Application Notes:

ADTRAN 900 Series Gateway Configuration for MaxCS 7.5 and 8.0

November 2016

Contents

Introduction

These application notes are provided for administrators who are configuring an ADTRAN Total Access 900e series gateway as a TI/PRI trunking gateway for MaxCS Premise 7.5 and 8.0 deployments.

This guide also includes instructions on how to configure an ADTRAN gateway for fax support, for MaxCS Release 7.5 and MaxCS 8.0 deployments.

Note: If you are configuring an ADTRAN NetVanta 664 device, perform the steps in the section MaxCS Configuration, then refer to article 1176 in the AltiGen Knowledgebase (https://know.altigen.com/)

Minimum Requirements

Your environment must meet the following minimum requirements:

- You must be running MaxCS Release 7.5 Update 1 or Release 8.0.
- You must be deploying an ADTRAN Total Access Gateway Generation 2 Series or Generation 3 series.

  To determine the generation number of your device, look on the sticker on the bottom of the device. It should say something similar to “Gen 2” or “Gen 3.”

  IMPORTANT: If you do not see a generation identification on the sticker, then you may have a generation 1 device. AltiGen does not recommend using a generation 1 device with MaxCS.

Configure DTMF Relay Minimum Duration

Before you begin any other steps in this guide, you must set the ADTRAN device’s DTMF relay minimum duration to 70ms, to avoid any DTMF double-digit issues.

1. Make sure that your computer has a Telnet client, so that you can Telnet to the ADTRAN device through your computer.
2. In your command window or terminal, type `telnet xxx.xxx.xxx.xxx` and press **Enter**, replacing `xxx.xxx.xxx.xxx` with your ADTRAN device’s IP address.
3. Type the password of the ADTRAN device and press **Enter**. The default password is “password”.
4. Type `enable` and press **Enter.** Type the password and press **Enter** again.
5. Type `configure` and press **Enter.** Then press **Enter** again to use the default option [terminal].
6. Type `ip rtp dtmf-relay min-duration 70` and press **Enter.** This sets the minimum duration to 70ms.
7. Type `exit` and press **Enter**.
8. Type `write` and press **Enter** to save the configuration to the ADTRAN device.
9. Type `exit` and press **Enter** to close the Telnet session.

Once these steps have been completed, we recommend that you proceed through this guide **in order**. Once you have configured the T1/PRI and SIP configuration, you can continue on to the fax configuration section if you are deploying fax support.

TI /PRI Configuration

This section describes how to configure the gateway via the ADTRAN gateway web configuration page.

Please be aware of the following PRI gateway limitations, based upon your specific ADTRAN model.

Important! AltiGen does not recommend using a generation 1 Total Access device.

Table 1: Connectivity Matrix by Model

For these models…	…use this configuration for PRI
1st Generation Model	**Not recommended**
2nd Generation (model 904 or 908)	Use **only** t1 0/2 for PRI
2nd Generation (model 908e, 916e, or 924e)	Use **only** t1 0/3 or t1 0/4 for PRI
3rd Generation (908e, 916e, or 924e)	Use any of the four t1's (for a maximum of 2 PRIs)

Log into the ADTRAN Configuration Page

Refer to the ADTRAN documentation to install your gateway. You can find documentation on the ADTRAN web site at http://www.adtran.com/web/page/portal/Adtran/group/40.

Open the Gateway configuration page in your web browser and log in. Refer to the Total Access 900e series documentation from ADTRAN for the configuration page URL and login defaults.

In this configuration page, you choose from menus in the left panel to configure parameters for the gateway.

Configure the Ethernet Interface

First, configure the Ethernet interface.

1. Expand the **System** menu and select **Physical Interfaces**.
2. We are using the Ethernet port 0/1 as the connection to MaxCS, so click the **eth 0/1** interface in the table. The configuration page opens. (If using a 3rd Generation Adtran you can use the Gigabit Port 0/1 in place of Ethernet port 0/1)

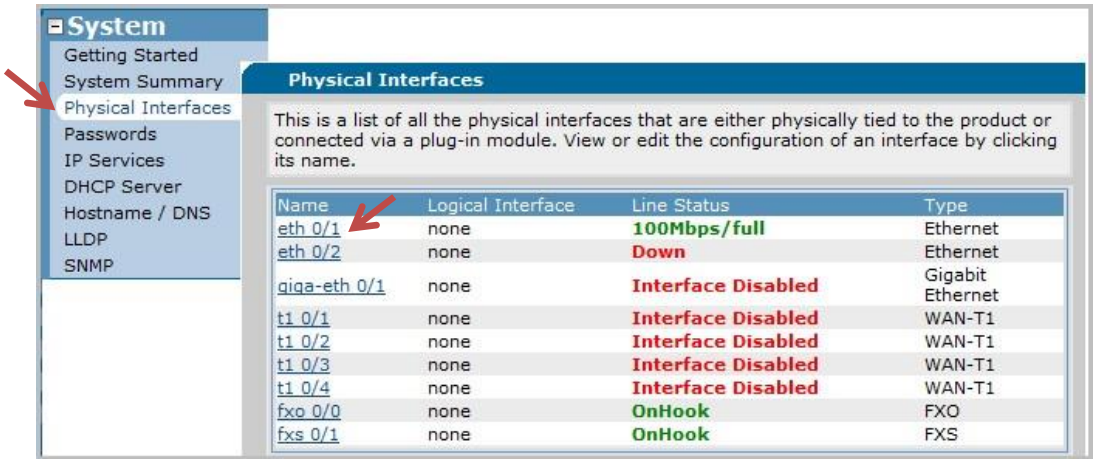


Figure 1: The Physical Interfaces table

3 In the *Description* field, label the interface **SIP to MaxCS**.

4 Select the **Enable** checkbox to enable the interface.

5 Make sure that the *Interface Mode* field is set to **IP routing**.

6 Clear the *Enabled AWCP* checkbox.

7 Set the *Address Type* field to **Static**.

.

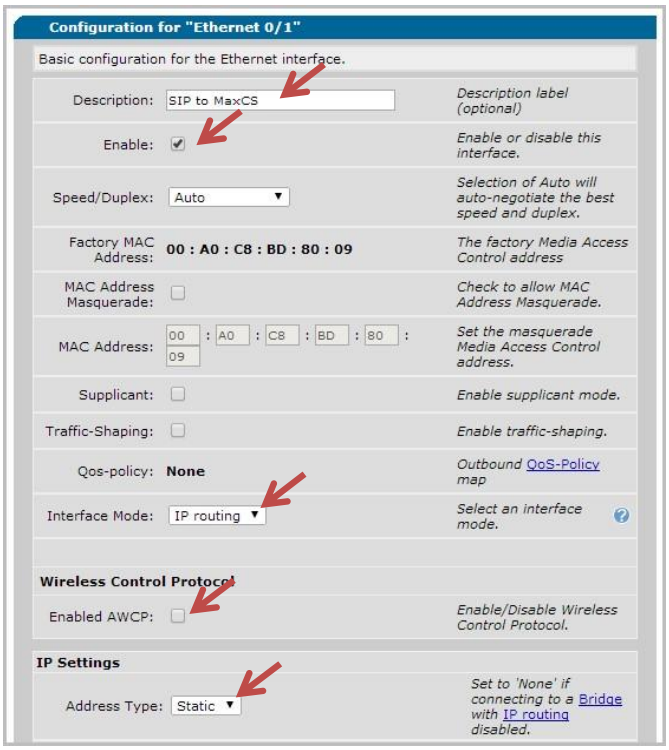


Figure 2: Configure the eth 01 interface

8 In the *Media-Gateway* section, set the *IP Address Type* field to **Primary**.

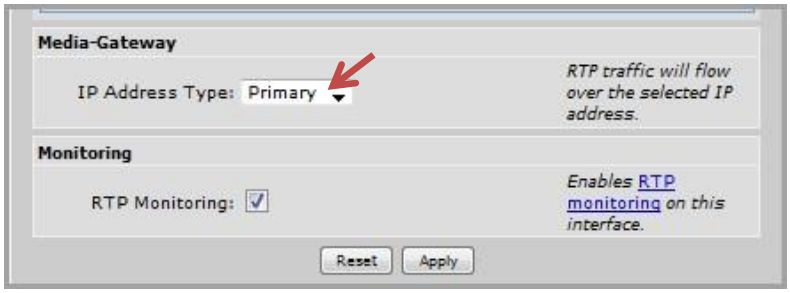


Figure 3: Configure the Media Gateway IP Address parameter

9 Click **Apply**.

10 To set up the default gateway, expand the **Data** menu and click **Default Gateway**.

11 Enter your organization's gateway address and click **Modify**.

Figure 4: Configure the Default Gateway parameter

Configure the T1 Interface

Next, configure the T1 interface. If you are adding two PRIs to the Adtran, you will complete the following steps on a second T1 interface.

1 Expand the **System** menu and click **Physical Interfaces**.

2 In the table, click on the t1 0/x entry that you want to connect (refer to the connectivity table on page 4 to determine which t1 can be used for your model). This action opens the configuration page for the selected interface.

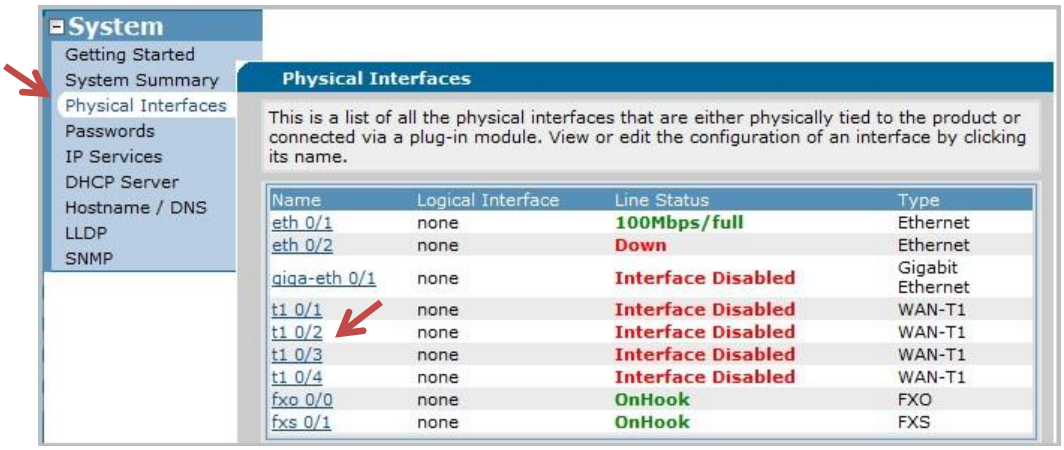


Figure 5: Select the t1-01 interface in the table

3 For the *Description* field, enter the label to **PSTN**, as illustrated in the next figure.

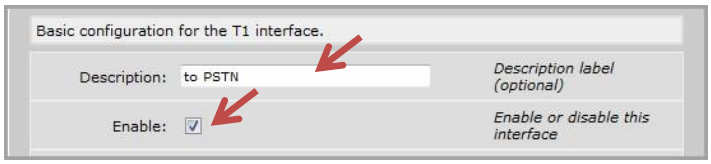


Figure 6: Configure the t1_01 interface parameters

4 Select the **Enable** checkbox to enable the interface. Click **Apply**.

Add the PRI Connection

Next, connect the T1 0/1 interface to a PRI.

1 For the *Connect To* field, select **PRI**.

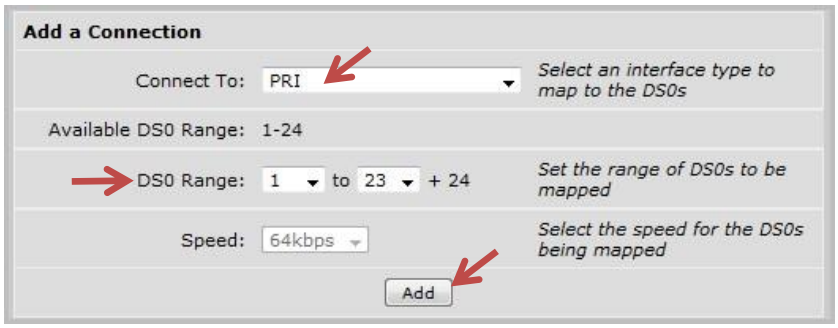


Figure 7: Configure the TI 00 PRI connection

2 The *Available DS0 Range* shows the DS0s on the T1 that are available for use.

For the *DS0 Range* fields, select **1** for the start and **23** for the end. (DS0 24 is automatically configured because it is the D-channel for the PRI.)

3 Click **Add** to proceed to the *PRI Configuration* page.

Configure the PRI Connection

On the *PRI Configuration* page, specify the appropriate PRI parameters.

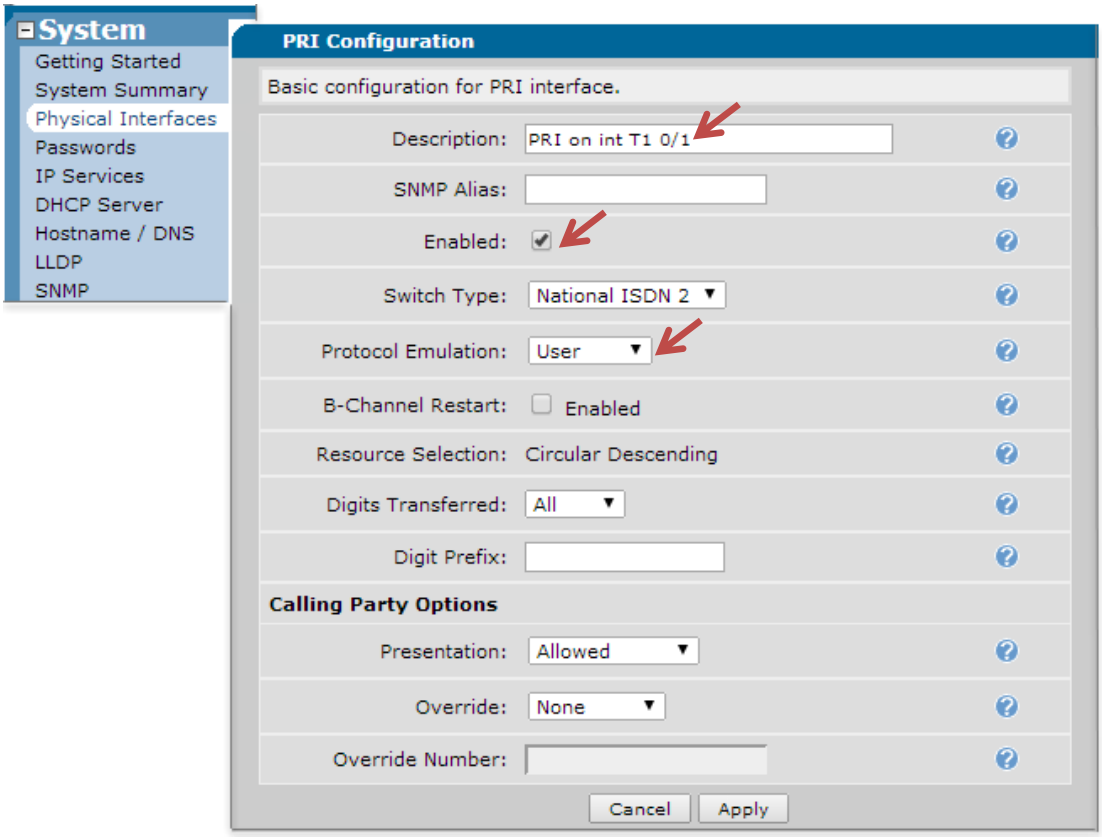


Figure 8 Configure PRI parameters

1. In the *Description* field, label the interface *PRI on int T1 0/1*.
2. Set the *Protocol Emulation* field to **User**.
3. Check the *Enabled* option to enable the interface.
4. Click **Apply**.

Configure a Codec List for the PRI Trunk

Now you will configure a Codec list to be used by the PRI trunk.

