP**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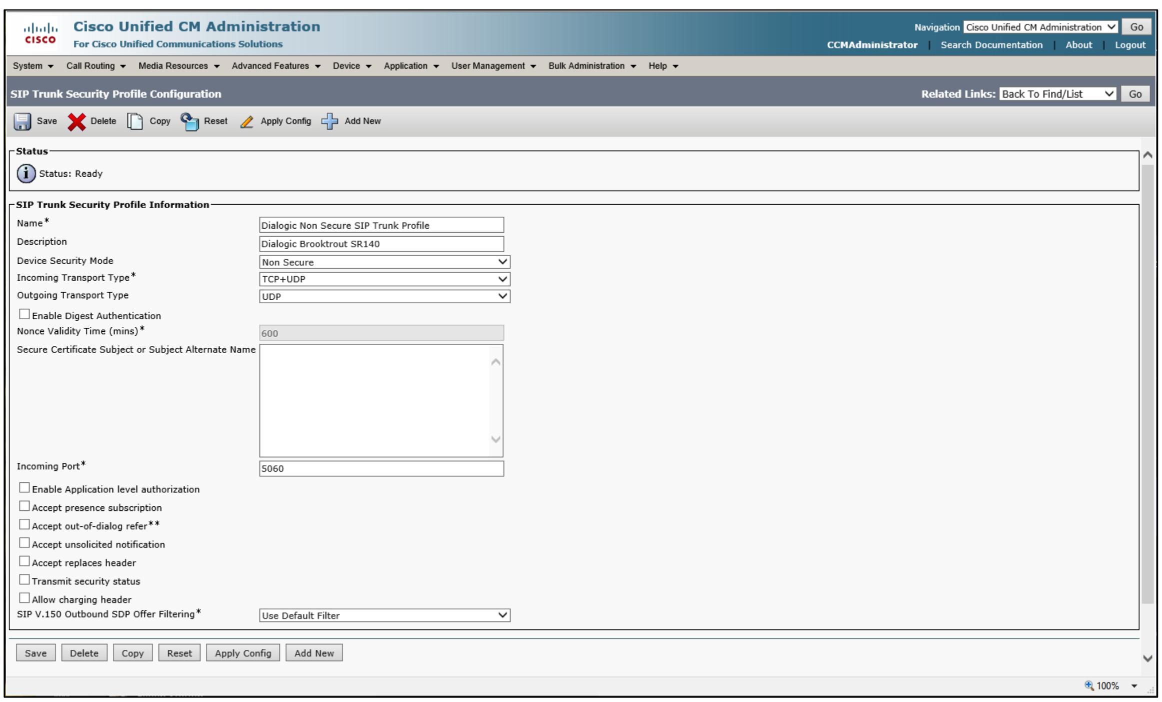
CCMAdministrator | Search Documentation | About | Logout
System Call Routing Media Resources Advanced Features Device Application User Management Bulk Administration Help
SIP Trunk Security Profile Configuration
Related Links: Back To Find/List Go
Save
Status
Status: Ready
SIP Trunk Security Profile Information
Name*
Dialogic Non Secure SIP Trunk Profile
Description
Dialogic Brooktrout SR140
Device Security Mode
Non Secure
Incoming Transport Type*
TCP+UDP
Outgoing Transport Type
UDP
Enable Digest Authentication
Nonce Validity Time (mins)*
600
Secure Certificate Subject or Subject Alternate Name
Incoming Port*
5060
Enable Application level authorization
Accept presence subscription
Accept out-of-dialog refer**
Accept unsolicited notification
Accept replaces header
Transmit security status
Allow charging header
SIP V.150 Outbound SDP Offer Filtering*
Use Default Filter
Save
100%

Click **Save.**


Cisco Unified CM Administration
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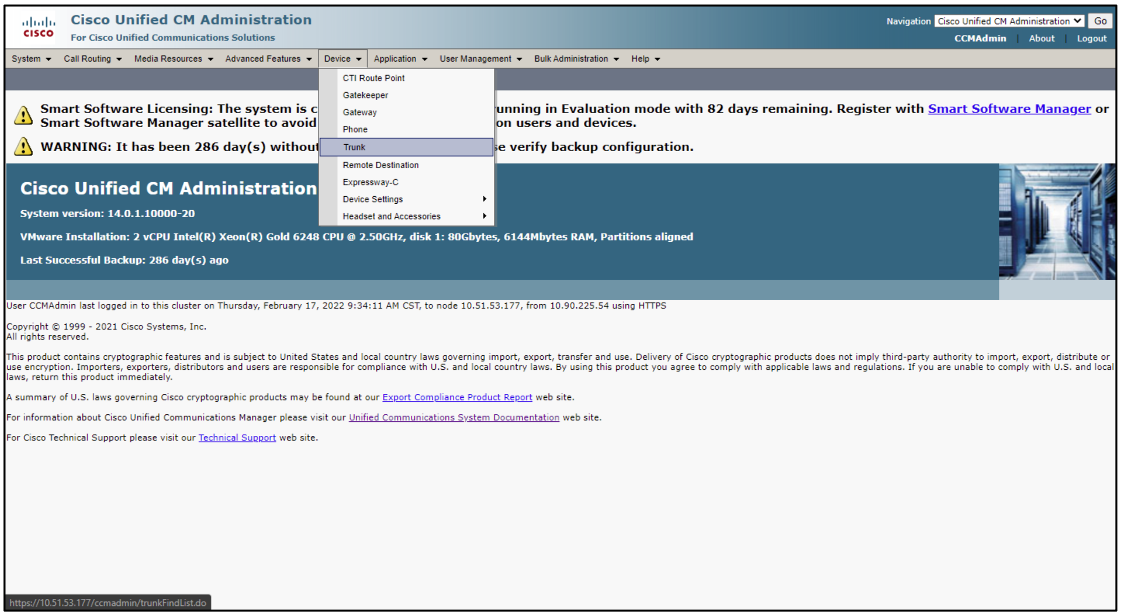
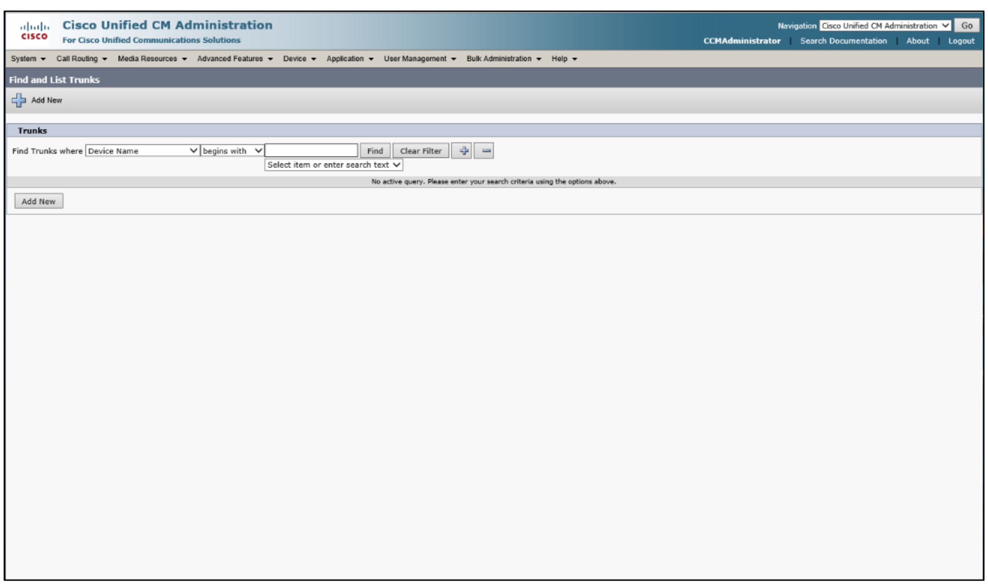
CCMAdministrator | Search Documentation | About | Logout
System Call Routing Media Resources Advanced Features Device Application User Management Bulk Administration Help
SIP Trunk Security Profile Configuration
Related Links: Back To Find/List Go
Save Delete Copy Reset Apply Config Add New
Status
Status: Ready
SIP Trunk Security Profile Information
Name*
Dialogic Non Secure SIP Trunk Profile
Description
Dialogic Brooktrout SR140
Device Security Mode
Non Secure
Incoming Transport Type*
TCP+UDP
Outgoing Transport Type
UDP
Enable Digest Authentication
Nonce Validity Time (mins)*
600
Secure Certificate Subject or Subject Alternate Name
Incoming Port*
5060
Enable Application level authorization
Accept presence subscription
Accept out-of-dialog refer**
Accept unsolicited notification
Accept replaces header
Transmit security status
Allow charging header
SIP V.150 Outbound SDP Offer Filtering*
Use Default Filter
Save Delete Copy Reset Apply Config Add New
100%

