MaxCS 7.5

SoTel SIP Trunk Configuration Guide

Intended audience:

AltiGen Authorized Partners

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Contents

1. About This Guide

This guide is provided for AltiGen Partners who are provisioning SoTel SIP Trunks for customers for MaxCS 7.5.

2. SIP Trunk Configuration

Follow the procedures in this section to configure the SIP Trunks for this account.
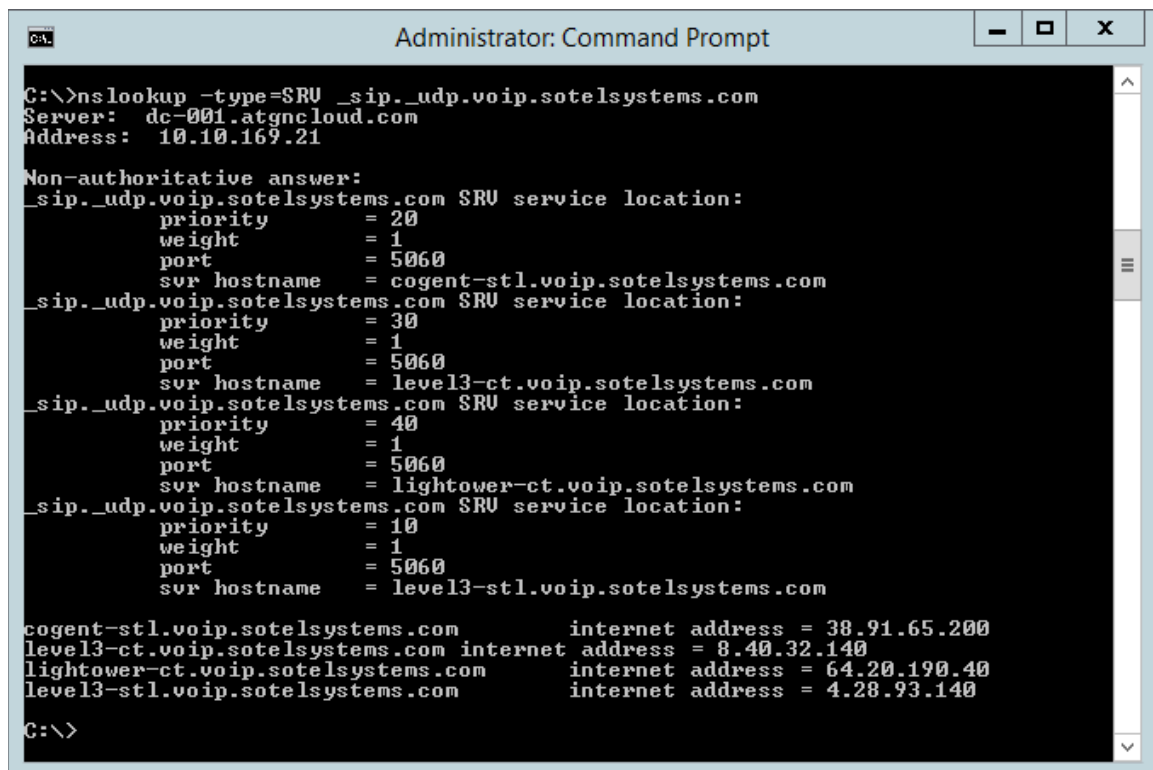
2.1. Determine which SoTel SIP Trunk Servers to Use

SoTel uses DNS SRV records to provide the IP addresses of their SIP Trunk servers. MaxCS 7.5 does not support the use of SRV records for this, so it must be configured manually.

To determine the SoTel Servers to use, open a command window and type the following command:

nslookup -type=SRV _sip._udp.voip.sotelsystems.com

The results will look similar to the following figure.

Figure 1: The nslookup command results

The results in Figure 1 indicate that there are four servers. The goal is to select the most appropriate two SIP Trunk servers to be used by your MaxCS server.

The first server to be used should be the one with the lowest "priority" value. In this example, the server is *level2-stl.voip.sotelsystems.com*. This will be the primary SIP trunk server.

The secondary server should be the one with the least commonality to the primary server, to provide the highest degree of resiliency for calling.