1. Expand the **Voice** menu and choose **Codec Lists**.
2. Click the **Add New Codec List** button.

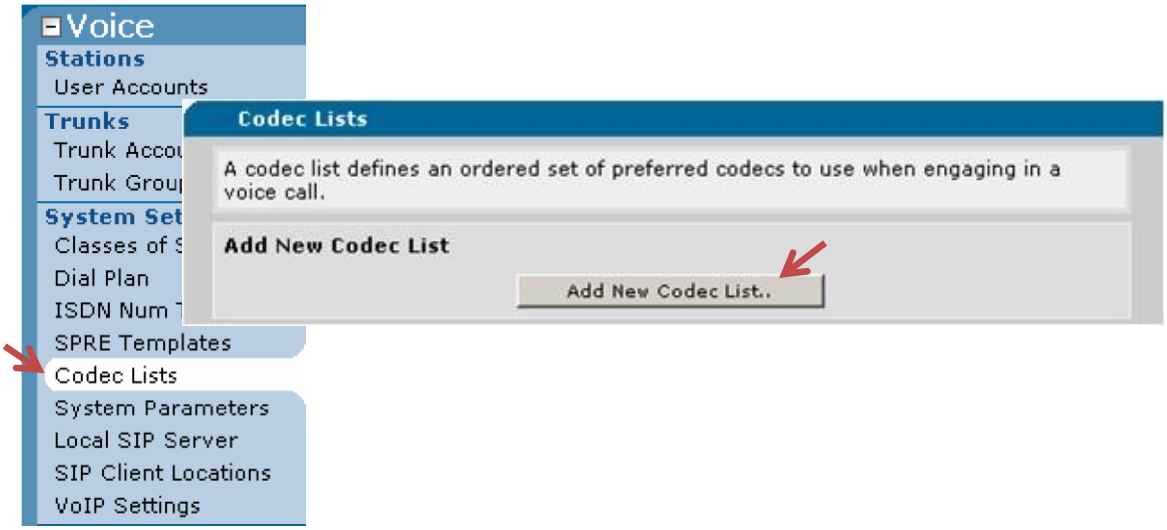


Figure 9: Select Codec Lists on the menu and click Add New Codec List

3 For the *Codec List Name* field, enter **PRI Trunk**.

4 For *Codec #1,* choose **G.729**.

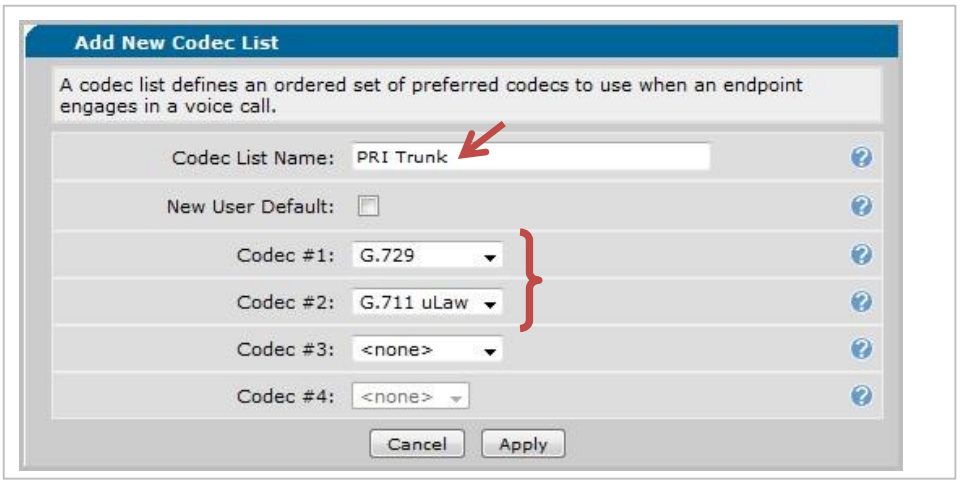


Figure 10: Configure the PRI Codec list

5 For the secondary codec, *Codec #2*, choose **G.711 uLaw**.

6 Click **Apply**.

Create the PRI Trunk

Next, create the PRI trunk. You will follow these steps twice if you need to have 2 PRIs on your ADTRAN.

1 Expand the **Voice** menu and click **Trunk Accounts**.

2 In the *Trunk Name* field, enter the name **PRI to PSTN**.

3 Set the *Type* field to **ISDN**.

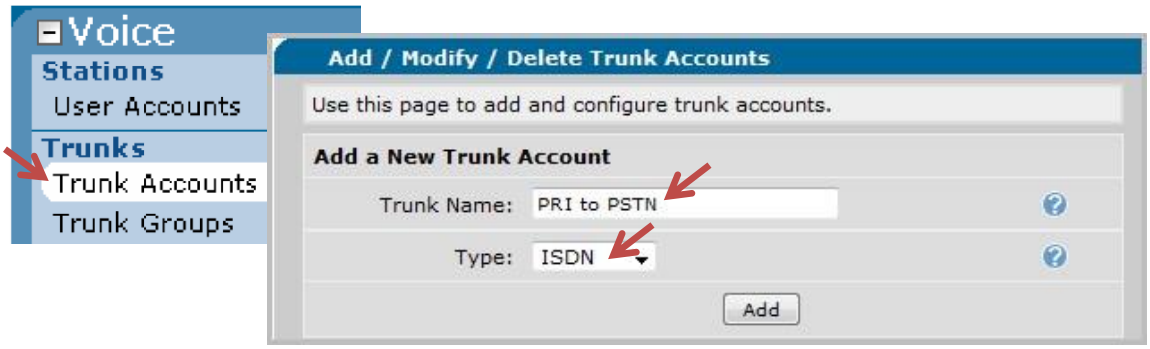


Figure 11: Create the PRI trunk

4 Click **Add**. This action opens the *Edit Trunk* page.

5 For the *ISDN Interface* field, select **pri 1**. If you are adding the second PRI, select **pri 2**.

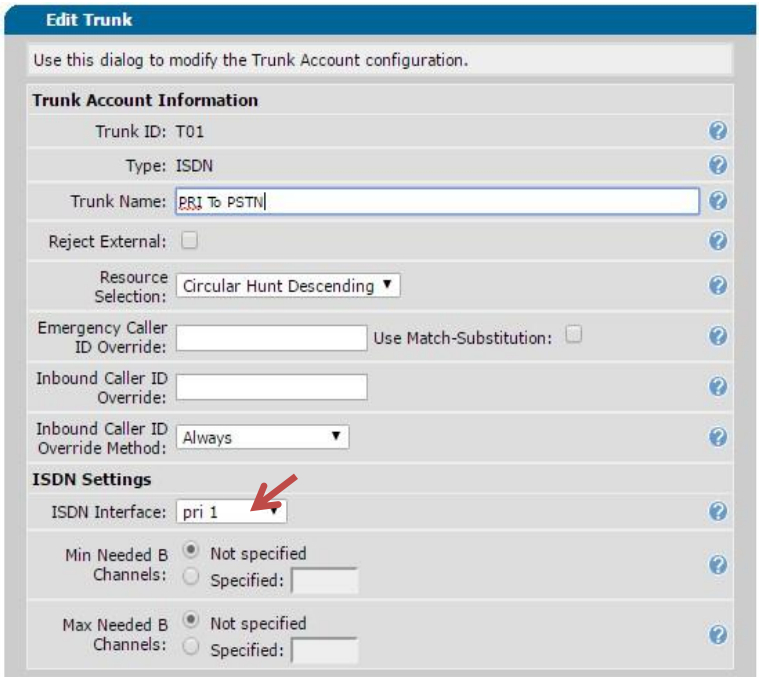


Figure 12: Edit the PRI Trunk parameters

6 Scroll down to the bottom half of the page.

7 In the *VOIP Settings* tab, for the *Codec Group*, select the codec that you created earlier, in the section Configure a Codec List for the PRI Trunk on page 9 (PRI Trunk).

8 Click **Apply**.

Configure the PRI Trunk Group

The last step for T1/PRI configuration is to create a trunk group for the PRI trunk. If you are adding 2 PRIs and calls can go out over either PRI or Come in on either PRI you will add both PRIs to this group.

If you want to route calls to a specific PRI by type of call or set PRI priority by type of call. You will need to create a separate group by repeating these steps for the second PRI & add only that PRI to the group and do not add it to this first group.

1 Expand the **Voice** menu and click **Trunk Groups**.

2 For the *Group Name* field, enter the label *PRI Trunk Group*.

Figure 13: Create a PRI Trunk Group

3 Click **Add**. This action opens the *Edit Trunk Group* page.

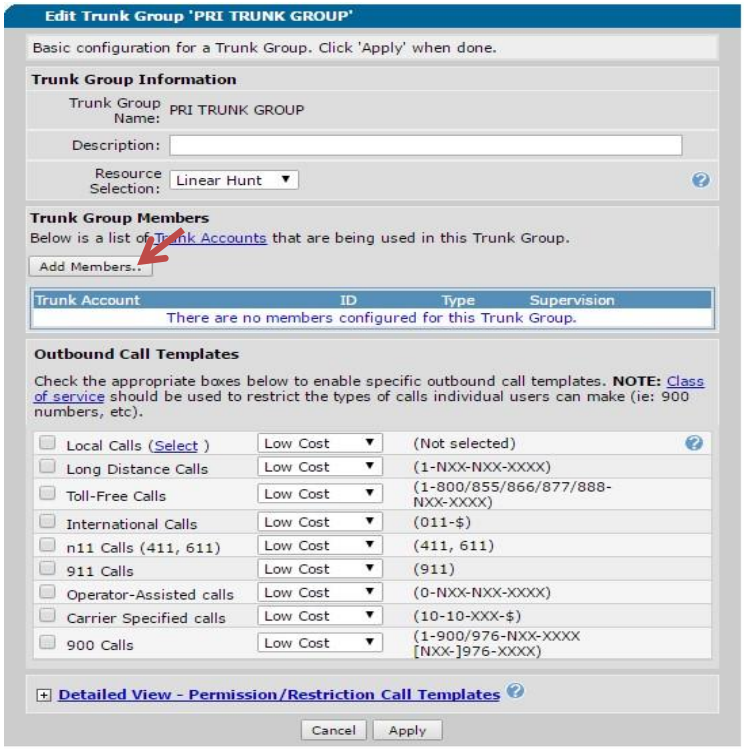


Figure 14: Edit the Trunk Group parameters

4 Click the **Add Members** button above the list. This action opens a new panel.

5 In the *Add Members to Trunk Group* panel, check the **PRI to PSTN** trunk account checkbox.

6 Click the **Add Selected Trunks** button. If you are adding 2 PRIs to this group, then you will select both.

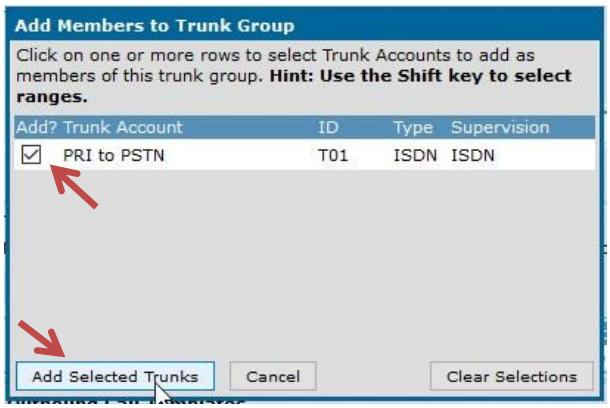


Figure 15: The Add Members to Trunk Group panel

7. At the bottom of the page, click **Apply** to apply the configuration changes.
8. Click **Save** at the top of the page.

Two-PRI Scenario

If you are adding 2 PRIs to the gateway and you want calls to be able to flow over both PRI connections and incoming could be on both, then you will need to do the following steps. Please make sure you have done all previous instructions and setup in this manual for both PRIs. You will need to connect to the CLI of the ADTRAN, either through serial or telnet.

If you wish to separate the PRI connections by type of call or allow or deny certain calls on a specific PRI, then you will not perform the commands below.

1. Open serial or telnet session and get to enable mode on the Adtran. Enter in the command `conf t` and press **Enter**.
2. Enter the command `isdn-group 2` and press **Enter**.
3. Enter the command `no connect pri 2` and press **Enter**.
4. Type *`exit`* and press **Enter**.
5. Enter the command `isdn-group 1` and press **Enter**.
6. Enter the command `connect pri 2` and press **Enter**.
7. Type `exit` and press **Enter**, type `exit` in again and press **Enter**.
8. Enter the command `write` and press **Enter**. You may now close your serial or telnet session.

SIP Codec Configuration

This section shows how to configure the device so inbound and outbound calls will to go to a SIP Trunk.

Configure a Codec List for the SIP Trunk

First, you will configure a codec list that will be used by the SIP trunk.

1 Within the ADTRAN configuration page, expand the **Voice** menu and click **Codec Lists** (in the section *System Setup*).

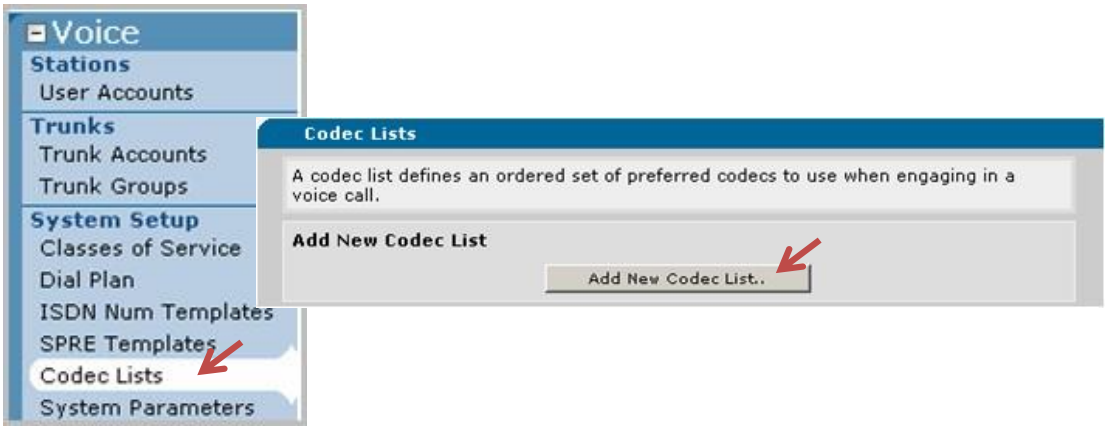


Figure 16: Add a new codec list

2 Click **Add New Codec List**.

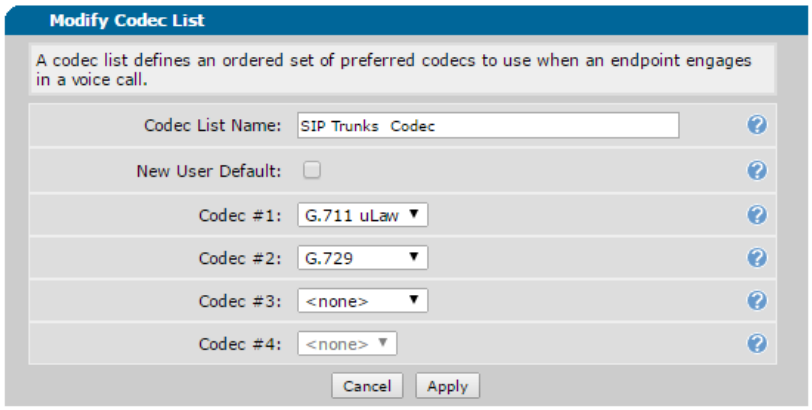


Figure 17: Define the new Codec list

3 For the *Codec List Name* field, enter **SIP Trunks Codec**.

4 For *Codec #1*, the primary codec, select **G.711 uLaw**.

5 For *Codec #2*, the secondary codec, select **G.729**. Click **Apply**.

Configure the SIP Trunk

Next, create the SIP trunk.

1 Expand the **Voice** menu and select **Trunk Accounts**.

2 For the *Trunk Name* field, enter **SIP To ACM**.

3 For the *Type* field, choose **SIP**.

4 Click **Add**. This action opens the *Edit SIP Trunk* page.

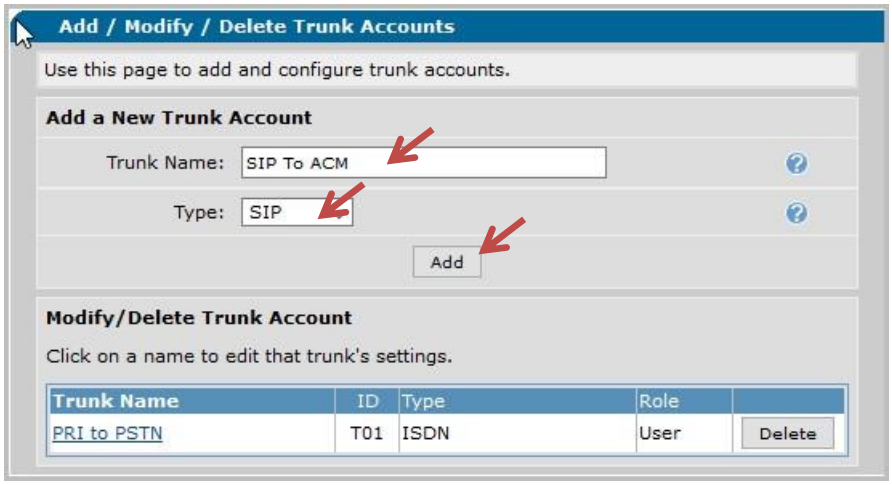


Figure 18: Add a Trunk Account

5 Change the *Max Number of calls* value to match the number of SIP Trunk licenses you plan to assign to this ADTRAN device in the MaxCS server. (typically 23 for a full PRI or 46 for 2 PRIs).