## 7.2 Configure SR140 (1) Trunk

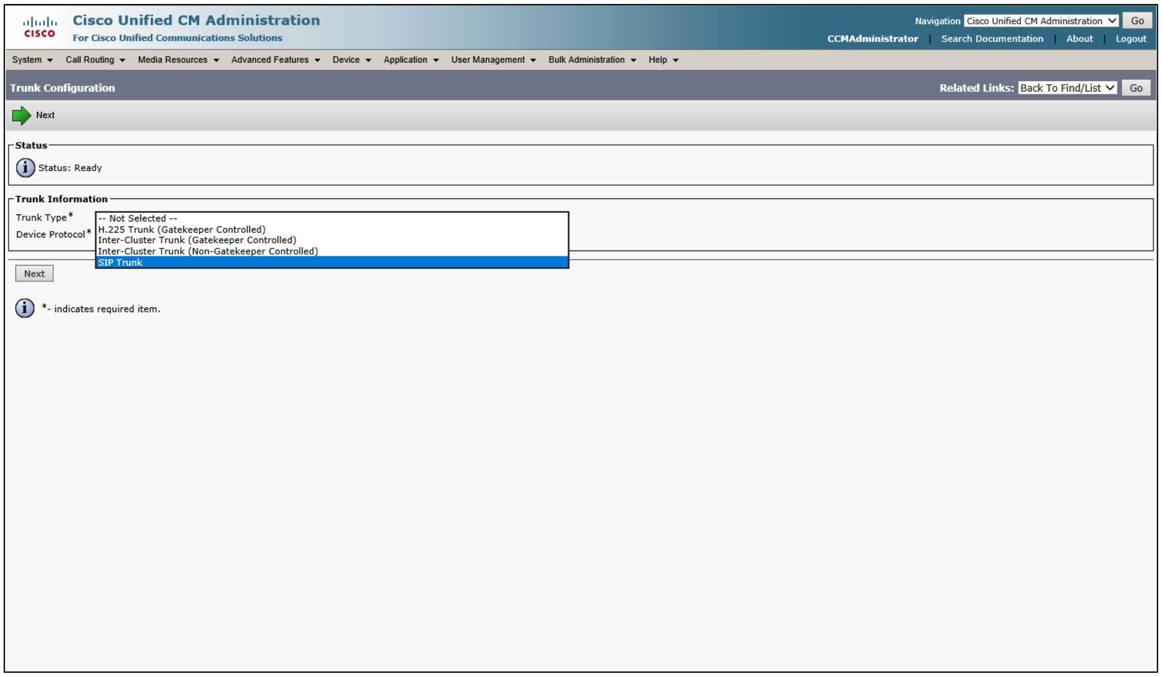
Using a web browser, log into the Cisco Unified CM Administration screen
From the menu select Device | Trunk



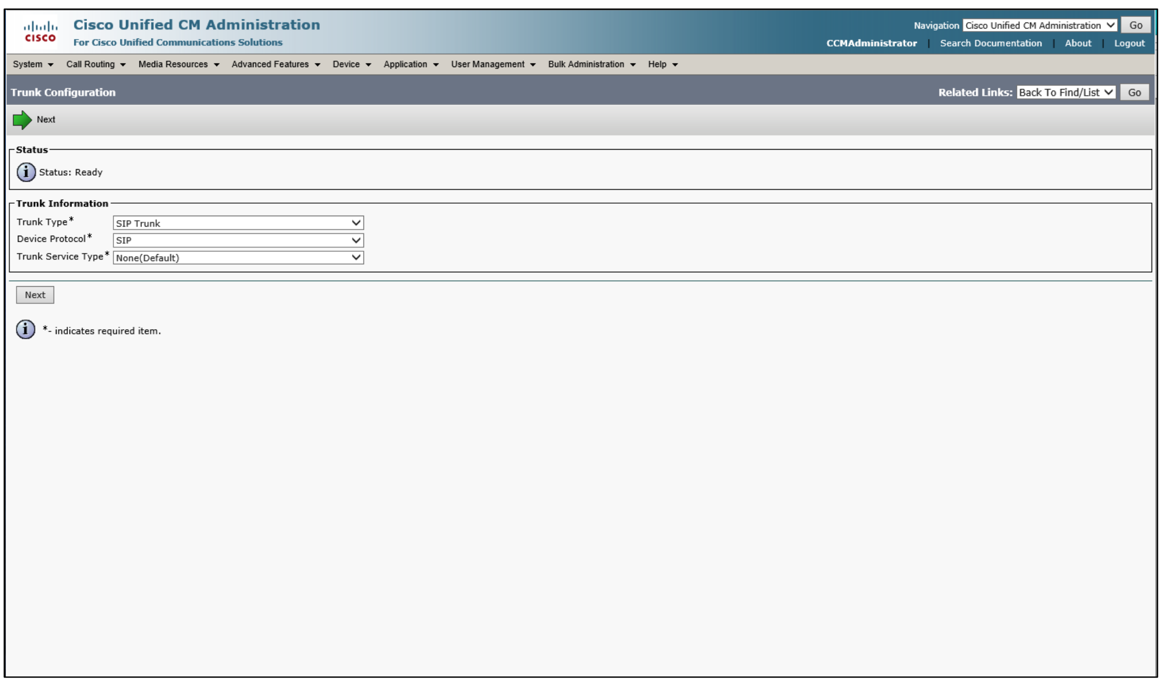
The following screen will appear. Press **Add New** to add a new SIP Trunk



Select **SIP Trunk** for the Trunk Type. Click **Next**.



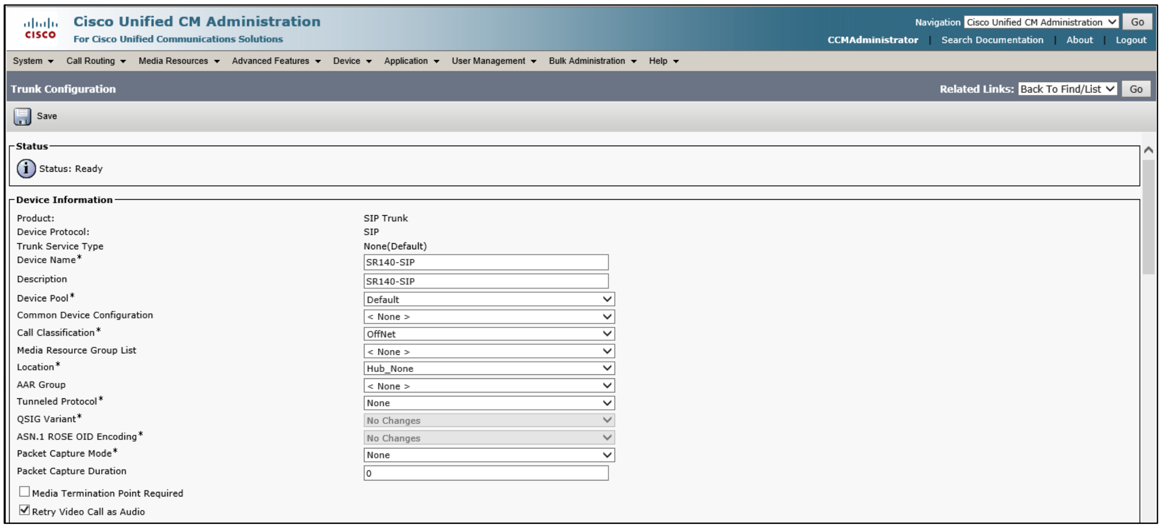

Accept the default Trunk Service Type. Click **Next**.