Currently, SoTel has service from two datacenters – one in St. Louis and one in Connecticut. At each of these facilities they have service from two different data carriers. This combination can be seen in the hostnames:

- level3-stl.voip.sotelsystems.com – This is the St. Louis location with data service from Level3.
- cogent-stl.voip.sotelsystems.com – This is the St. Louis location with data service from Cogent.
- level3-ct.voip.sotelsystems.com – This is the Connecticut location with data service from Level3.
- ligthtower-ct.voip.sotelsystems.com – This is the Connecticut location with data service from Lightower.

Since level3-stl.voip.sotelsystems.com is the primary server, lighttower-ct.voip.sotelsystems.com should be selected as the secondary serer because it is both a different datacenter and a different data carrier.

Given this, the SIP Trunk servers used in this configuration guide will be:

- Primary: 4.28.93.140 (level3-stl.voip.sotelsystems.com)
- Secondary: 64.20.190.40 (ligthtower-ct.voip.sotelsystems.com)

If these results should change in the future, please consult with SoTel for their recommendations on which of their SIP Proxy servers should be handling calls.

2.2. Change Digit 9 to Route Access

The SIP Proxy servers provided by SoTel have different priority values in their SRV records. This indicates that there is a clear order in which they would like the servers to be contacted. Calls should route through the primary server, and should only use the secondary server in the event that the primary is not responsive.

In order to accommodate this trunk selection, Out Call Routing must be used on the MaxCS system. This example will use 9 as the leading digit for route selection. If you are using a different digit to get an outside line, adjust accordingly.

1. In MAXCS Administrator, select **System** > **System Configuration**.
2. In the *Trunk Configuration* page, select a SIP Trunk. The *Trunk Access code* field is currently set to 9. Change *Trunk Access code* to **None**. Click **Apply To**.
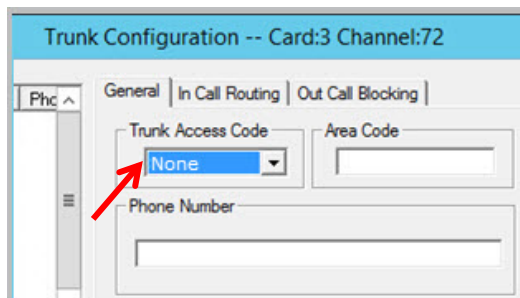
Figure 2: The Trunk Access Code for the SIP Trunk channel

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3. All of the other SIP trunks are automatically selected; click **OK**. Click **OK** again to close the window.