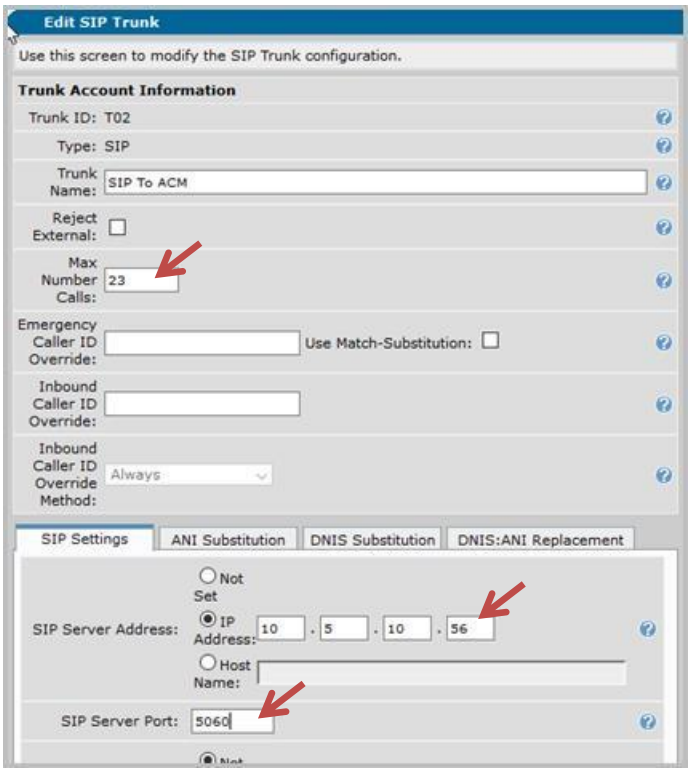
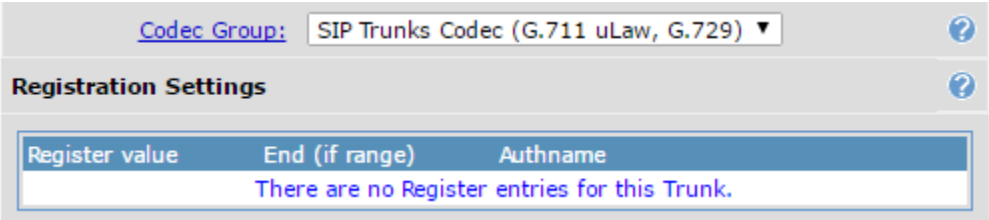


Figure 19: Configure SIP Trunk parameters

6 In the *SIP Settings* tab below, for the *SIP Server Address*, select **IP Address** and enter the IP address of the MaxCS server.

7 For the *SIP Server Port* field, select **5060**.

8 Set the *Codec Group* field to **SIP Trunk Codec (G.711uLaw, G.729)**. Click **Apply**.



Create the Trunk Group

Next, create a trunk group for the SIP trunk.

1 Expand the **Voice** menu and click **Trunk Groups**.

2 For the *Group Name* field, enter **SIP Trunk Group**.

3 Click **Add**. This action opens the *Edit Trunk Group* page.

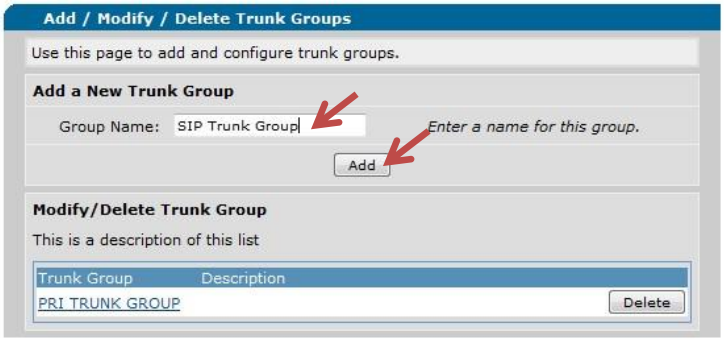


Figure 21: Create the Trunk Group

4 In the next panel, click **Add Members**.

Figure 22: Click Add Members and set parameters

5 Check the **SIP TO ACM** option.

6 Click **Add Selected Trunks**.

7 Click **Apply**.

8 Click **Save** at the top of the page to save these changes.

Figure 23: Save your configuration changes

Add the Dial Plans

In order to make calls inbound and outbound flow to either the SIP or ISDN trunks created, we will be using a custom built dial plan. These dial plans are basic and are set for 1 or 2 PRI with calls coming in or going out either PRI in a 2 PRI configuration. The dial plan below is set to accommodate 4-10 digit DNIS for incoming calls, as well as 7 & 10 digit dialing. We also built these to be compatible with direct

Fax setup and FXS extensions on the Mac CS server. If you wish to have 2 PRIs and want to calls to flow to a specific PRI then read the customizing your dial plan section below. With FXS fax, the customer will NOT dial the pre-digit string needed for extension usage. We are passing the call directly to the carrier, so they will just initiate an outbound fax by dialing out as the carrier expects the call. (E.g. 7-, 10-, or 11-digit string).

If you are combining registered extensions (FXS) with T-1, Fax, and SIP, they will dial the string as if they are an extension on the system, including the Pre-Dial Digit. This section will cover the Dial-Plan settings necessary to accommodate all strings.

Configure the PRI Trunk Group

1. Expand the **Voice** menu and click **Trunk Groups**.
2. Select **PRI TRUNK GROUP**.
3. Uncheck all boxes in the *Outbound Call Template* section. Click **Apply.**
4. Select **PRI TRUNK GROUP**
5. Expand the Detailed View – Permission/Restriction Call Templates section at the bottom of the page.
6. Click **Configure Templates**.

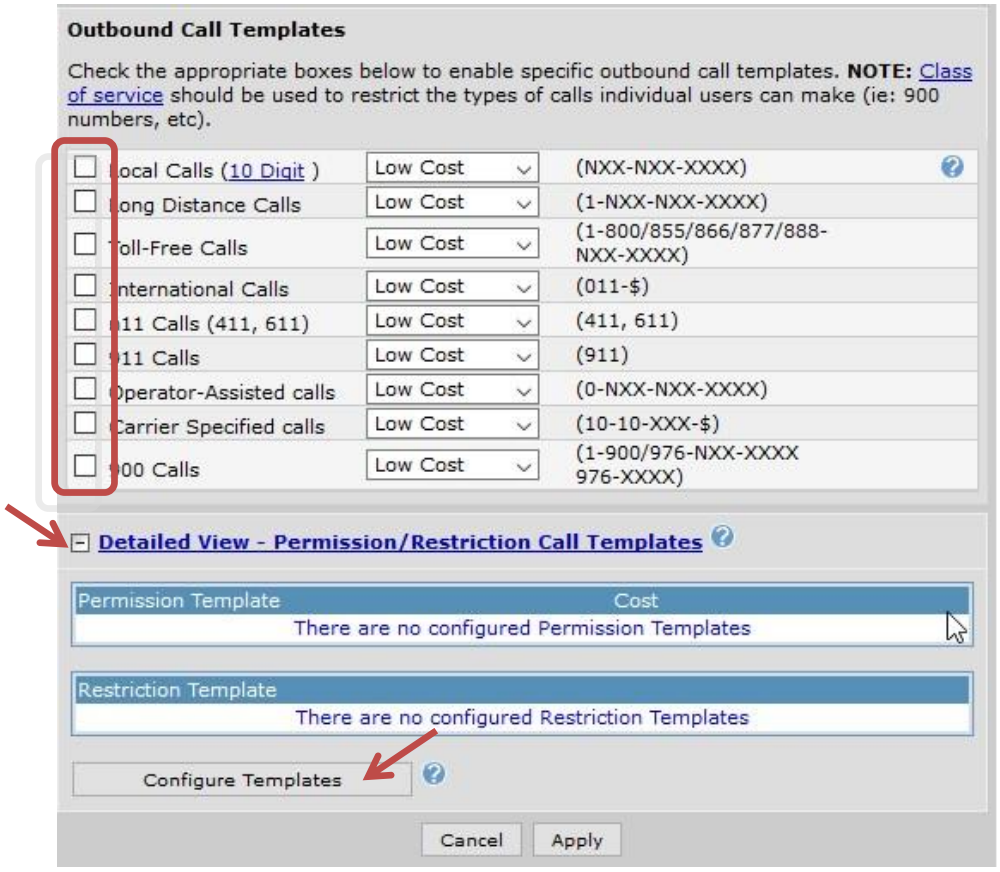


Figure 24: Configure the outbound call template

To add information specific to dial pattern, the *Template* field will be the string, and the *Cost* is how to decide in what Low Cost Order to send a call. The lower the value, the more likely to use that path.

The order of items is important. The file reads as a flat file (top to bottom). If you place items out of order, you may route calls to an unintended source.

Some example entries below have a *9* at the beginning. This assumes that you are using 9 for your Route Access Code on the MaxCS server. If you are using 7 or 8, this entry should be modified accordingly.

7. To add an entry, you will place the string in the top field (*Template*)and the cost in the next field and click **Add**.

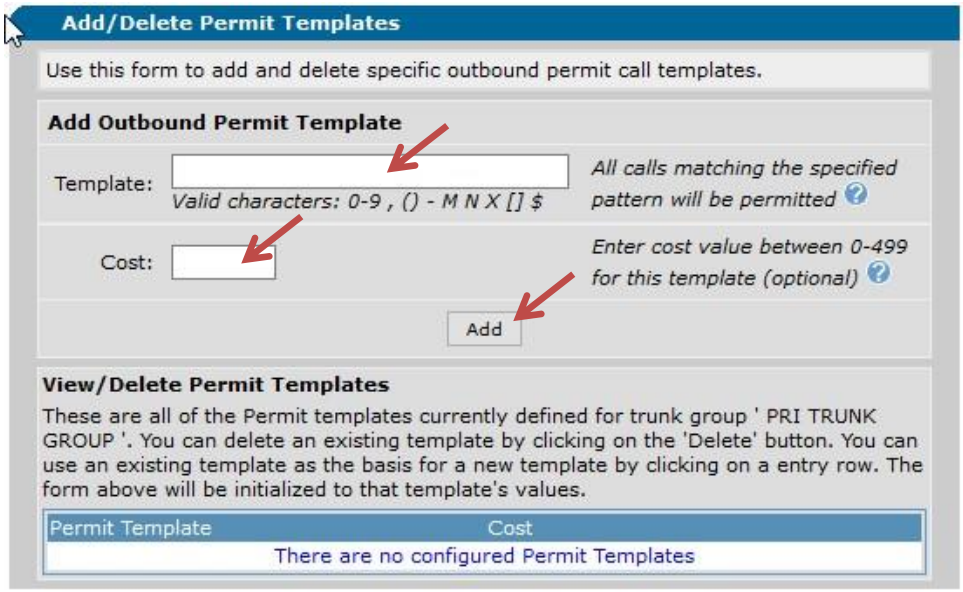


Figure 25: Add items to PRI Trunk Group template

In PRI Trunk Groups, add the following items, in this order:

Template (String)	Cost
XXX-XXXX	0
XXX-XXX-XXXX	0
1-XXX-XXX-XXXX	0
9-XXX-XXXX	400
9-XXX-XXX-XXXX	400
9-1-XXX-XXX-XXXX	400
011$	0

Template (String)	Cost
9011$	400
911	0

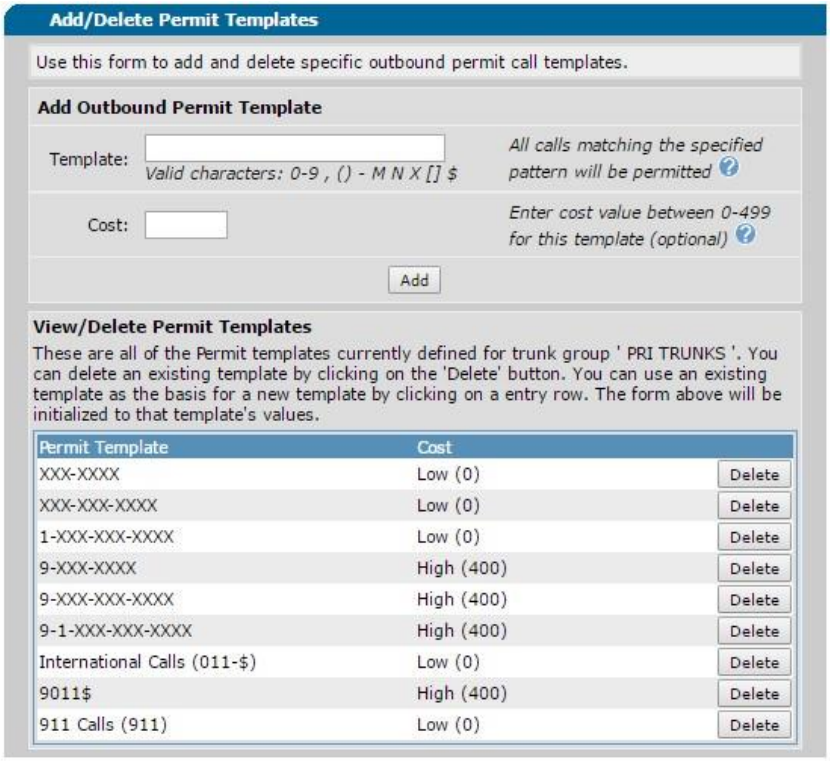


Figure 26: The PRI Trunk Group entries

Configure the SIP Trunk Group

1. On the **Voice** > **Trunk Groups** tab, select **SIP TRUNK GROUP**.
2. Uncheck all boxes in the **Outbound Call Template** section. Click **Apply.**
3. Select **SIP TRUNK GROUP**.
4. Expand the Detailed View – Permission/Restriction Call Templates section at the bottom of the page.
5. Click **Configure Templates**.
6. In the PRI Trunk Groups, add the following items, in this order:

   Note: If the string begins with 9, this is your Route or Trunk Access Code. You may need to change this number to match whatever number your system uses for outbound access.

Template (String)	Cost
XXX	0
XXXX	0
XXXXX	0
XXXXXX	0
Template (String)	**Cost**
XXX-XXXX	400
XXXXXXXX	0
XXXXXXXXX	0
XXX-XXX-XXXX	400
1-XXX-XXX-XXXX	400
9-XXX-XXXX	0
9-XXX-XXX-XXXX	0
9-1-XXX-XXX-XXXX	0
011$	400
9-011$	0
$	0

7 Save your changes by clicking **Save** at the top of the page.

Figure 27: Save the configuration

To test the connection, connect the fax device to the FXS port and make inbound and outbound calls.

Customize your Dial Plan

Note: This is only done to your PRI trunks – not the SIP trunks.

Important! **This cannot be done if your carrier is sending you 7 or 10 digit DNIS**. If you need to set this up, then you will need to contact your carrier and have them change to any other amount of sent digits other than 7 or 10.

There may be times when you wish to route calls to a specific PRI in a 2 PRI scenario. If this is the case, you can do this by changing the cost of the dial patterns shown above on the two separate PRI Trunk groups you created earlier. You can use a cost of 200 to allow a secondary route or remove a dialing pattern completely. The example below is a simple 2-PRI setup dial plan with PRI1 local calls only but as backup for Long Distance. PRI 2 is long distance only.