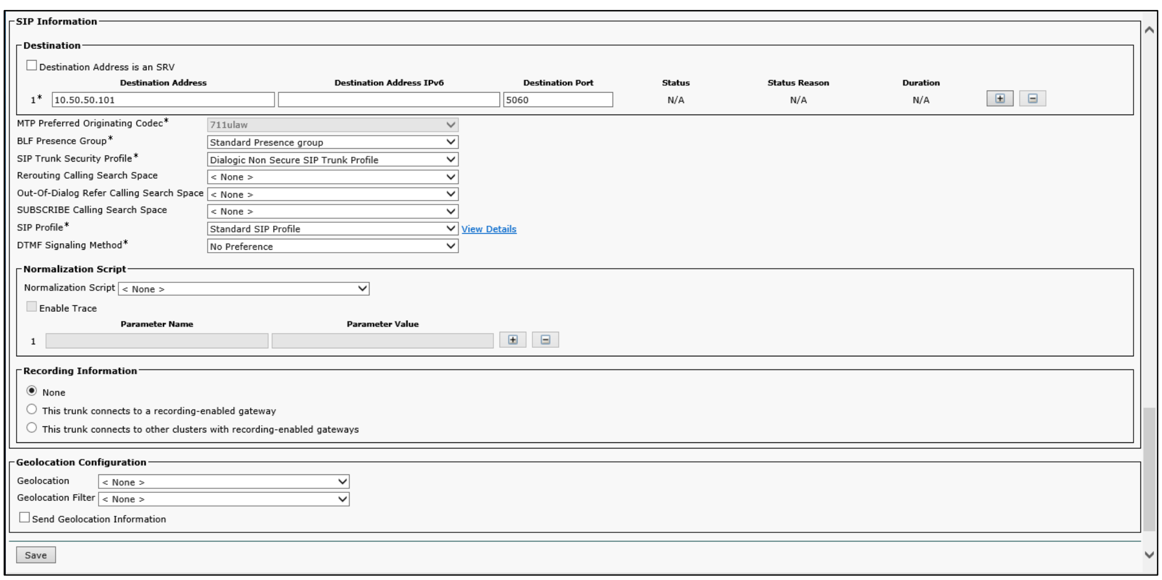


Select **SIP** for the Device Protocol and press **Next**.

Set the following:

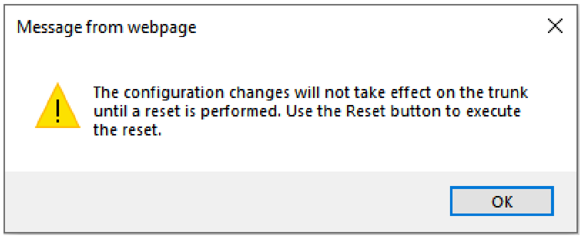
- Device Name: SR140-SIP (for example)
- Device Description: SR140-SIP (for example)
- Device Pool: Default
- Call Classification: OffNet
- Destination Address: 10.50.50.101 (Use the IP address of your SR140 server)
- SIP Trunk Security Profile: Dialogic Non Secure SIP Trunk Profile (for example)
- SIP Profile: Standard SIP Profile



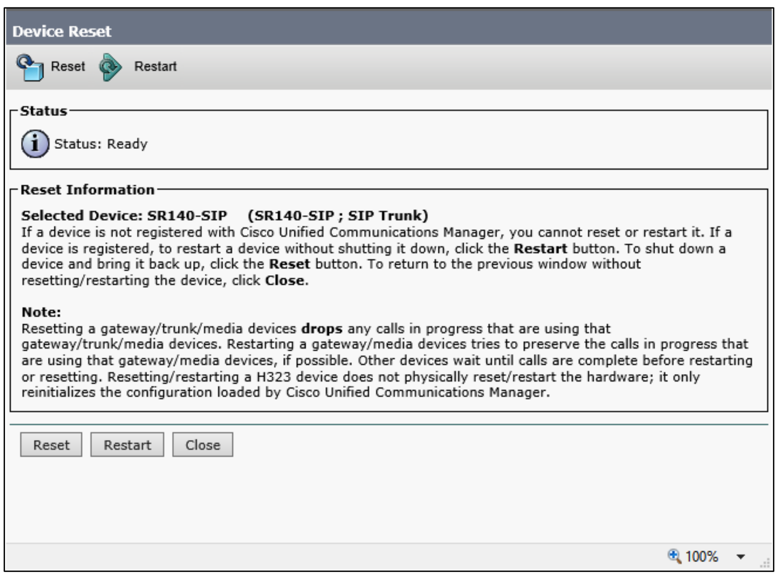



Click **Save.**

A reset message will appear. Click **OK**.




Press **Reset**, then click **Close**.