4. Select **System** > **System Configuration**. Click the *Number Plan* tab and change digit 9 from **Trunk Access** to **Route Access**. Click **OK** to close the window.
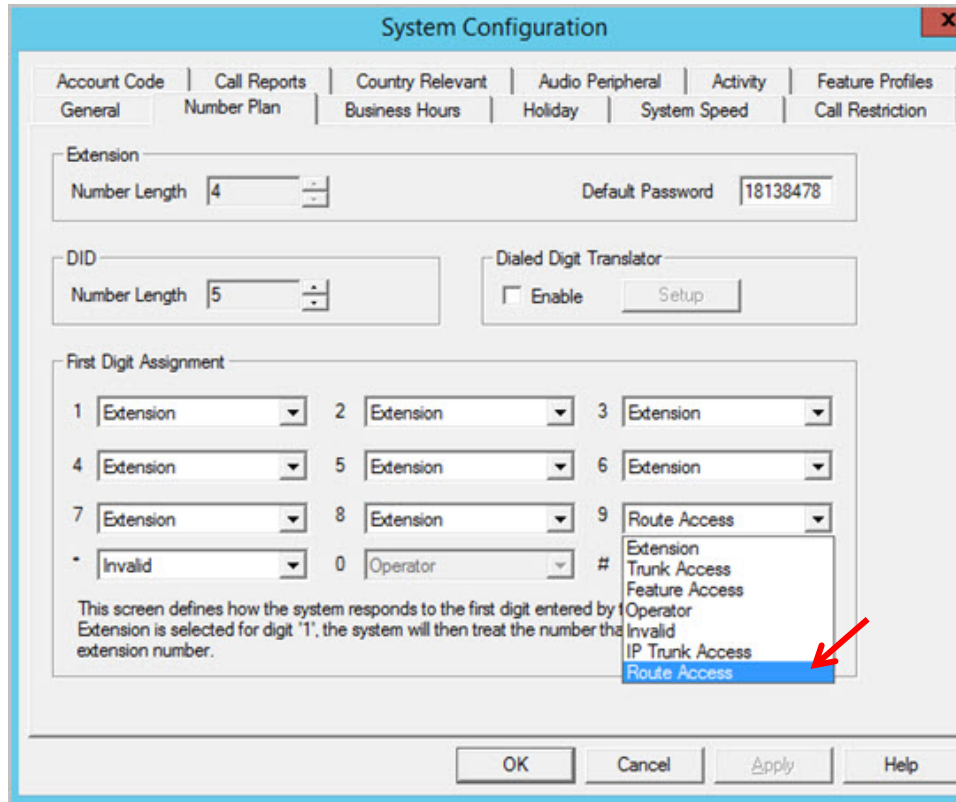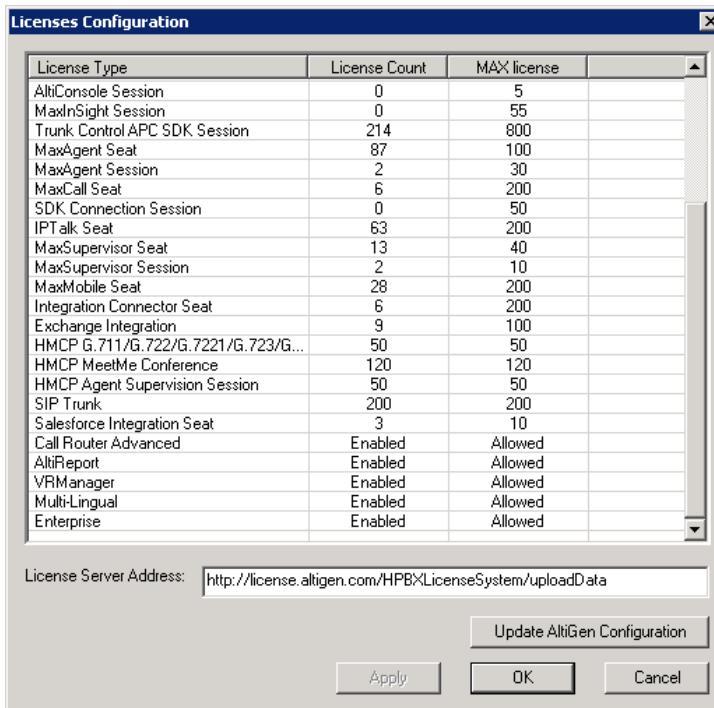

Figure 3: Change Digit 9 to Route Access

2.3. Check Licenses and SIP Trunks

1. Confirm that you have SIP Trunk licenses installed and set for maximum number of channels needed.

Figure 4: The License Information panel

2. Make sure that the SIP trunks appear in the *SIP Trunk* view. If they do not appear in that list, you must stop and restart switching before you proceed with SIP trunk configuration.

2.4. Configure a New Codec Profile

Next, configure a Codec Profile for the SIP trunks in Enterprise Manager:

1. In MAXCS Administrator, select **VoIP** > **Enterprise Network Manager**.

2. Click the **Codec** button on the *Quick Launch* bar (this is different from the *IP Codec* tab).

3. Create a new profile for the SoTel SIP trunks; click **Add** and create a profile with the following parameters:

- For the name, enter **SoTel**
- Set the *Selected Codec* to use G.729 first and G.711 Mu-Law second (use the **Add, Remove, Up,** and **Down** buttons as needed)
- Set *DTMF Delivery* to **RFC 2833**
- Set *SIP Early Media* to **Enable**
- Set *SIP Transport* to **UDP**
- Click **Advanced** and set both packet lengths to **20** ms