PRI1 Group Permit Templates

XXX-XXXX 0

XXX-XXX-XXXX 0

1-XXX-XXX-XXXX 200

9-XXX-XXXX 400

9-XXX-XXX-XXXX 400

9-1-XXX-XXX-XXXX400

011$ 200

9011$ 400

911 0

PRI2 Group Permit Templates

XXX-XXXX 400

XXX-XXX-XXXX 400

1-XXX-XXX-XXXX 0

9-XXX-XXXX 400

9-XXX-XXX-XXXX 400

9-1-XXX-XXX-XXXX 400

011$ 0

9011$ 400

MaxCS Configuration

At this point, you can configure your MaxCS server. Please turn to the section that matches your MaxCS version:

- MAXCS 7.5 Update 1 Configuration
- MAXCS 8.0 Configuration

Once you have completed the steps in this section, you may add any additional direct FXS faxes or FXS extensions by following the steps in the section Analog Fax Configuration, beginning on page 29.

MAXCS 7.5 Update 1 Configuration

This section describes how to configure **MaxCS Release 7.5 Update 1** parameters for the ADTRAN gateway. If you are configuring the gateway for MaxCS Release 8.0, then follow the instructions in in the next section instead, beginning on page 22.

These steps assume that you are familiar with MaxAdministrator; refer to the MaxCS *Administration Manual* for full details as needed.

1 Open MaxCS Administrator.

2 Choose **PBX** > **Trunk Configuration**.

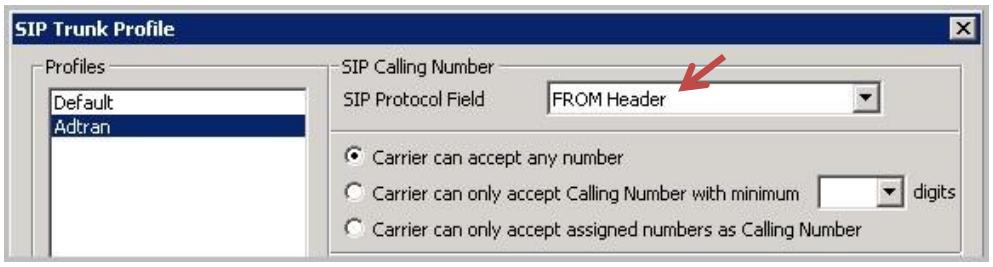


Figure 28: The MAXCS SIP Trunk Profile panel

3 Add a new SIP trunk, naming it *Adtran*.

4 Set its *SIP Protocol Field* to **FROM Header**.

5 Configure the SIP Trunk's parameters as appropriate; assign the gateway's IP address and SIP Trunk Profile.

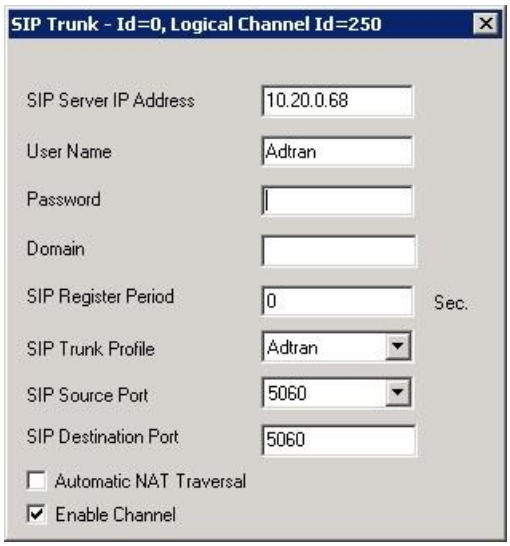


Figure 29: Configure the SIP Trunk parameters

6 Open Enterprise Manager. On the *Codec* tab, add an *Adtran* codec profile. You will need to create a codec that should match the screen below. You may choose G729 if you require compression but will need to be aware that your MaxCS server has enough available combo codecs available for the amount of calls you will be taking and sending to the Adtran. (For example, 1 full PRI would need 23; 2 full PRIs would need 46 available combo codecs)

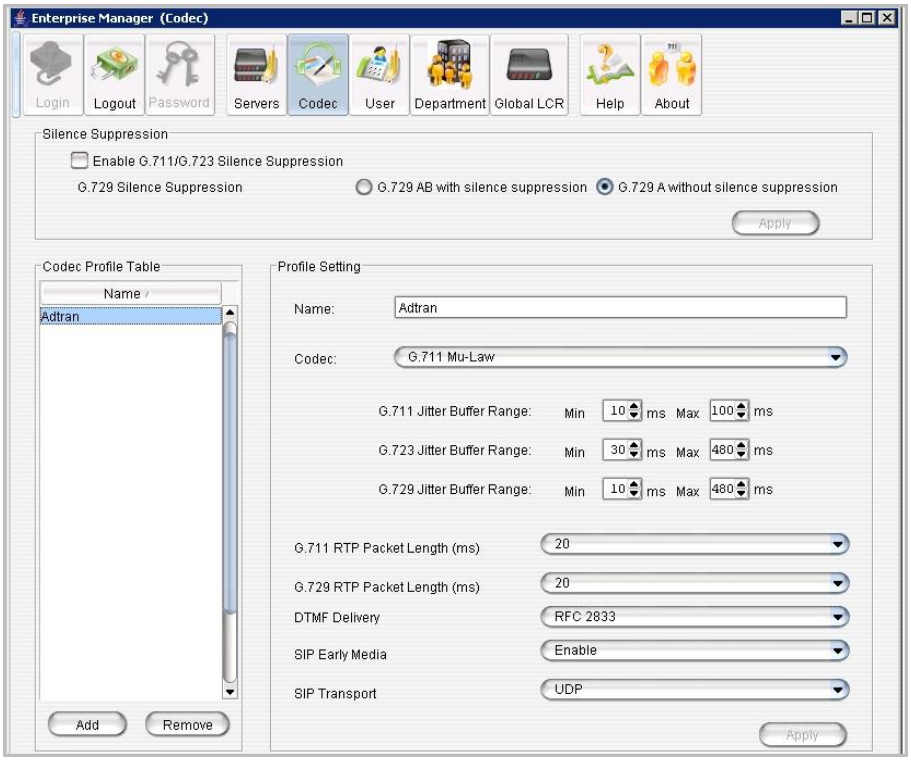
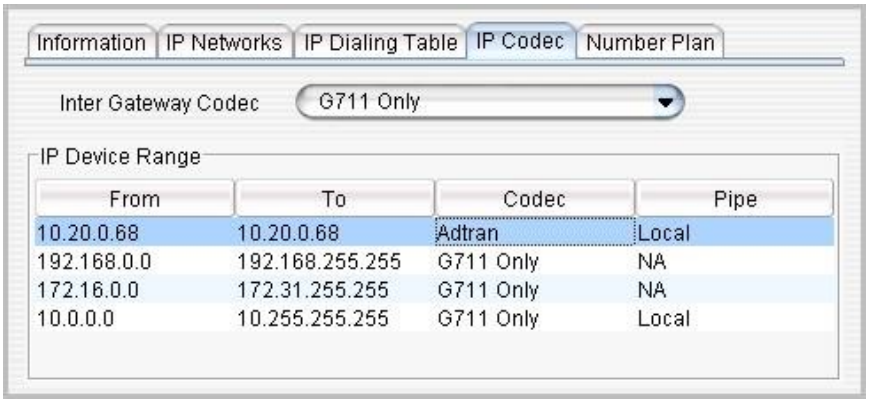


Figure 30: The Codec tab in Enterprise Manager

7 Add an IP codec for the ADTRAN gateway's IP address.



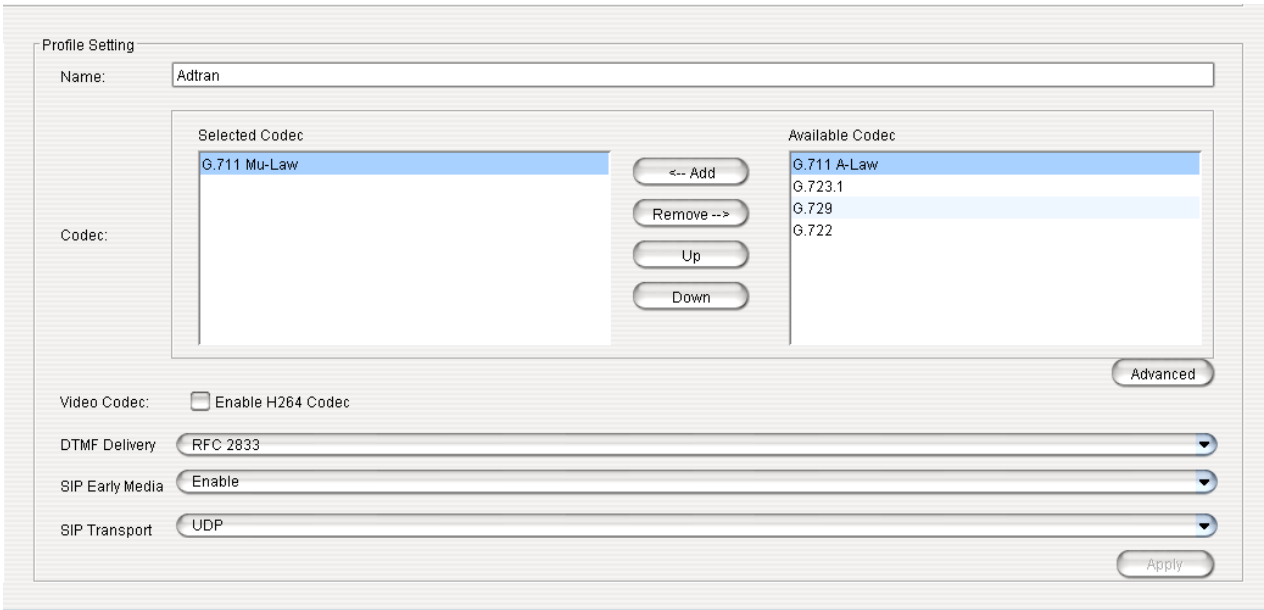
The configuration is now complete. The SIP trunk status should show as *Idle*. To verify the configuration, make both inbound and outbound calls, to test the connectivity.

MAXCS 8.0 Configuration

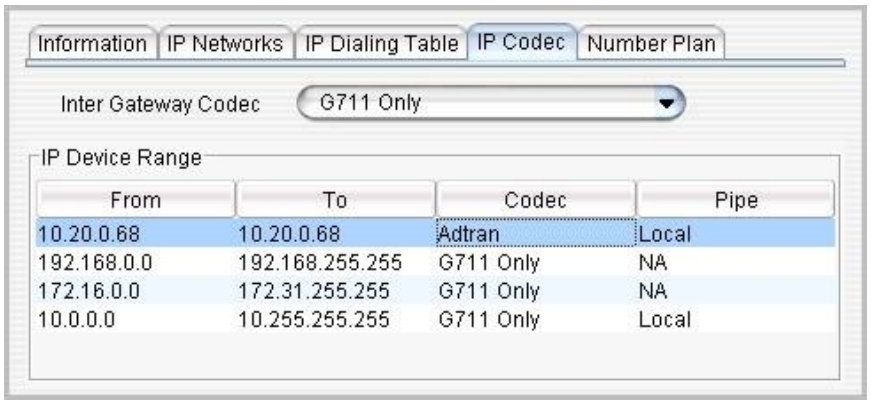
This section describes how to configure **MaxCS Release 8.0** parameters for the ADTRAN gateway. If you are configuring the gateway for MaxCS Release 7.5 Update 1, then follow the instructions in the previous section instead.

1. Add the ADTRAN Codec to MaxCS. In the Enterprise Manager click Codec and add a codec to the codec profile table that matches the picture below.

**If you need to use or add the G729 codec, be aware that your MaxCS server has enough available combo codecs available for the amount of calls you will be taking and sending to the Adtran. (1 full PRI would need 23, 2 full PRIs would need 46 available combo codecs)



2. Assign the codec to the IP address of the Adtran. You will need to go the Server, then IP Codec in Enterprise Network Manager. You will need to make an entry that covers the IP address of your Adtran. Make sure to assign the Adtran codec that you created in the previous step.



These steps assume that you are familiar with MaxAdministrator; refer to the ACM *Administration Manual* for full details as needed.

1 Open MaxCS Administrator.

2 Open the *Boards* panel and double-click **SIP SP**. Click **Board Configuration**. Click **SIP Group Configuration**.

3 Below the *Groups* list, click **Add**. The *Add SIP Group* popup opens.

4 In the *Name* field, type **Adtran Trunks**. Click **Ok**.

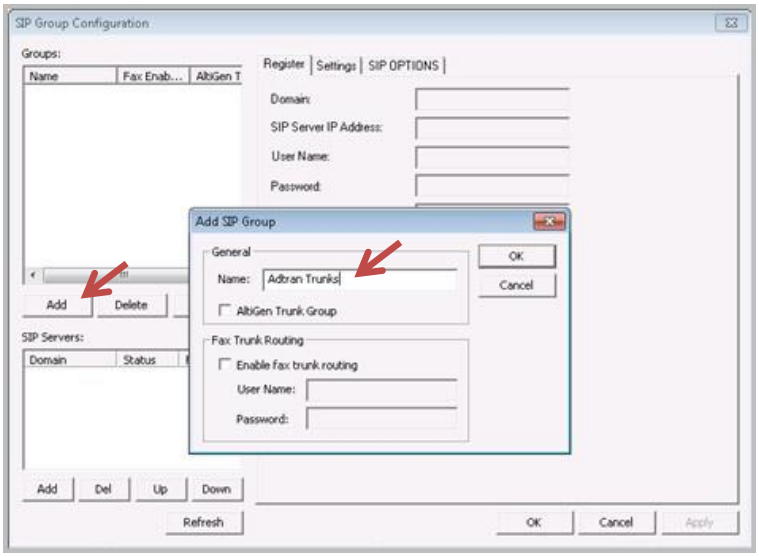


Figure 32: Name the new SIP Group "Adtran Trunks"

5 Below the *SIP Servers* list, click the **Add** button. The *Add SIP Server* popup opens.

6 In the *Domain* field, enter the IP Address of the ADTRAN device. Click **Ok**.

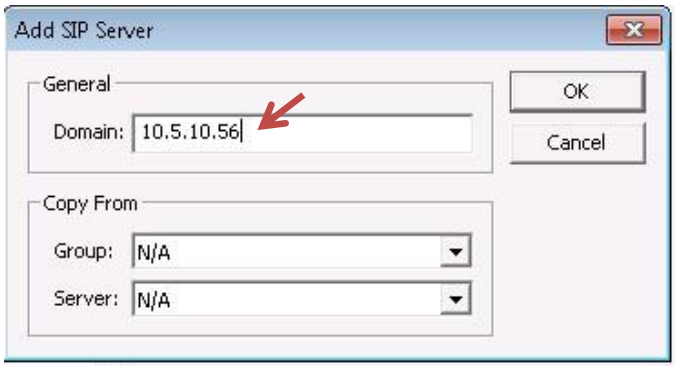


Figure 33: Enter the device's IP Address for the Domain

7 You return to the main SIP Group Configuration panel. The SIP Server that you just entered should still be selected in the *SIP Servers* list.

On the right (on the *Register* tab), for the *SIP Server IP Address*, enter the ADTRAN IP Address. Click **Ok**.