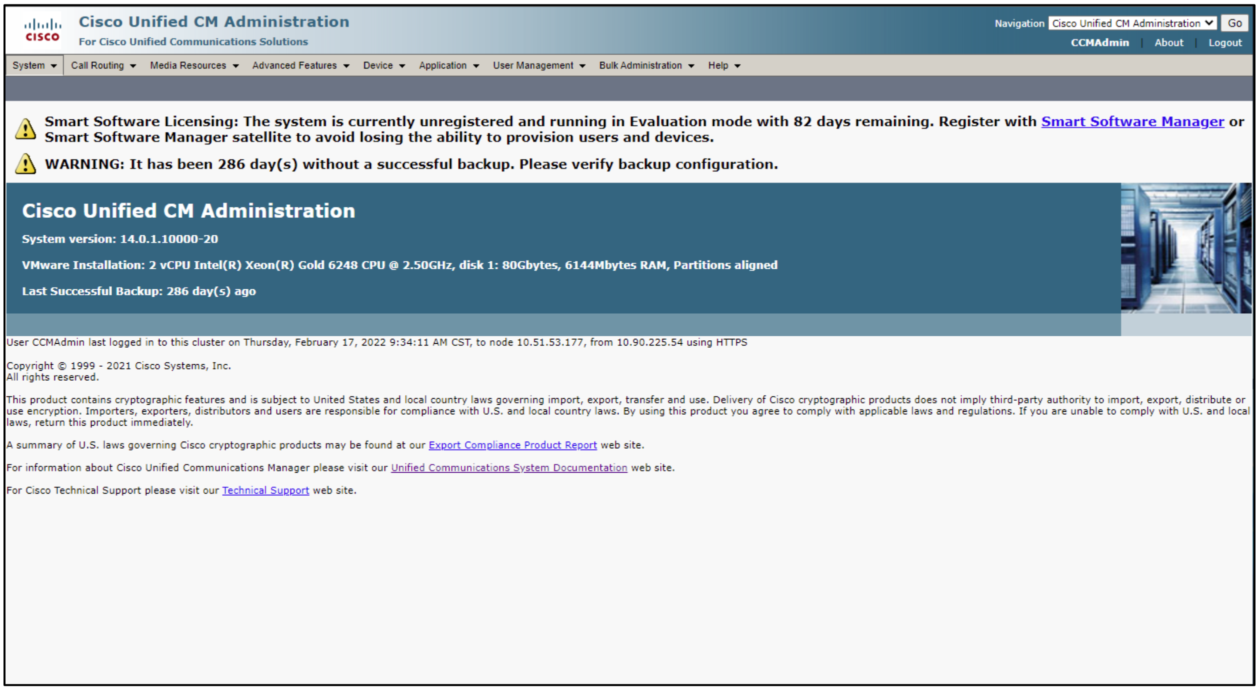



## 7.3 Configure SR140 (2) Trunk

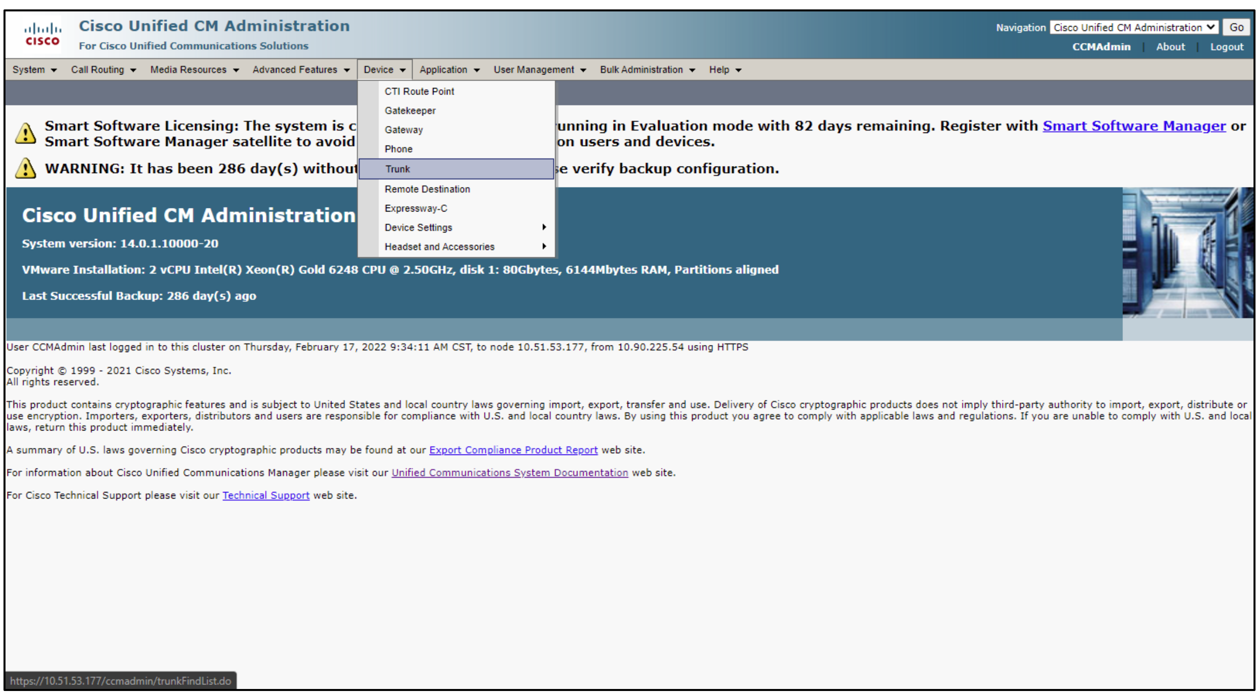
Under normal deployments the second trunk will be used to bring in a PSTN connection either through a SIP trunk using an SBC like the Cisco CUBE, or through a PRI through a Cisco voice router. In most cases this will already be configured for your voice usage. You will want to confirm that the following setting are set to support fax.

The following section describes how the second trunk was configured for this testing. It is similar to the previous trunk configuration but with a different IP address and a different route pattern that will be configured to route to this trunk versus the first one.

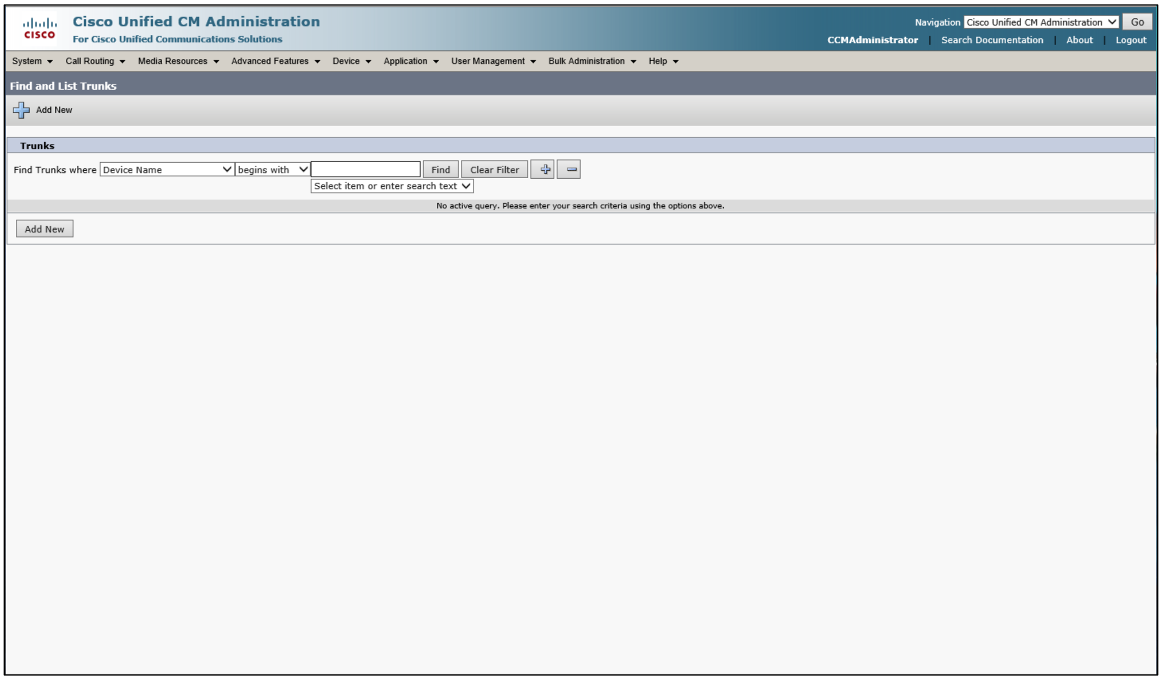
Using a web browser, log into the Cisco Unified CM Administration screen.



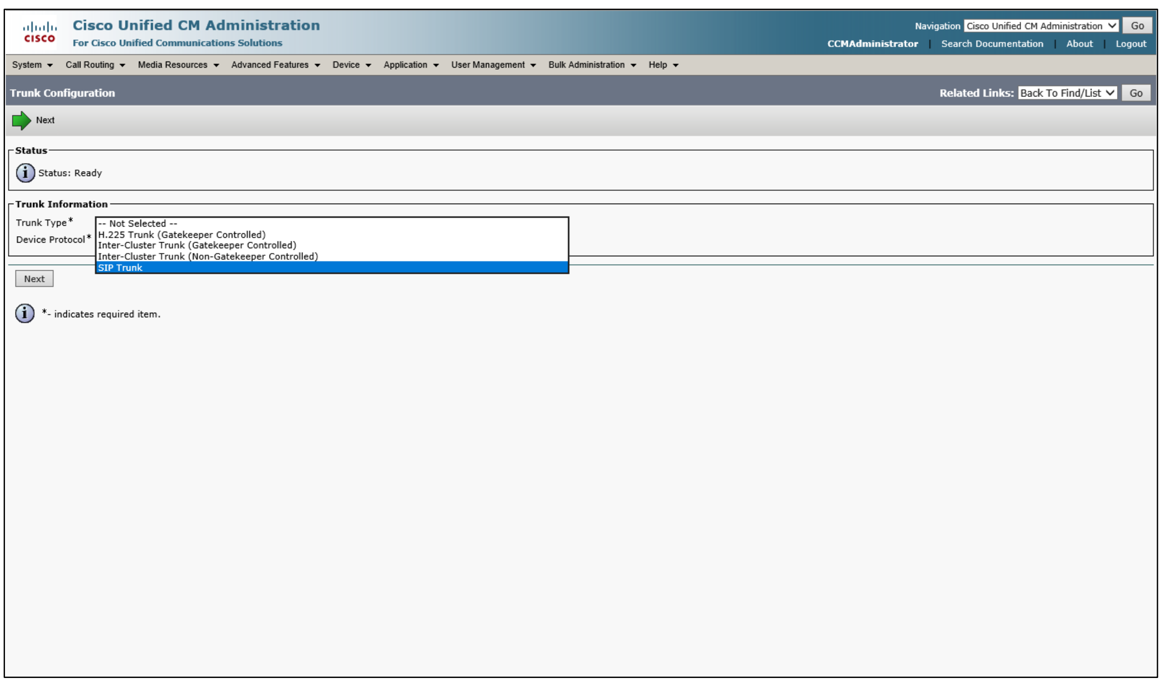

From the menu select Device | Trunk.