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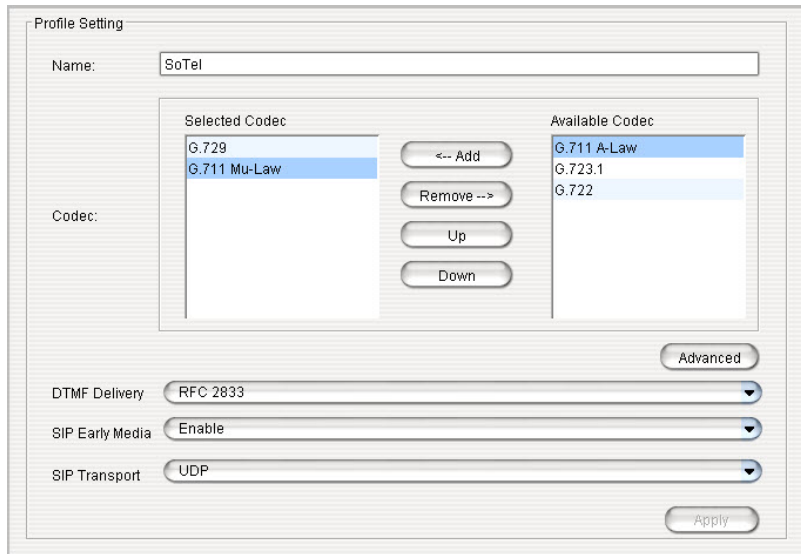
Figure 5: The Codec page in Enterprise Manager

2.5. Assign the Codec Profile to the Two SIP Servers

Next, assign the *SIPTrunk* Codec Profile to the two SIP trunk servers.

1. In Enterprise Manager, click the **Servers** button on the Quick Launch bar.

2. Open the **IP Codec** tab.

3. Click **Add**, add the primary server's IP address, and set the *Codec Profile* to *SoTel*. Repeat for the secondary server.
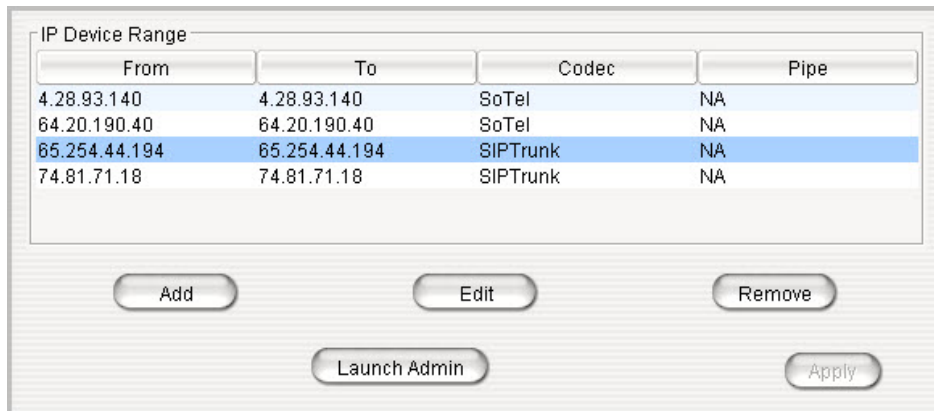
Figure 6: The Servers page (IP Codec tab) in Enterprise Manager

2.6.   Confirm NAT Configuration

1.   To confirm that NAT support has been configured, click the **IP Networks** tab and confirm that both of the NAT support checkboxes are selected, and that the *Public IP Address* matches the public IP address of this system.

Figure 7: Enable NAT support

2.   Close Enterprise Manager.

2.7.   Configure a New SIP Trunk Profile

1.   Open the SIP Trunk Configuration panel:

   •   In MAXCS Administrator, open Trunk view.

   •   Double-click an unconfigured SIP Trunk.

   •   In the Trunk Configuration panel, click **Trunk Properties**.

   •   In the next dialog box, click **SIP Trunk Configuration**.

   •   Click **SIP Trunk Profile**.

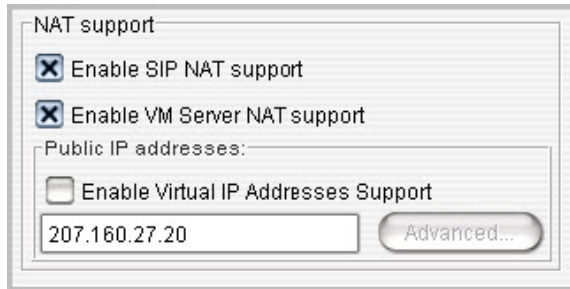2.   Click **Add**, and create a new SIP Trunk Profile named **SoTel**.