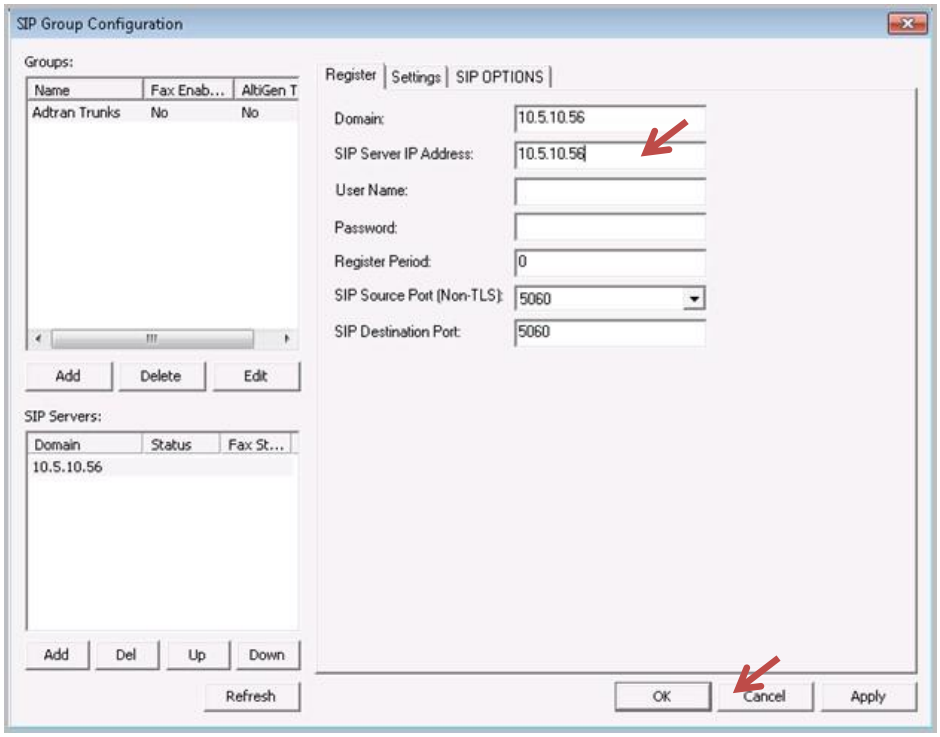


Figure 34: Enter the SIP Server IP Address

8 Switch to the *Settings* tab.

9 In the *SIP Calling Number* group, for *SIP Protocol Field,* select **FROM Header**.

10 Check the **Send Caller Name** checkbox.

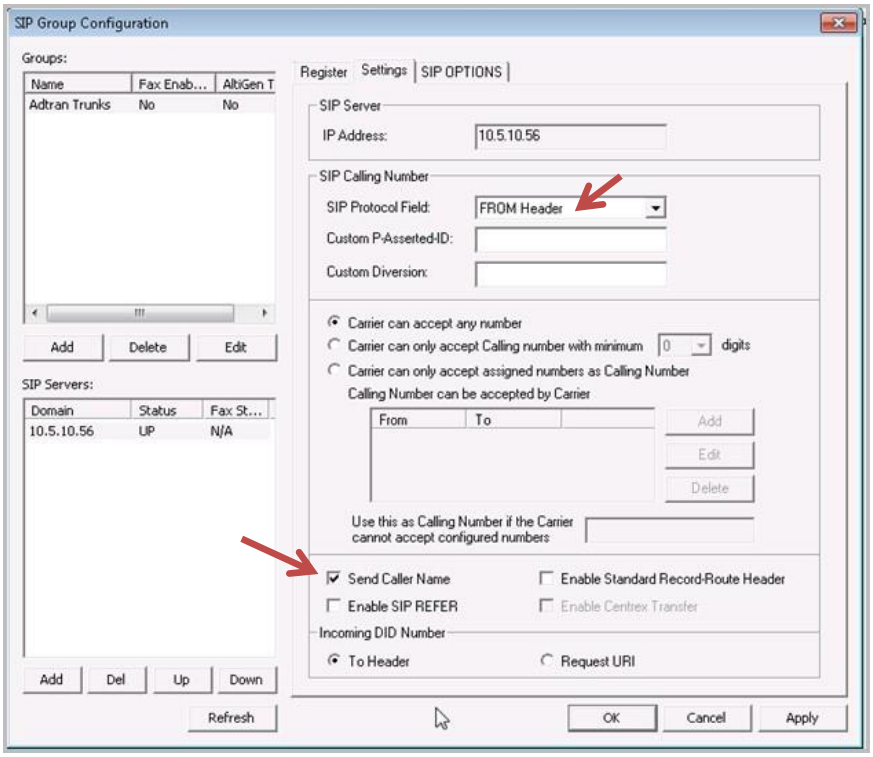


Figure 35: Configure the SIP Protocol Field and check Send Caller Name

11 (Optional) If you want to set SIP options, switch to the SIP OPTIONS tab. If not, skip ahead to step 12.

SIP Options functions as a keep-alive connection between MaxCS and ADTRAN. Every 30 seconds, MaxCS sends a keep-alive message to the device. If MaxCS does not receive a response within a specified period, it sets the ADTRAN trunks in MaxCS Administrator's *Trunk* view to *Not Ready*. This feature is supported by ADTRAN.

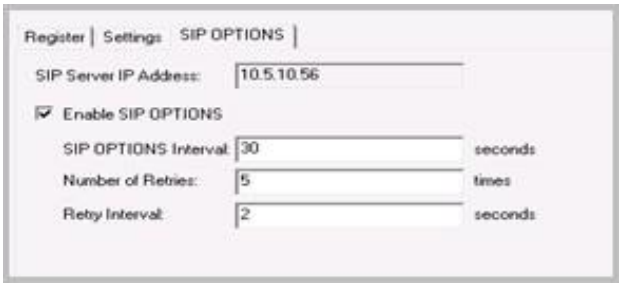


Figure 36: Configuring SIP OPTIONS settings

Set the *SIP Options interval* field to **30**, and check the *Enable SIP OPTIONS* checkbox.

12 Click **OK**. You return to the *SIP Signalling Channel Configuration* window.

13 In the *SIP Signalling Channel Configuration* window, click the **Channel Assignment** button.

14 In the list, highlight the channels that you will use for MaxCS-to-ADTRAN calls. You can use Ctrl-Click to select multiple channels.

15 Once all channels are selected, click the **Assign Group** button.

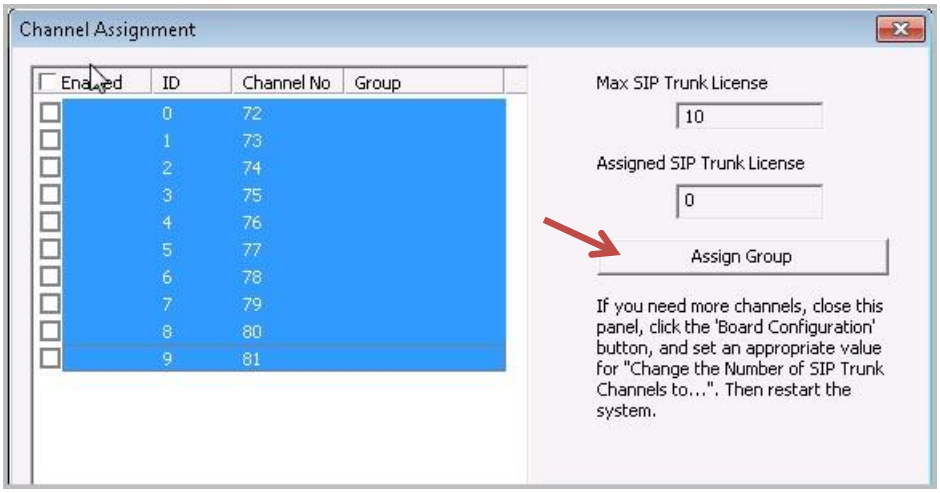


Figure 37: Select the appropriate channels and click Assign Group

16 The *Assign SIP Group* popup opens. In the list, select **Adtran Trunks**. Click **Ok**.

Figure 38: Select the "Adtran Trunks" group

17 Check the *Enabled* checkboxes to the left of each trunk that you wish to use. Click **Ok**.

18 Click **Ok** again.

19 Select **Reset Board**. This will reset the SIP Trunks as well as any IP phone or port.

The configuration is now complete. To verify the configuration, make both inbound and outbound calls to test the connectivity.

If you wish to deploy fax support, proceed to the next section, Analog Fax Configuration.

Analog Fax Configuration

This section describes how to configure the ADTRAN device for fax support. Faxing through the ADTRAN device will utilize what is called *Hair-pinning*. This approach will send the call directly from the FXS port to the ISDN port, and it offers three benefits:

1 NO Station or 3rd Party SIP Licenses are used.

2 There will be no call record on the MaxCS system, because the call will not pass through.

3 Fax failures will be minimized, due to the fact that fax is analog. By not decoding to digital and back again, by passing the call through the MaxCS server (which will not exchange codecs to T.38 on third party), the call will be tied directly to Analog-to-analog.

Configure the FXS Interface

Use the FXS port 0/1 as the connection to the fax device.

1 Open the ADTRAN Gateway configuration page. Expand the **System** menu and click **Physical Interfaces**.

2 In the list, click **fxs 0/1**.

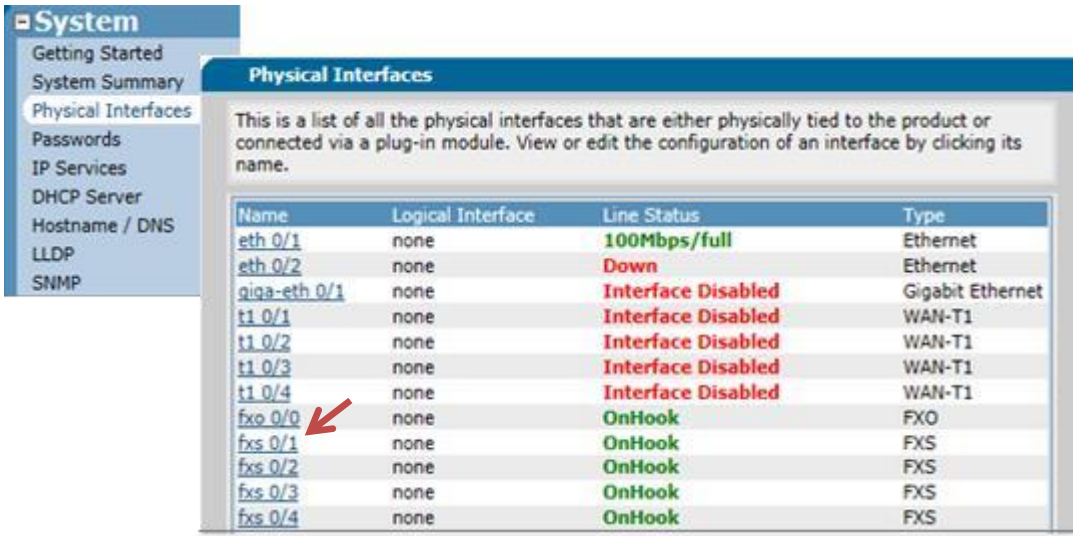


Figure 39: Select the fxs 0/1 interface in the table

3 Make sure that the first checkbox, 0/1, is checked.

4 For the *Description* field, enter **FAX Machine** followed by the DID number.

5 Check the **Enable** checkbox.

6 Leave all of the other fields set to the default settings and click **Apply**.

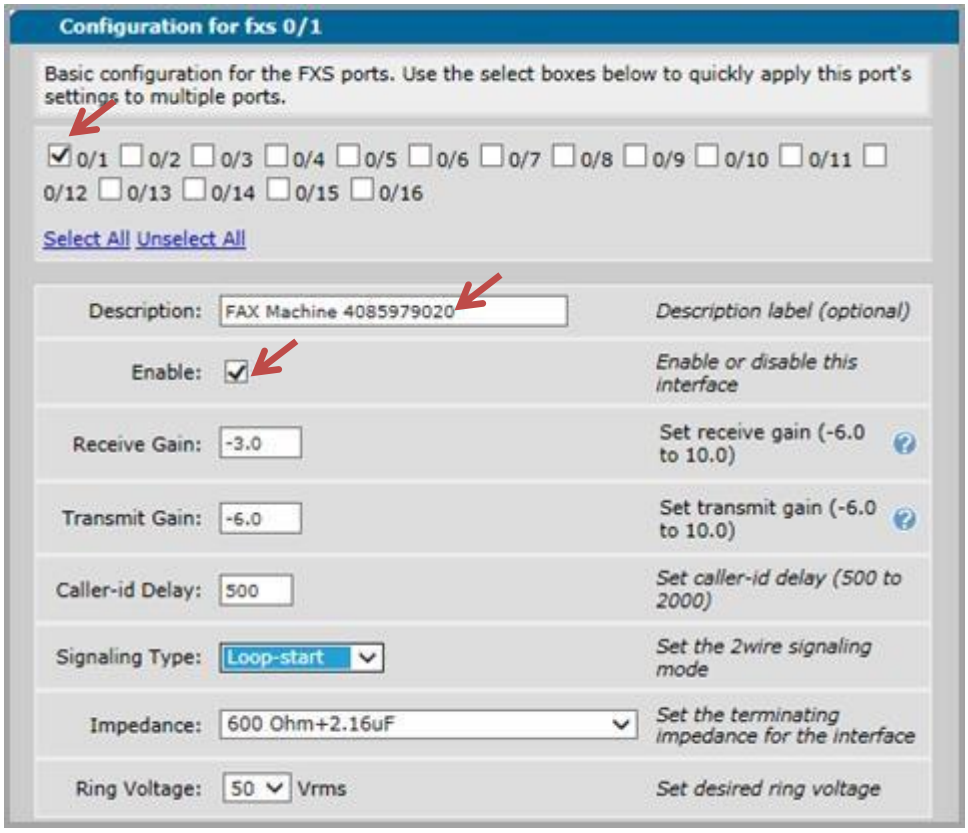


Figure 40: Configure the fxs 01 interface

Configure the Fax Codec

Next, configure a Codec list that will be used by the fax device.

1. Expand the **Voice** menu and click **Codec Lists**.
2. Click **Add New Codec List**.

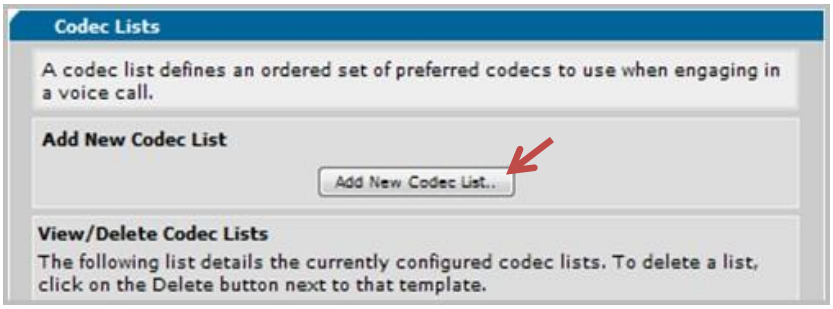


Figure 41: Add a Codec list

3. For the *Codec List Name* field, enter **Fax Codec**.
4. For *Codec #1*, select **G.711 uLaw**. Click **Apply**.

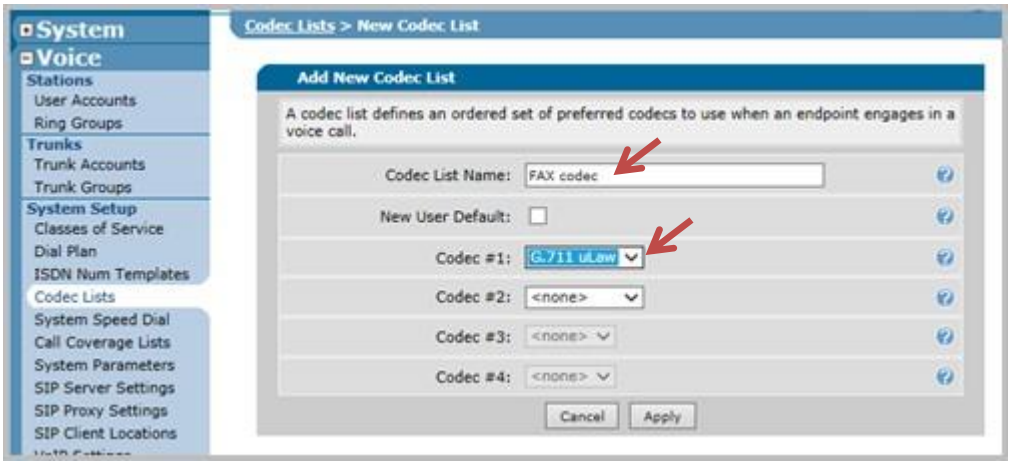


Figure 42: Configure the Codec List

Configure the Fax User Identity

Configure a user identity that will be used by the fax.