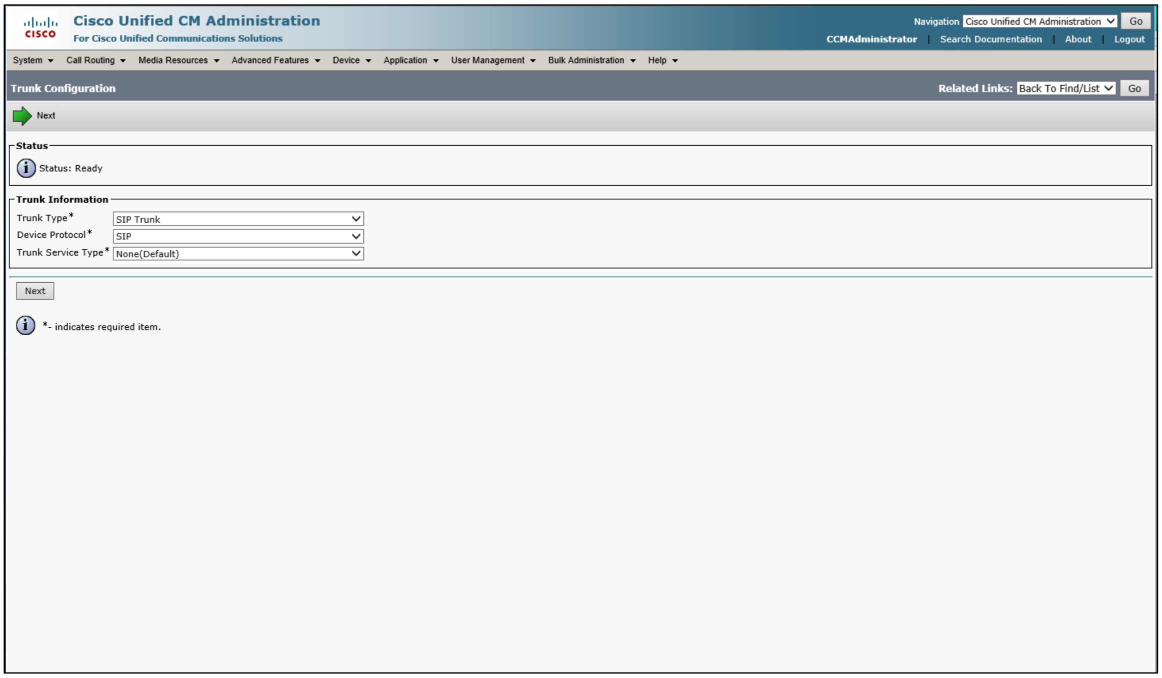
The following screen will appear. Click **Add New** to add a new SIP Trunk.




Select **SIP Trunk** for the Trunk Type. Click **Next**.

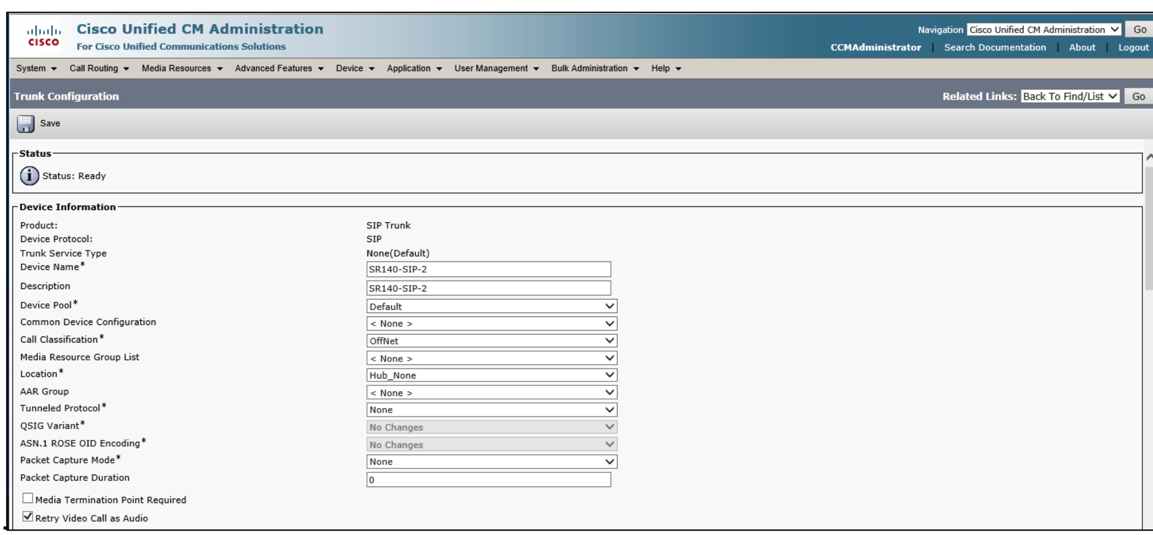


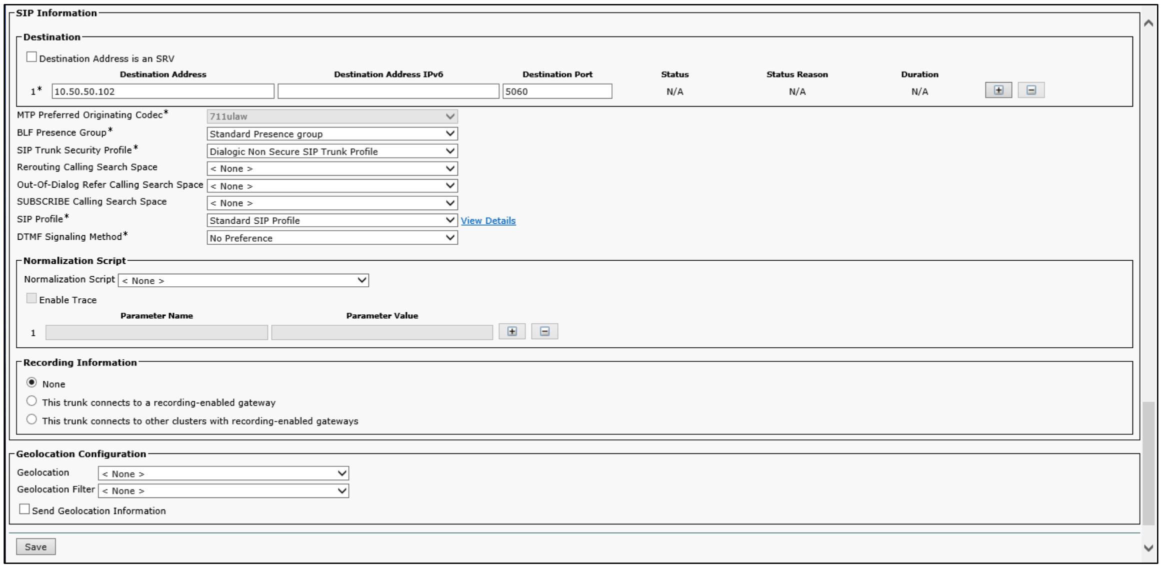
Accept the default Trunk Service Type. Click **Next**.




Set the following:

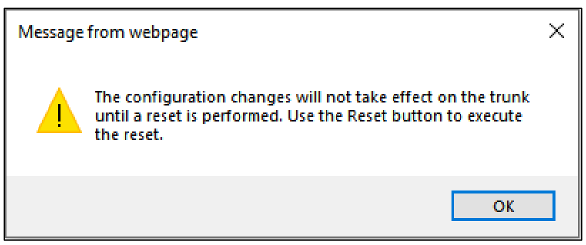
- Device Name: SR140-SIP-2 (for example)
- Device Description: SR140-SIP-2 (for example)
- Device Pool: Default
- Call Classification: OffNet
- Destination Address: 10.50.50.102 (Use the IP address of your SR140 server)
- SIP Trunk Security Profile: Dialogic Non Secure SIP Trunk Profile (for example)
- SIP Profile: Standard SIP Profile



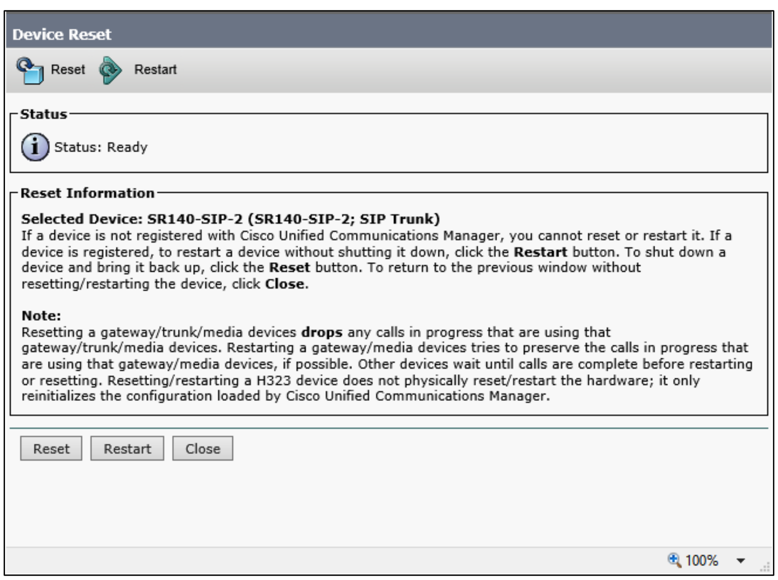



Click **Save**.