3.   Modify the new SIP Trunk profile, specifying the following parameters, and click **OK**.

   •   Set the *SIP Calling Number -> SIP Protocol Field* to **FROM Header**.

   •   Select *Carrier can only accept assigned numbers as Calling Number*. This will enable you to enter numbers that are authorized to call out.

   The number or numbers that you enter can be a single DID (main number) or block of numbers or typically a DID block assigned to you by your provider.   To enter a block or range of numbers, click the **Add** button and add the range of numbers.

   •   For the *Use this Calling Number if the Carrier cannot accept configured numbers* field, enter the main phone number.

   •   Select **Send Caller Name**. (Do NOT select Enable Standard Record-Route Header.)

   •   Set *Incoming DID Number* field to **To Header**.

2.8.   Plan the Channel Configuration

You will need the SIP Trunk details from your order in the MAXCS Cloud portal to complete the steps in this section.

For fail-over trunking, you will assign half of the channels to the primary server as determined in Section 2.1, and the remaining half to the second server.

In addition, you will configure only the **first channel** in each half to register.

1. Determine the number of SIP Trunk channels available, and determine the channel number mid-way through the list. This channel will be the first of the channels that uses the second server.

    For example, if you have 20 channels, consider the 11th channel as the channel that switches to the second server. You would assign the first 10 channels to the first server, and the last 10 channels to the second sever. (See Figure 9 for an example.)

2. Jot down this mid-point channel number; we'll refer to this as *ChannelB* in later steps, to avoid confusion. You can also note the range of channels for the first and second servers.

Channel number	Server	Register period
0072	01	60
0073	01	0
0074	01	0
0075	01	0
0076	01	0
0077	01	0
0078	01	0
0079	01	0
0080	01	0
0081	01	0
0082	02	60
0083	02	0
0084	02	0
0085	02	0
0086	02	0
0087	02	0
0088	02	0
0089	02	0
0090	02	0
0091	02	0

ChannelB: _____

1st Server channels: _____ - _____

2nd Server channels: _____ - _____

← – – – – – – – ChannelB

Figure 8: Example of dividing 20 channels between two servers

2.9. Configure the First Half of the Channels

First, configure the first half of the SIP Trunk channels, which will be assigned to the first server.

1. Collect the username, password, and domain name from SoTel.

2. Switch to MAXCS Administrator. You should be in the *SIP Trunk Configuration* page. If not, open it now.

3. Select the first SIP Trunk channel and click **Edit**. Set the following parameters and click **OK**:

    •   For *SIP Server IP Address*, enter the IP address of the first SIP trunk server (in our example, this is 4.28.93.140, chosen on page 4).

    •   For *User Name*, *Password*, and *Domain*, enter the details provided by SoTel.

- Set the *SIP Register Period* to **0**. (You will modify this for the first channel later.)
- Set the *SIP Trunk Profile* to **SoTel**.
- Set the *SIP Source Port* and the *SIP Destination Port* fields to **5060**.
- Select **Enable Channel**.

4. Copy that configuration to the rest of the first half of the channels:

   a. Select the first channel and click **Copy To**.

   b. Select the range of channels from the second channel through the end of the channels that belong with the first server. Do not include ChannelB or any channels beyond ChannelB. For the scenario in Figure 8, for example, you would copy the configuration of channel 00 to channels 01 through 09.

   c. Click **OK**.

5. Update the first channel to specify a registration period other than 0, so that this trunk will send a registration message to the carrier:

   a. Select the first SIP Trunk channel again. Click **Edit**.

   b. Change the *SIP Register Period* setting to 3**600**. Click **OK**.

2.10. Configure the Second Half of the Channels

Now you will configure the second half of the channels, which will be assigned to the second server. This process is almost identical to step 3.9, except that you are using the "Secondary" SIP details from the order portal instead of the details for the first sever.