1. Expand the **Voice** menu and click **User Accounts**.

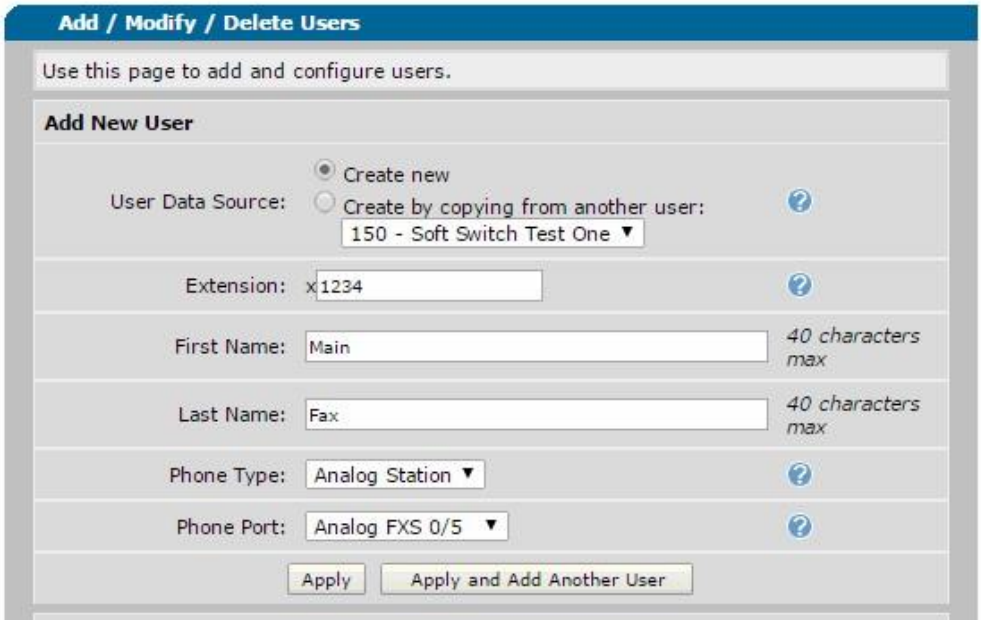


Figure 43: Configure the User Account for the Fax

2. For the *Extension* field, enter the DNIS digits for the fax. Example: Your Fax number is 444-5551234 but you only get 4 digit DNIS from your carrier you would create your Extension as 1234. If

   you do not need to receive incoming faxes you may create any extension number as long as it does not match any incoming DNIS digits sent from your carrier.

3. For the *First Name* field, enter **Main Fax**.

4. For the *Phone Type* field, select **Analog Station**.
5. For the *Phone Port* field, select **Analog FXS 0/1**. Click **Apply**.
6. A new page opens. In the *External Caller ID Number* field on the *User Config* tab, enter a 10-digit CID. This number must be accepted as outbound Caller ID from your carrier. It does not have to match the DNIS that you used to create the extension.

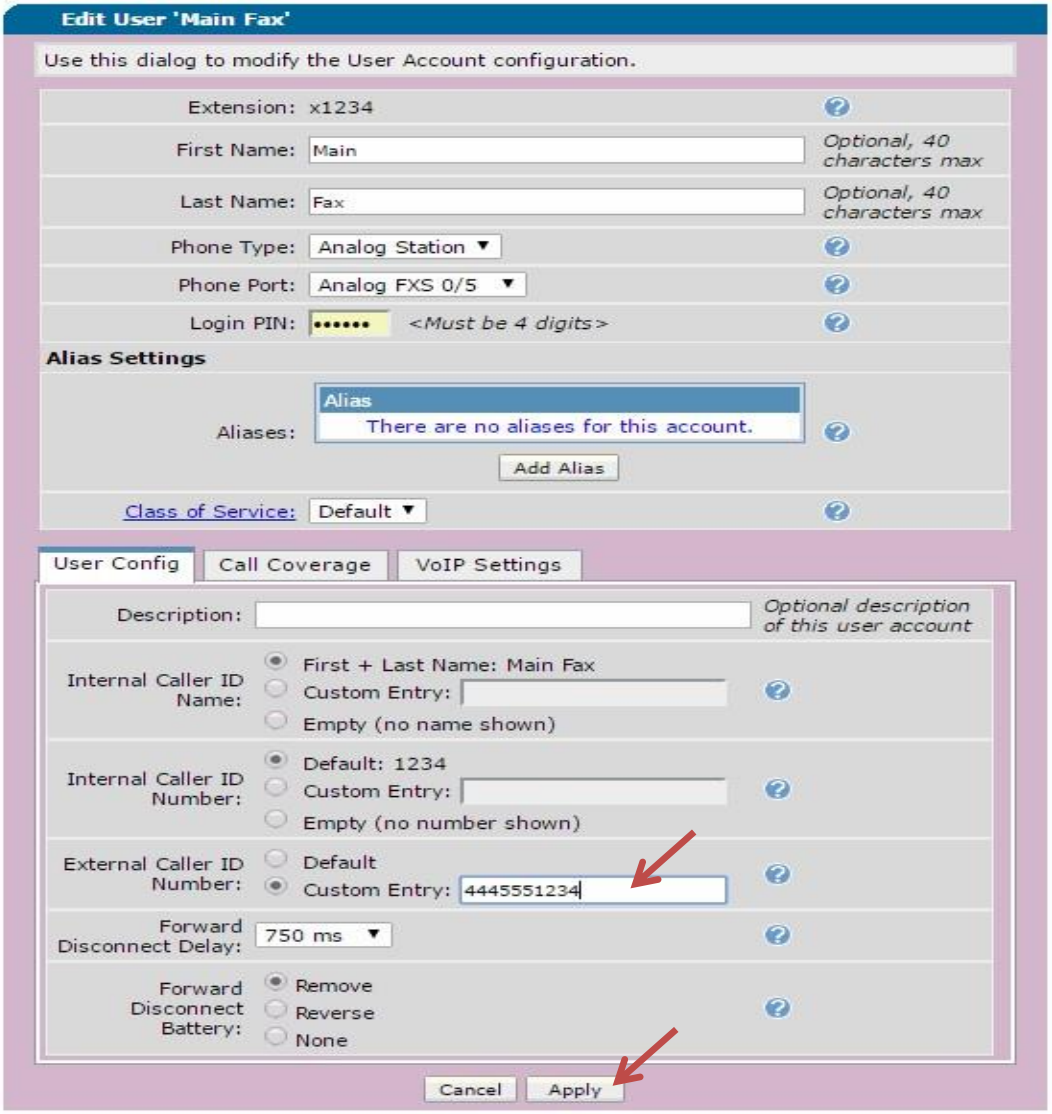


Figure 44: Enter a 10-digit Caller ID

7. Click **Apply**.
8. Repeat this process if you wish to add more direct Fax Machines.
9. Click **Save** at the top of the page to save these changes.

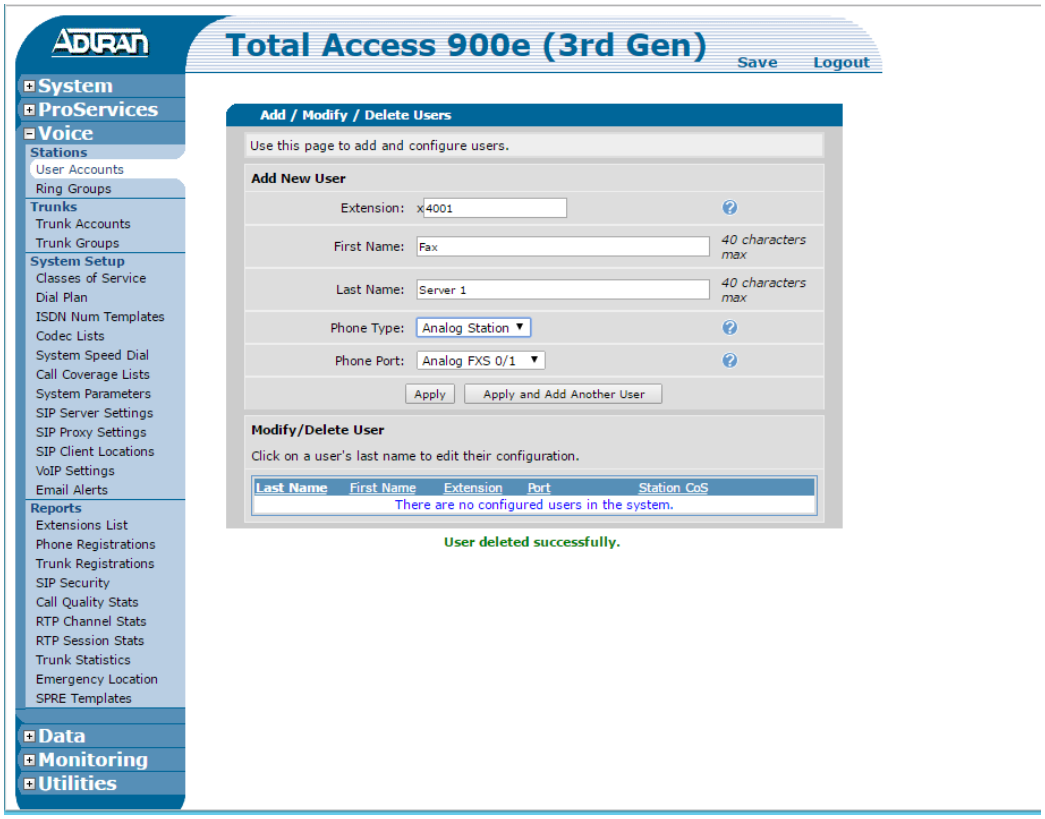
Configure Adtran for Analog Fax Server Operation

Complete the setup of the PRI and SIP trunk portions of this Configuration Guide. Make sure that you have entered the Permit Templates.

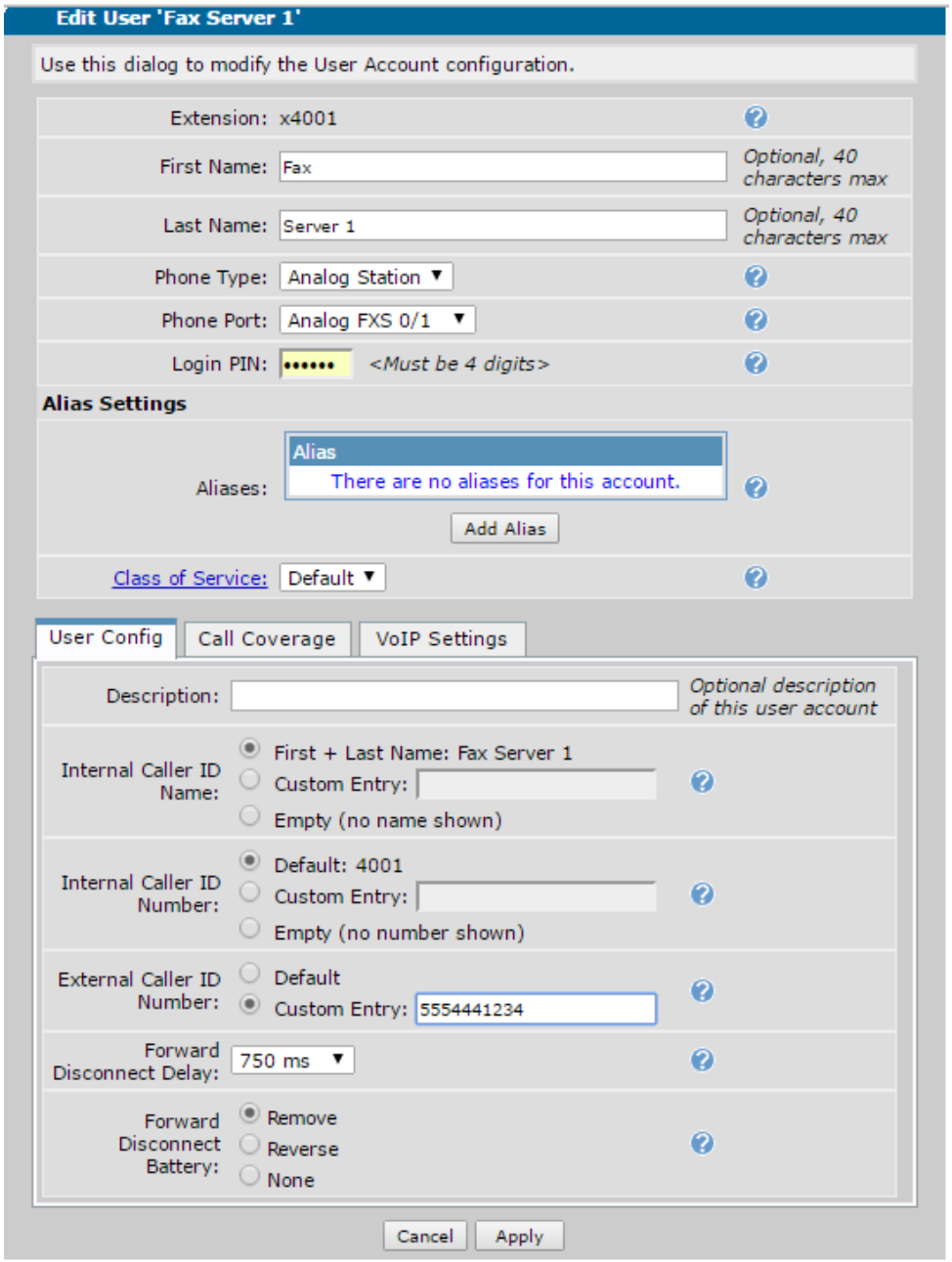
You will need to have either Telnet Access or Serial Connection available to the Adtran device. We recommend that you use Putty for this.

Step 1: Build The Users for the FXS Ports

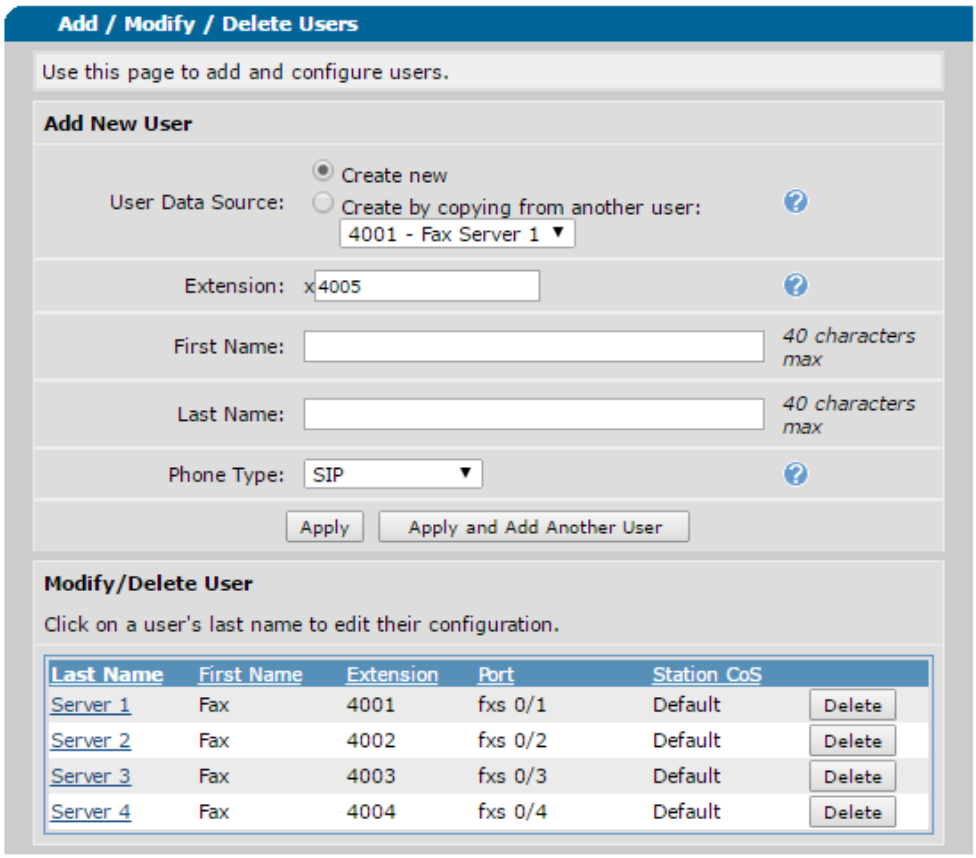
a. On your Adtran device, select **User Accounts** under the Voice Menu on the left as shown below. In the Extension field, enter an extension number, making sure what you enter does not match any of your incoming DNIS numbers or extensions configured on your MaxCS server. You can add a first and last name if you wish, for your reference. Use the Phone Type drop down to choose **Analog Station**. The Phone port drop down will appear. Select the FXS port on the Adtran you wish to use. Click **Apply**.



b. You will now see the screen below. On this screen, there is one optional setting. If you want to be able to send an outbound fax from this port, then you will need to select External Caller ID Number and set it to **Custom Entry**: put a valid carrier-accepted 10-digit string in this field. Once done, or if you do not need outbound faxing from this port, click **Apply**.



c. You will be at the previous menu shown below and you will see the user you created. You will need to repeat the previous steps and create as many users as you may need ports for. There are four shown in the example below.



User 'Fax Server 4' updated successfully.