A reset message will appear. Click **OK**.

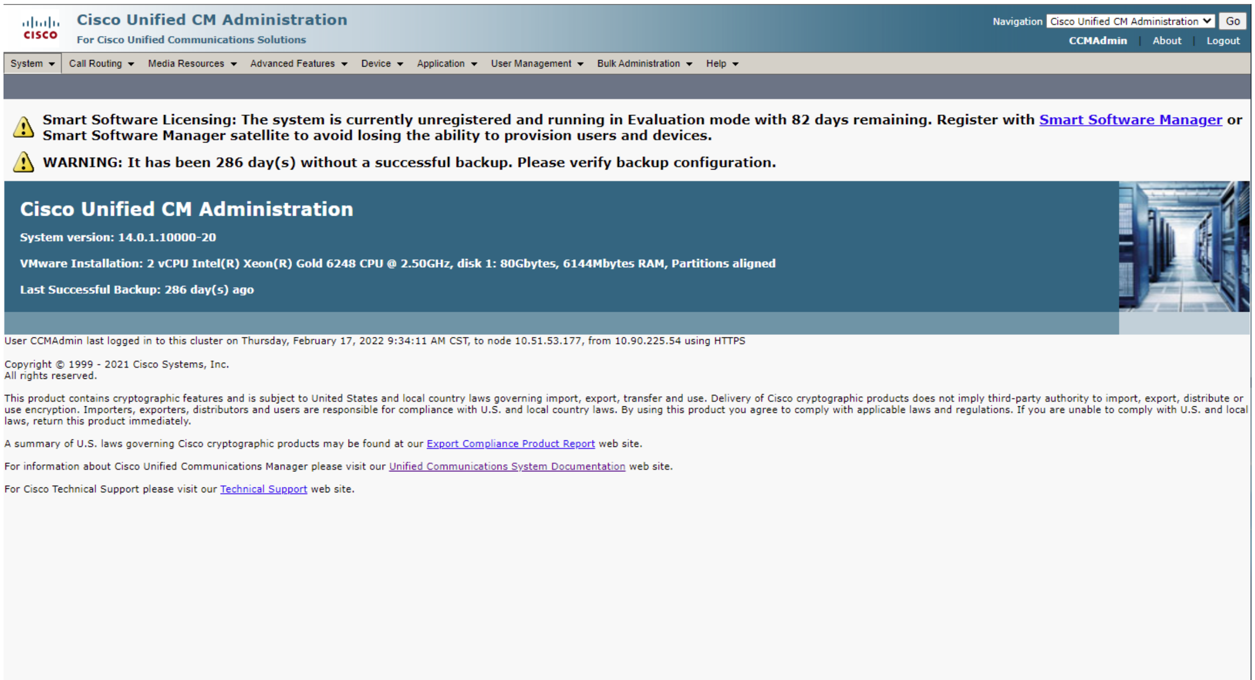



Press **Reset**, then click **Close.**

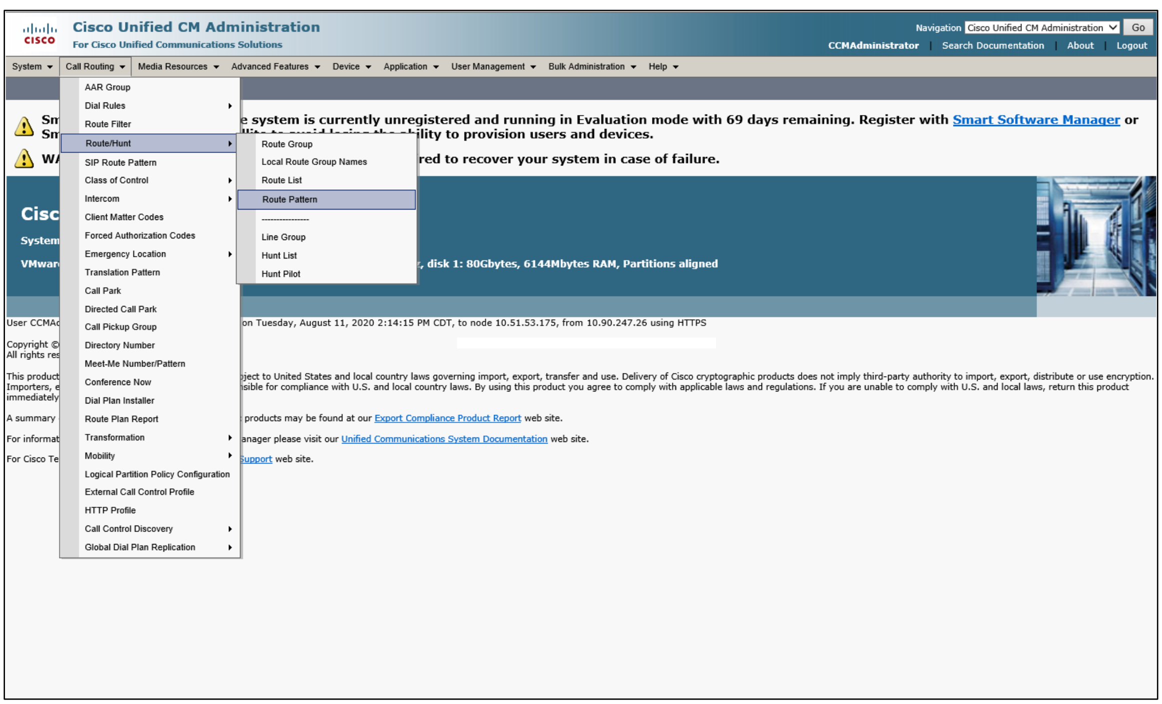


## 7.4 Configure Call Routing

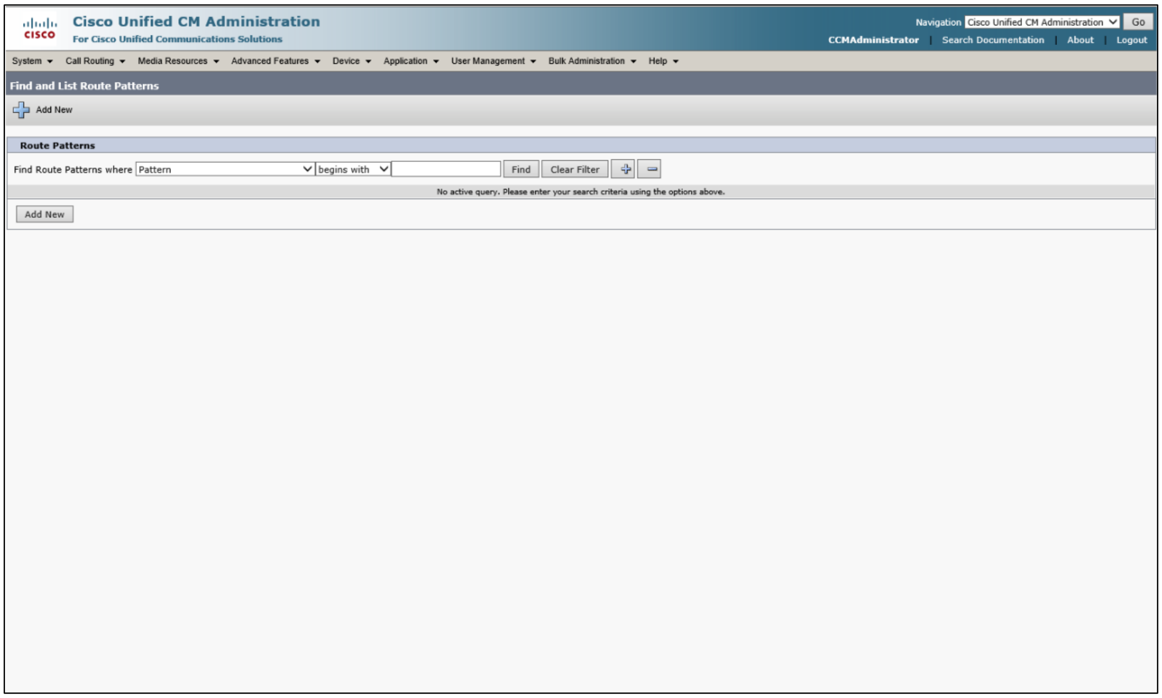
Using a web browser, log into the Cisco Unified CM Administration screen.




From the menu select Call Routing | Route / Hunt | Route Pattern.

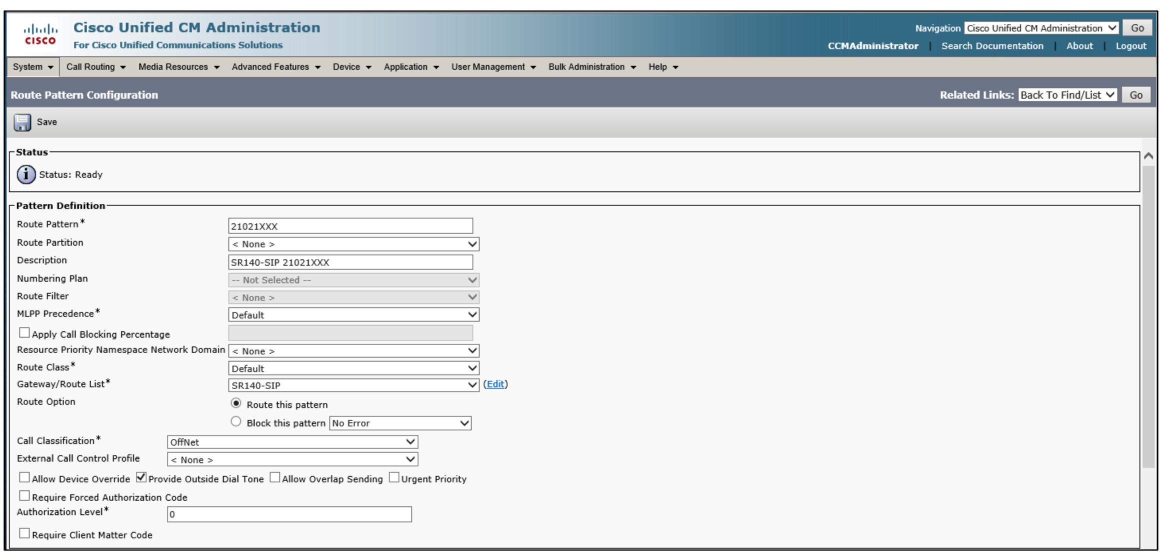


The following screen will appear. Click **Add New**.

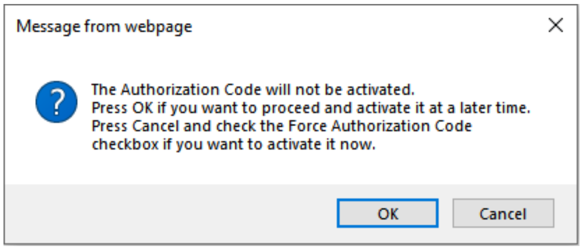



Set the following:

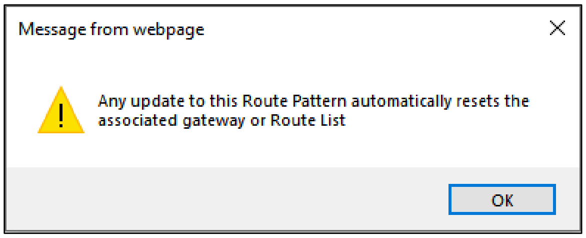
- Route Pattern: 21021XXX
- Description: SR140-SIP 21021XXX
- Gateway/Route List: SR140-SIP
- Call Classification: OffNet




Click **Save**.



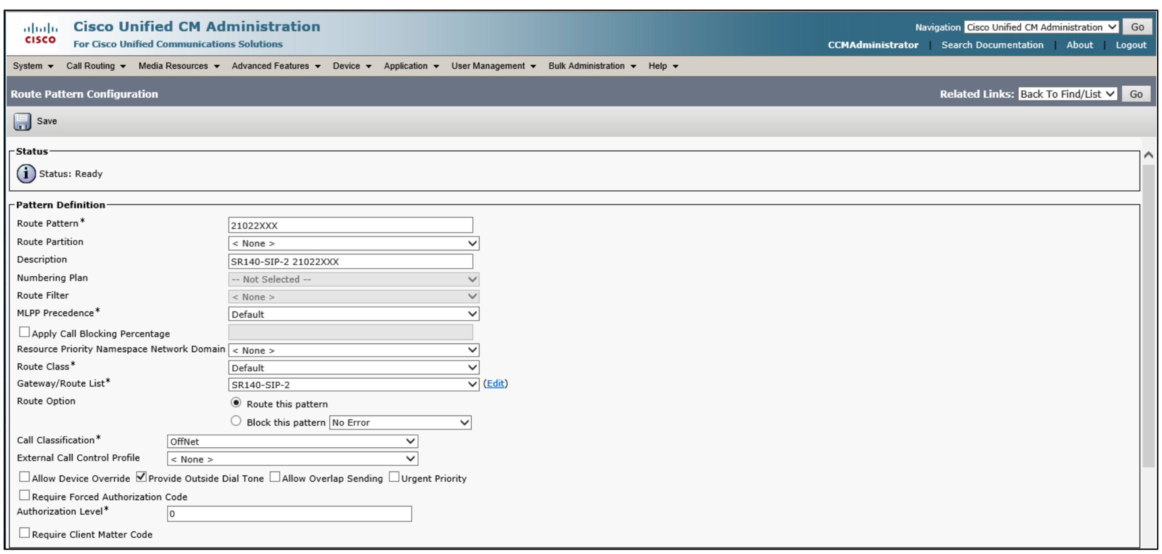

Press **OK**.




Press **OK**.

Repeat the same steps and set the following to route to the SR140-2:

- Route Pattern: 21022XXX
- Description: SR140-SIP-2 21022XXX
- Gateway/Route List: SR140-SIP-2
- Call Classification: OffNet




Click **Save**.

## 8. References

- Brooktrout Fax Products Installation and Configuration Guide
  http://www.dialogic.com/manuals/brooktrout/default.htm

- CUCM Documentation Roadmaps
  http://www.cisco.com/en/US/products/sw/voicesw/ps556/products_documentation_roadmaps_list.html

## 9. Frequently Asked Questions

- ***I'm configured as near as possible to the sample configuration described in this document, but calls are still not successful; what is my next step?***

  If you have confirmed your configuration is correct, you should open a support case with your Fax Server Application provider or Brooktrout technical support and provide the following information:

  - The LAC (License Activation Code) for the SR140 license that is covered by a support contract
  - A network capture showing the failed call attempts (see below for information on collecting a network capture)
  - A copy of your callctrl.cfg and btcall.cfg files
  - A set of debug logs (see below for information on collecting debug logs)

  For Brooktrout Technical Support, email Brooktrout.support@enghouse.com.

- ***How do I obtain network captures?***

  There are two options: Wireshark and Brooktrout Capture Tool.

  **Wireshark**

  Traces can be captured and viewed using the Wireshark network analyzer program, which can be freely downloaded from http://www.wireshark.org. Instructions for using this program can also be found on that site.