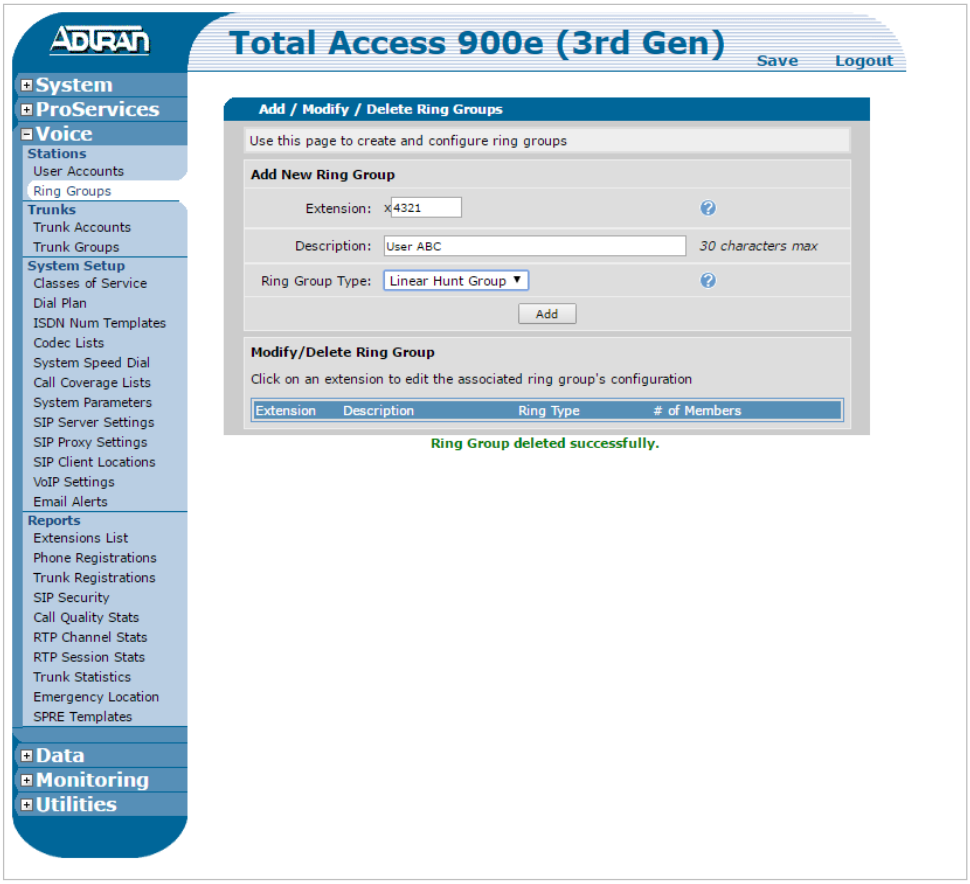
Tip: Adtran 904 has 4 FXS ports, 908 & 908e has 8 FXS ports, 924e has up to 24 FXS ports some models have a mix of FXS & FXO.

Step 2: Creating the Group and Assigning Users to the Group

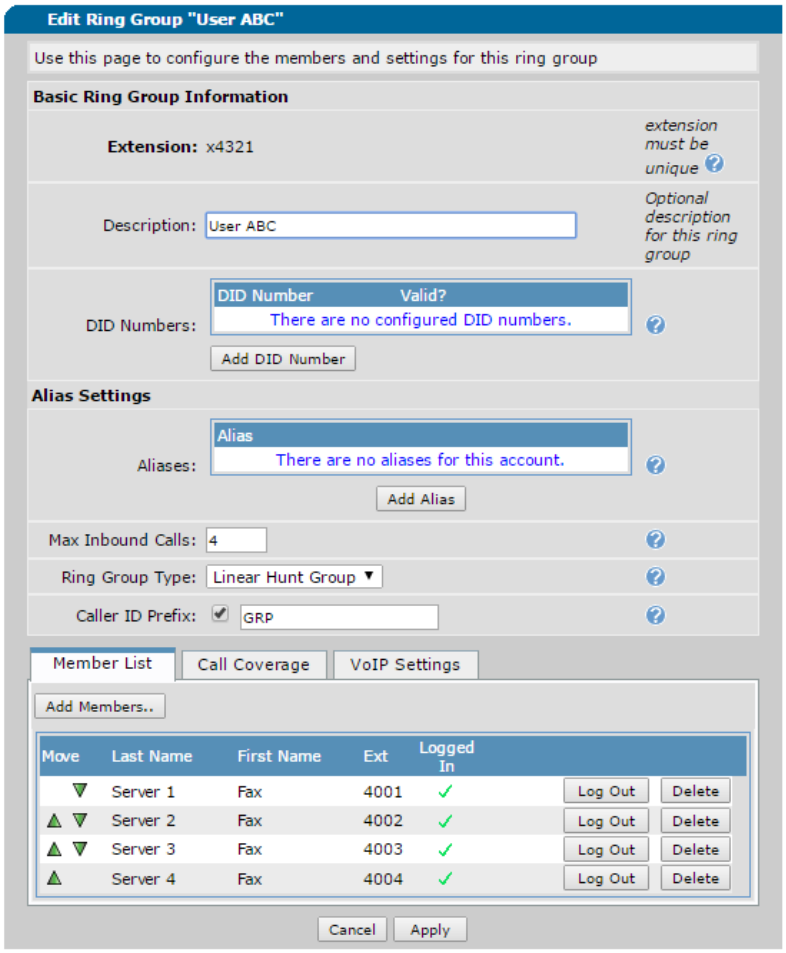
a. You must now create a group for each DID/DNIS number that you want to send to the fax server. You will need to know and verify how many digit DNIS you get from your carrier because these group numbers must match those digits exactly.

   For example, if one of your fax DID/DNIS numbers is 4321, then you must make sure that you get 4 digit DNIS from the carrier.

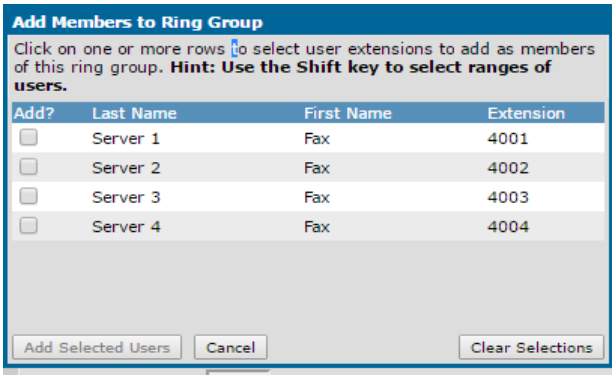
b. Select **Ring Groups** under the Voice Menu on the left as shown below. In the Extension Field enter the DIS/DNIS digits for the fax server user. The description field is optional; you can put the users name here. Leave the Ring Group Type set to Linear Hunt Group Click add.



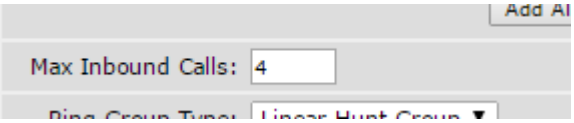
c. You will see a screen like the one below. Click **Add Members**.



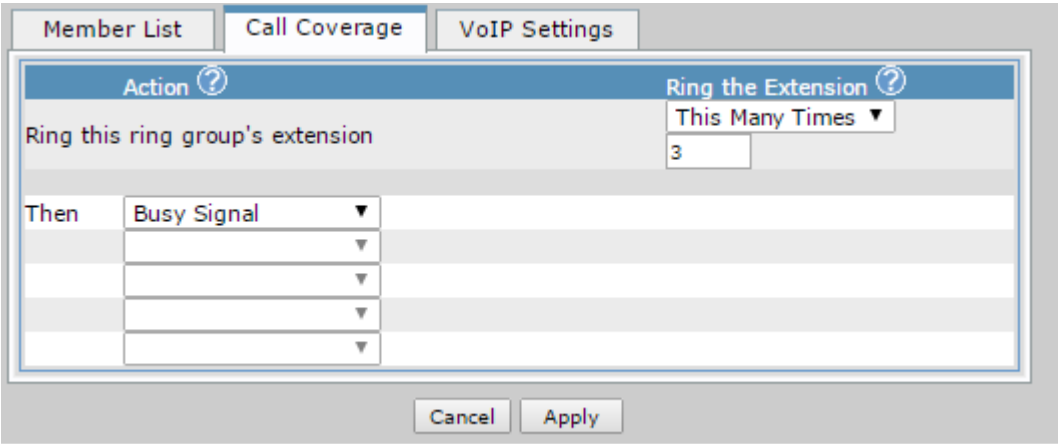
d. You will see the pop up shown below. Check the boxes of the extensions you added in step 1. Click **Add Selected Users**.



e. You return to the previous screen. Change the **Max Inbound Calls** field to the number of ports you configured. For my example we created 4 ports in step 1, so we set this field to 4. Click **Apply**.



f. You will be back at the screen to add groups. Click the group you just created. Now click the tab at the bottom labeled Call Coverage. Under the Ring the Extension This Many Times Field put 3 in and click Apply. This now will set your group to ring the extensions you created in step 1 in order 3 rings each before moving to the next extension. If the fax server does not answer any available port the it will be given a busy signal.



g. You will now need to repeat Step 2 for every DID/DNIS number you want to have sent to the fax server. You will use the same extensions from step one for every DID/DNIS number configured. Click **Save** on the top of the screen shown below.

Step 3: Configure the Fax Server Extensions to Send the DID DNIS as Pulsed DTMF Digits

a. Connect to the Adtran by Telnet or Serial and get into enable mode.

b. From the enable prompt, enter `conf t` and press **Enter**.

c. From here, you will enter the command `voice user XXX`, XXX is one of the extension you added in step 1. So for my example I would enter `voice user 4001` and press **Enter**.

d. You should be at a prompt showing your voice user now. At this prompt you will enter DNIS-digits X, where X is the number of digits you wish to send to the fax server. For my example I used 4 so my command would be DNIS-digits 4 and press **Enter**.

Note: If you need a pause inserted you would enter your command like this DNIS digits 4 digit-delay X cut-through-delay 100, where X is the delay in ms starting at 100 and max of 1000. You can only put this in using increments of 100. Example 4 digit DNIS with a 1 second (1000ms) delay would look like this, DNIS -digits 4 digit-delay 1000 cut-through-delay 100. Press **Enter**.

e. Type `exit` until you reach the top level of the enable mode, and repeat steps b through d for each extension you created in step 1. Exit to the top level of enable mode and issue the `write` command to preserve your changes.

f. Test to make sure the DTMF Tones are now on by using an Analog Test Set and connecting to the first port you made in step 1. Call the Number/ Did for the fax user when your test set rings go off hook you should hear DTMF tones. If so, then you have successfully completed this guide.

If you do not hear the tones, then review the guide to determine what is missing.

Figure 45: Save the configuration

Add FXS Extensions

FXS extensions from third-party devices need a third-party extension license, per extension placed on the MaxCS server prior to configuration of ports on the third-party device. Faxing is not supported through these extensions.

The first step is to add the extension in the MaxCS system. Ensure that when you add the extension, you apply a third-party license to the extension by checking the 3rd party checkbox in the extension view.

1. Log into MaxCS Administrator.
2. Click the **Extension** Button in the top pane of the window.
3. Click **Add**.
4. Type the intended extension number and click **Ok**.
5. Once you have set up all of the needed information, enable the extension for third party.
   - Check the **Enable IP extension** option
   - Check the **Media Stream to Voice Server** option
   - Check the **Enable Polycom or 3rd Party SIP Device** option
   - Enter a password into the **3rd Party SIP Registration Password** field
6. Click **Ok**.

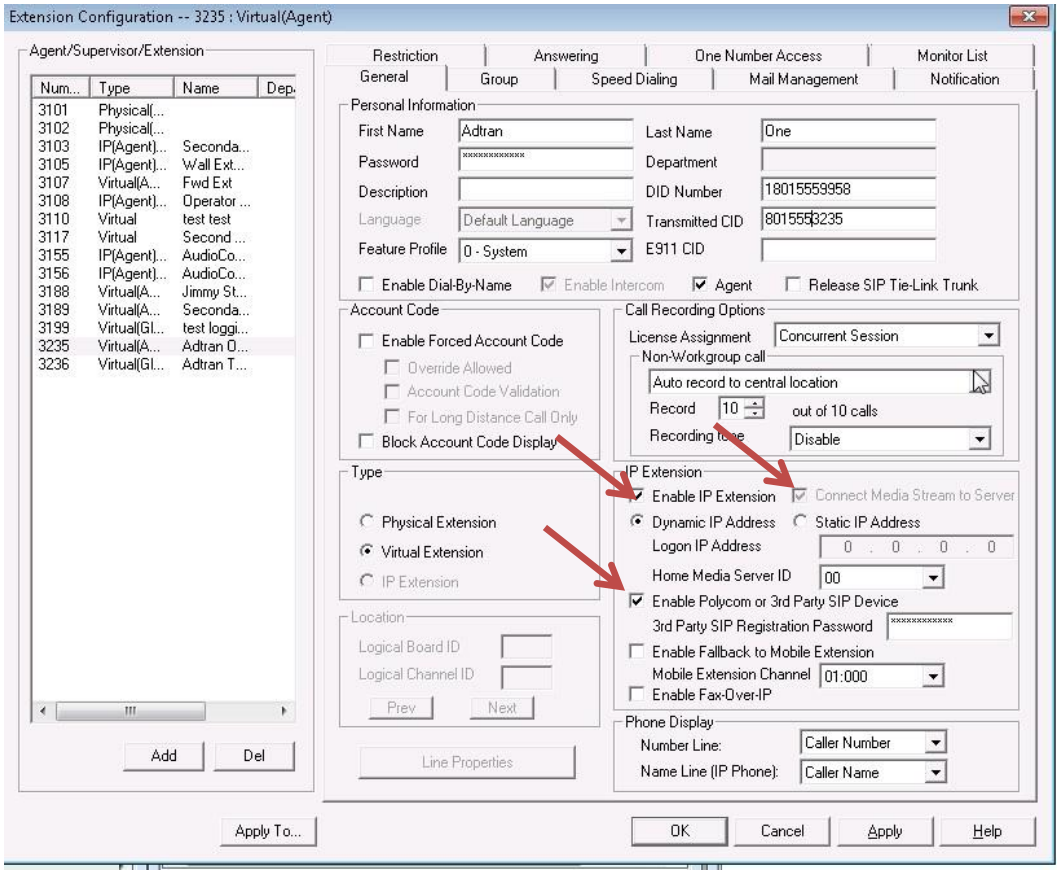


Figure 46: Configure the extension for third-party support

On the Adtran side, start by checking that the FXS port you intend to use is enabled. To do so, log into the Adtran. Expand the **System** > **Physical Interfaces** page. If the port shows OnHook, then it is already enabled.

If you have disabled this port, follow these steps to re-enable it:

1. Click on the intended FXS Port.
2. Enter the desired description information into the description field (this is strictly informational).
3. Check the **Enable** checkbox.
4. Click **Apply**.