  Select "Capture->Options" and select the Network Interface that the fax server is set up to use. Select "Start" and place a test call

  To view the call flow in Wireshark, open the desired network trace file and select "Statistics->VoIP Calls" from the dropdown menu. Then highlight the call and click on the "Graph" button.

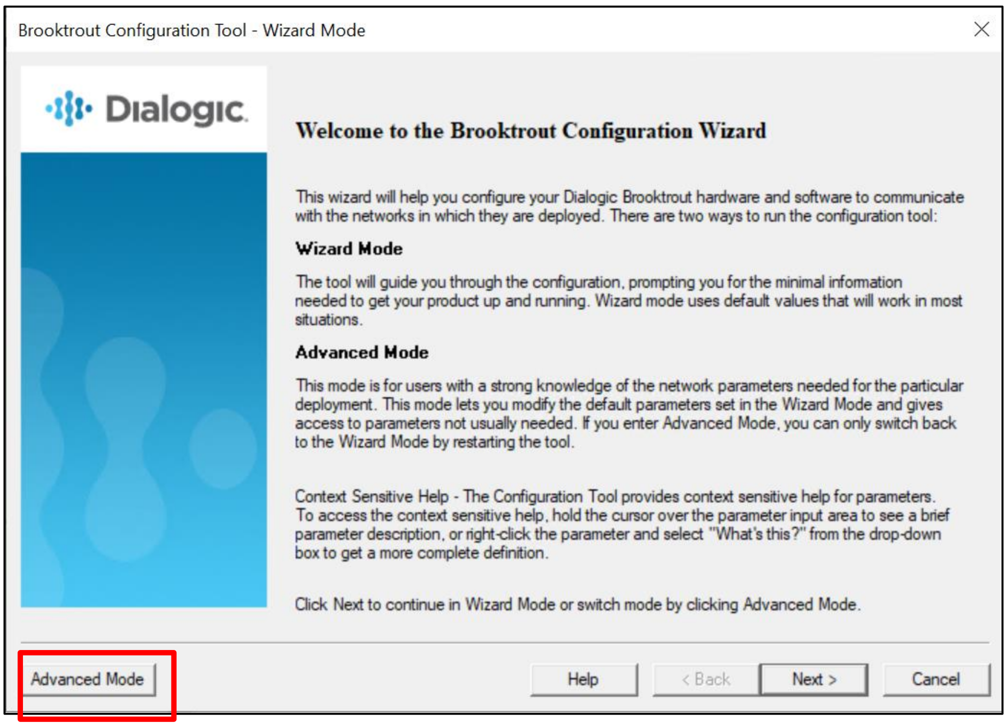
**Brooktrout Capture Tool**
Information on running the Brooktrout Packet capture utility can be found at:

https://ei-brooktrout.smartsupportapp.com/articles/132-New-Features-in-Brooktrout-SDK-6-15-Command-Line-Packet-Capture-Tool

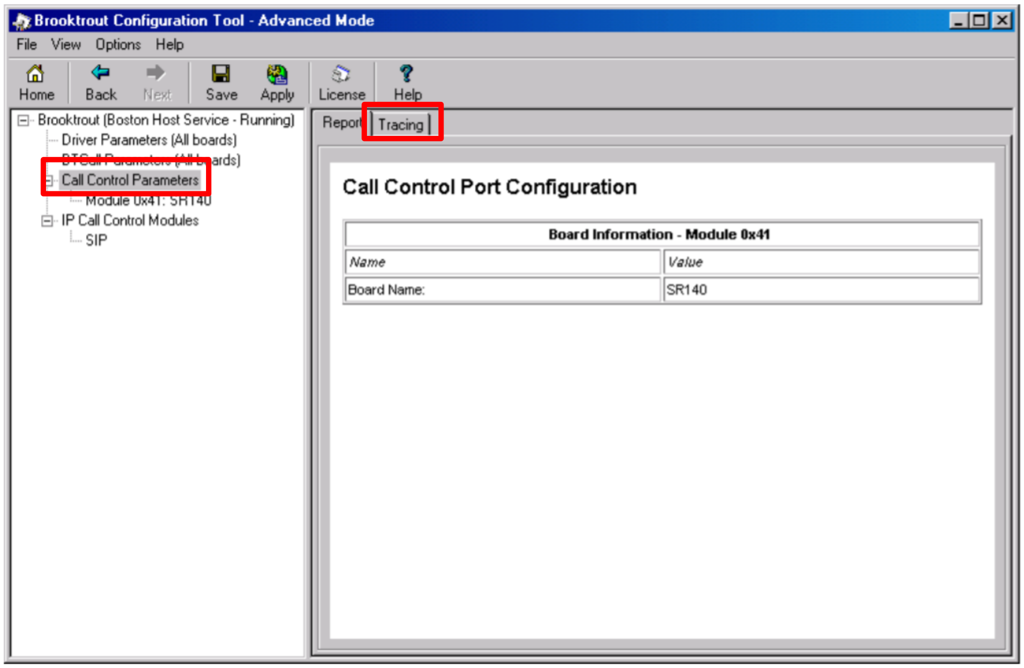
- ***How do I enable and gather debug logs?***

**ECC Logs**

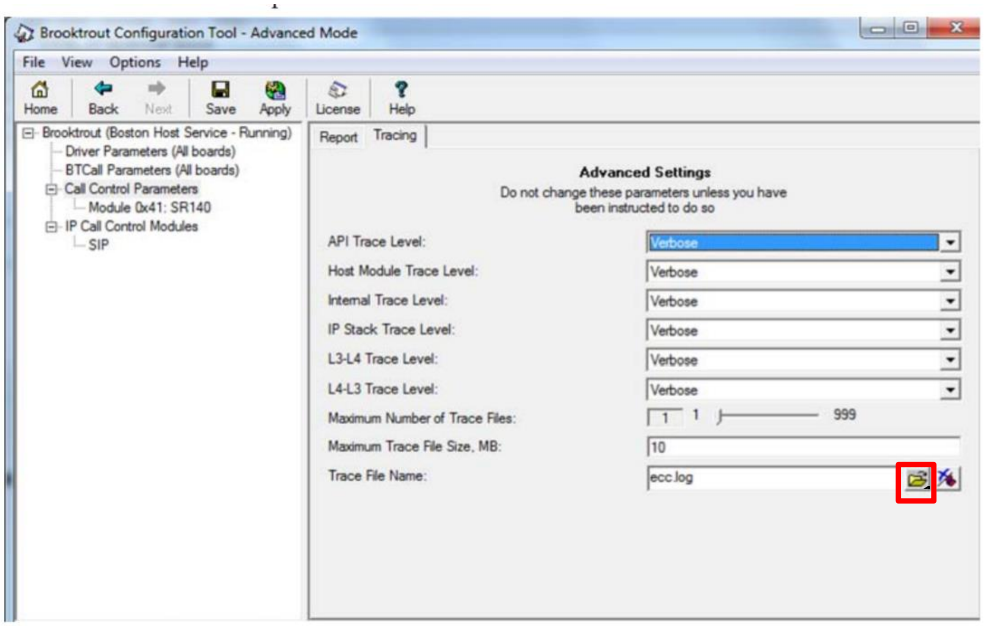
1. Open the Config Tool in Advanced Mode. This is done by clicking the "Advanced Mode" button on the lower left when/if the tool opens by default in Wizard Mode.



2. Highlight "Call Control Parameters." On the right side click "Tracing."




3. For all "_trace" values, choose "Verbose."




4. For the "trace_file" select a file name with an *absolute* path, that's important. You do this by clicking the open folder icon and going from there.

5. If you wish to create multiple call trace logs and/or set another maximum size in megabytes, please do so where indicated.
6. When done, hit "Save" then "Apply". Among other things this will restart the Boston Host Service.
7. To turn off ECC logging later, go back into the config tool and set all "trace" values to "none", and click the blue cross/red flag icon by "trace_file" to wipe everything out of that field to give it a null value. Then hit Save/Apply again.

**API Debug Logs**

API debug logs need to be configured by the Fax Server application providers. Please follow their directions on enabling their logging including Brooktrout API logs.

If using the Brooktrout FDTool sample application API debug logs can be enabled by selecting: “Tools->Debug”.

The resulting logs will be stored in “logs” directory of the folder where FDTool was installed.