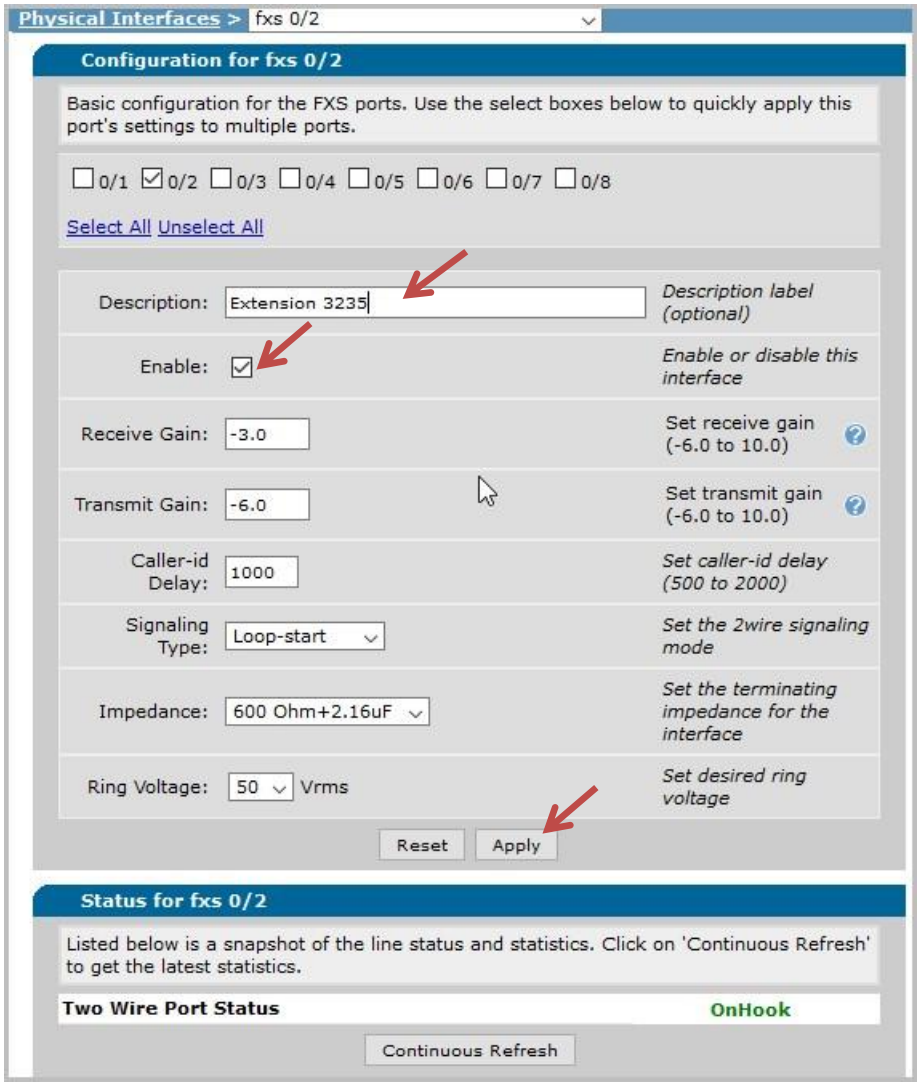


Figure 47: Enable the interface

5 Next, select **Voice** > **User Accounts**.

6 Ensure that the **Create new** option is checked.

7 Type in your extension information. The example below uses extension **3235.**

If this string matches with 4 digit DNIS inbound and is a DID, you need to add a non-matching string. Usually 10 or 11 digits for naming. Otherwise, the ADTRAN, which is set to match this string for possible ringing, will capture the call, ring the extension directly and there will be no record of the call on the MaxCS system. This can cause the MaxCS server to think that this extension is available and try to ring it via extension, group, trunks, ending in a failed call.

8 Enter First name and Last name information.

9 Select **Analog Station** in the *Phone Type* field.

10 For the *Phone Port* field, select the analog port that you will be wiring into. In the example, FXS 0/2 is selected.

11 Click **Apply**.

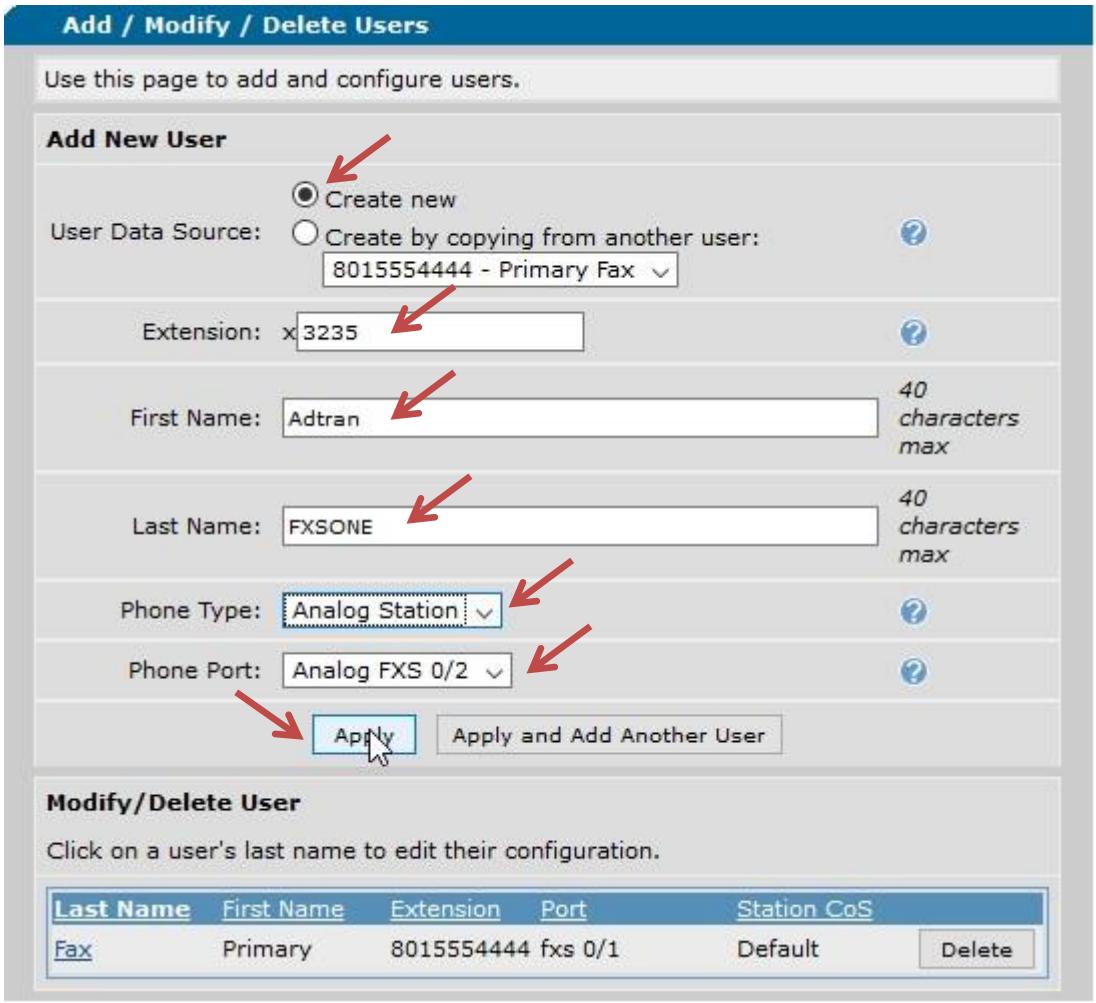


Figure 48: Create a new user

12 When the attached window opens, select the **VoIP Settings** tab.

13 Select **SIP Trunk Codec** in the *Codec Inbound Group* field.

14 Click the **Add SIP Identity** button.

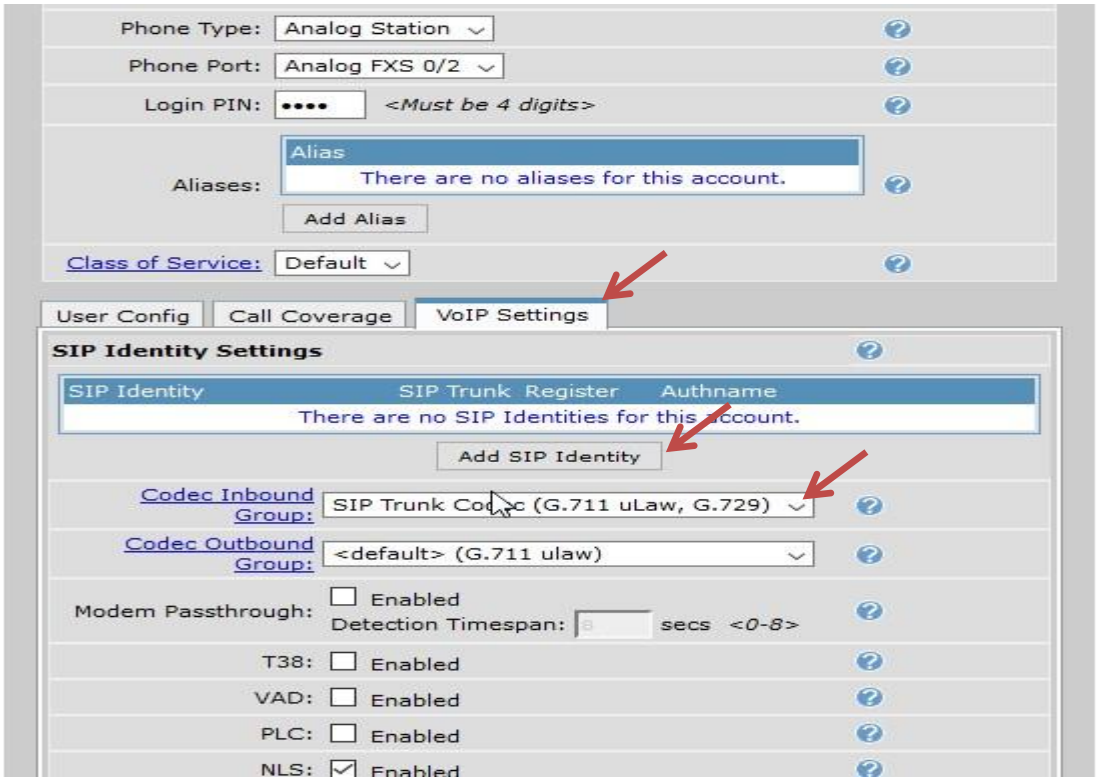


Figure 49: Configure VoIP options

15 The SIP Identity is the extension number. In our example, this is extension 3235.

16 Select **T02 – SIP to ACM** in the *Associated SIP Trunk* dropdown list.

17 Select the **Enabled** option next to *Trunk Registration*.

18 Select the **Set** option.

19 In the *User* field, enter the extension number.

20 Enter the extension's third-party password; this is the password that you entered for the extension in MaxCS Administrator.

21 Click **Add SIP Identity**.

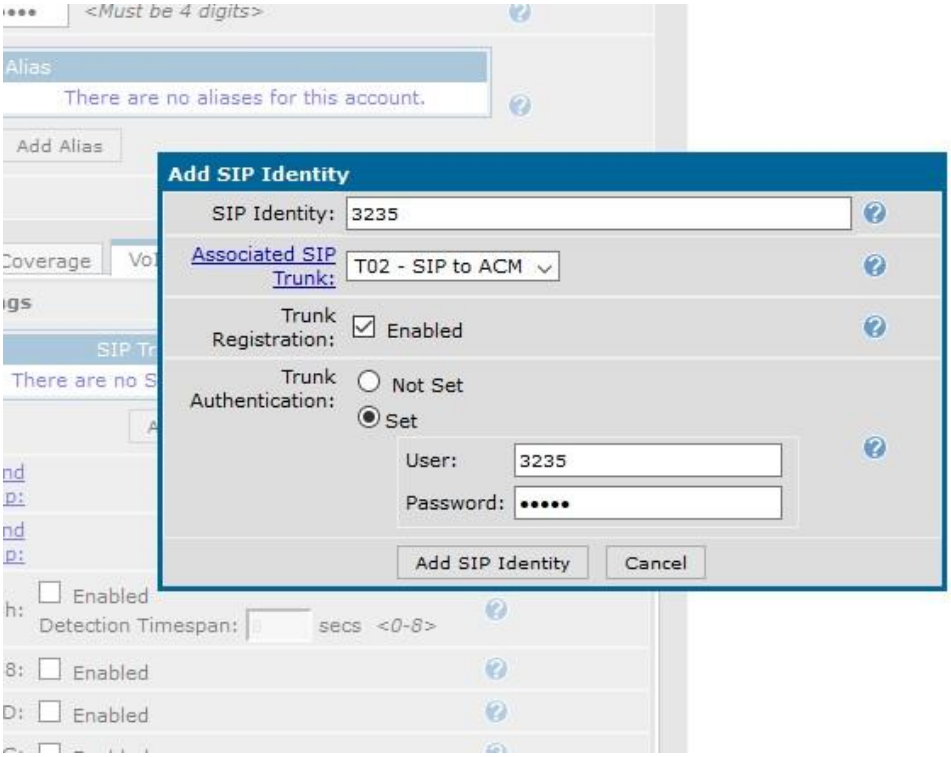


Figure 50: Add a SIP Identity

22 Click **Apply** at the bottom of the screen.

23 Click **Save** at the top of the page.

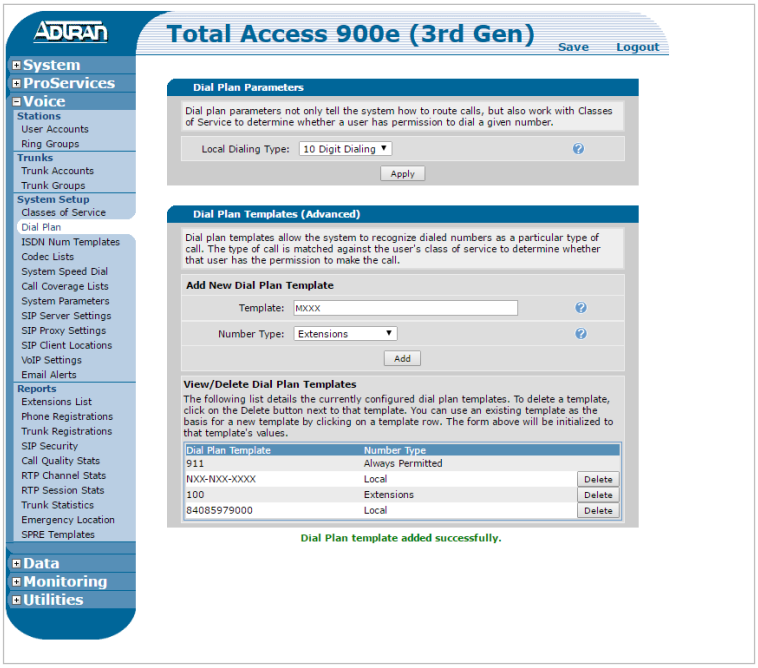
Your extension should soon register to MaxCS. Once registered, perform tests.

If you wish to make an FXS extension a ringdown extension, (the phone dials a specific number when it goes offhook), then follow the following directions after setting up your FXS extension port.

1. Log into the GUI interface of the Adtran device. Go to the Dial Plan and add the number you wish to hotline to.

   For example, in the figure below we put in Ext 100 and outside number of 84085979000. This would allow me to assign a hotline to any FX to either Ext 100 or to the outside number. Notice that the entry includes an outcall digit.

2. Click **Save** at the top of your screen.



1. Establish a serial or telnet session to your Adtran and log in and get to enable mode.
2. Enter `conf t` and press **Enter**.
3. Enter `voice user XXX` (XXX will be the number of an FXS ext you created earlier) and press **Enter**.
4. Enter `hotline XXX` (XXX can be any number you set in the dial plan in the first step.)
5. Enter `exit` and press **Enter**, enter `exit` a second time and press **Enter**.
6. Enter `write` and press **Enter**. You may now close your session. When you go offhook on the extension, it will now autodial the configured number.

Save Your Configuration

Once you have completed configuration and testing of your newly installed ADTRAN device, don't forget to save a copy of the configuration. This can be used at a later date to help in troubleshooting, as well as rebuild the configuration in a telnet session if the device encounters a hard reset and loses its configuration.

To do this, follow these steps:

1. In the ADTRAN configuration page, go to **Utilities** > **Configuration**.
2. Click the **SAVE** button at the top of the screen.
3. Click the **Download** button.
4. Select **Save File**. Unless you changed the location, your file will be stored in your *downloads* folder.

The file will be named **config-<Adtran model>-date.cfg**. For example, on a 908 model, without a time set up, the file would be named *config-908-01-01-1970.cfg*

5 Move and rename the file as needed, to a location and name that you can easily find in the future.

AltiGen Technical Support

AltiGen Technical Support provides assistance with third-party devices to ensure that your configuration matches the configuration that is detailed in this guide. If you encounter any issues with connectivity, however (for example, if the fax device does not drop the line), you should contact the device's manufacturer for support.

Configurations other than the ones detailed in this guide are not supported by AltiGen.

AltiGen provides technical support to Authorized AltiGen Partners and distributors only. End user customers, please contact your Authorized AltiGen Partner for technical support.

Authorized AltiGen Partners and distributors may contact AltiGen technical support by the following methods: You may request technical support on AltiGen's Partner web site, at https://partner.altigen.com. Open a case on this site; a Technical Support representative will respond within one business day.

Call 888-ALTIGEN, option 5, or 408-597-9000, option 5, and follow the prompts. Your call will be answered by one of AltiGen's Technical Support Representatives or routed to the Technical Support Message Center if no one is available to answer your call.

Technical support hours are 5:00 a.m. to 5:00 p.m., PT, Monday through Friday, except holidays.

If all representatives are busy, your call will be returned in the order it was received, within four hours under normal circumstances. Outside AltiGen business hours, only urgent calls will be returned on the same day (within one hour). Non-urgent calls will be returned on the next business day.

Please be ready to supply the following information:

- Partner ID
- AltiGen Certified Engineer ID
- Product serial number
- MAXCS version number
- Number and types of boards in the system
- Server model
- The telephone number where you can be reached

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