1. Select the first channel of the second half (ChannelB). Click **Edit**.

2. Set the following parameters and then click **OK**.

   - For SIP Server IP Address, enter the IP address of the second SIP trunk server (in our example, this is 64.20.190.40, chosen on page 4).
   - For *User Name*, *Password*, and *Domain*, enter the details provided by SoTel.
   - Set the *SIP Register Period* to **0**. (You will modify this again, for just ChannelB, later)
   - Set the *SIP Trunk Profile* to **SoTel**.
   - Set the *SIP Source Port* and the *SIP Destination Port* to **5060**.
   - Select **Enable Channel**.

3. Copy the configuration of ChannelB to the rest of the last half of the channels:

   a. Select ChannelB and click **Copy To**.

   b. Select the range of channels from the next channel (after ChannelB) through all of the rest of the channels. In Figure 8, for example, you would copy the configuration of channel 10 to channels 11 through 19.

   c. Click **OK**.

4. Now edit ChannelB to specify a registration period other than 0, so that this trunk will send a registration message to the carrier:

   a. Select ChannelB. Click **Edit**.

b. Change the *SIP Register Period* setting to **3600**. Click **OK**.
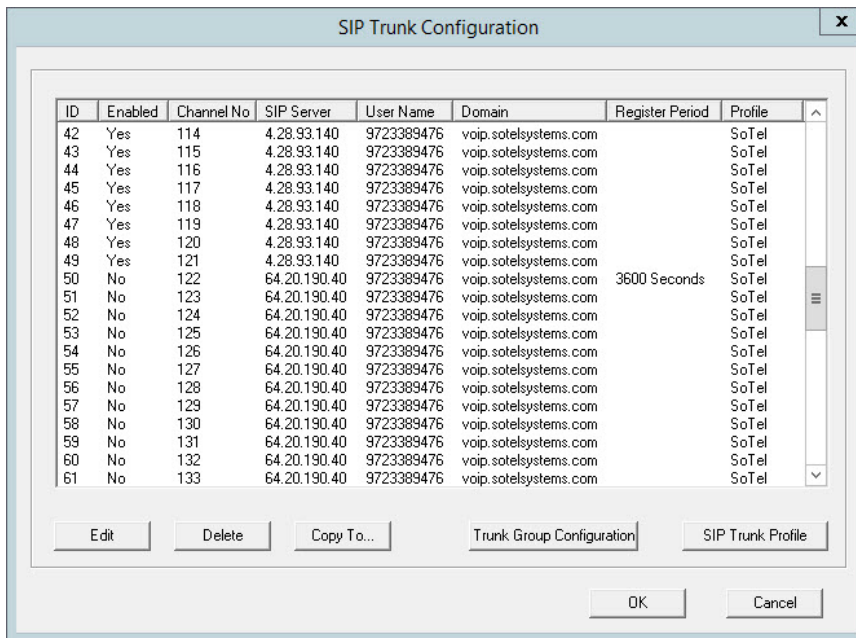
2.11. Check Your Configuration

1. In the SIP Trunk Configuration panel, the first half of your channels should list the primary server and the remaining channels should list the secondary sever.

    In addition, the first channel and ChannelB should both show a registration period of 3600 seconds; all other channels should show that field as empty.

    In Figure 9, ChannelB is channel number 122 (ID 50); channels above it are assigned the first server, the rest are assigned to the second server, and ChannelB has a *Register Period* of 3600 seconds.

2. If your configuration is not correct, make the necessary adjustments before you continue.

Figure 9: Channels are assigned to the second server starting with channel 122 (which is ID 50)

3. Return to the main Trunk view (close the various panels to reach that view) and confirm that all configured SIP trunk channels show as Idle, including the two channels that are configured to register.

2.12. Enable SIP Options for the Servers

The next step is to select the Enable SIP option for both of these servers. By sending a "keepalive" message and checking for a valid response, SIP devices will know whether remote peers are ready to receive a new request.

1. You should still be on the *SIP Trunk Configuration* page. Click **Trunk Group Configuration**.

2. Select the primary SIP Trunk server (4.28.93.140; refer to page 4) and assign it the name *SIPTrunk_Primary*. Check the **Enable SIP OPTIONS** checkbox and click **Apply**.

3. Select the secondary SIP Trunk server (64.20.190.40) and assign it the name *SIPTrunk_Secondary*. Check the **Enable SIP OPTIONS** checkbox and click **Apply**.
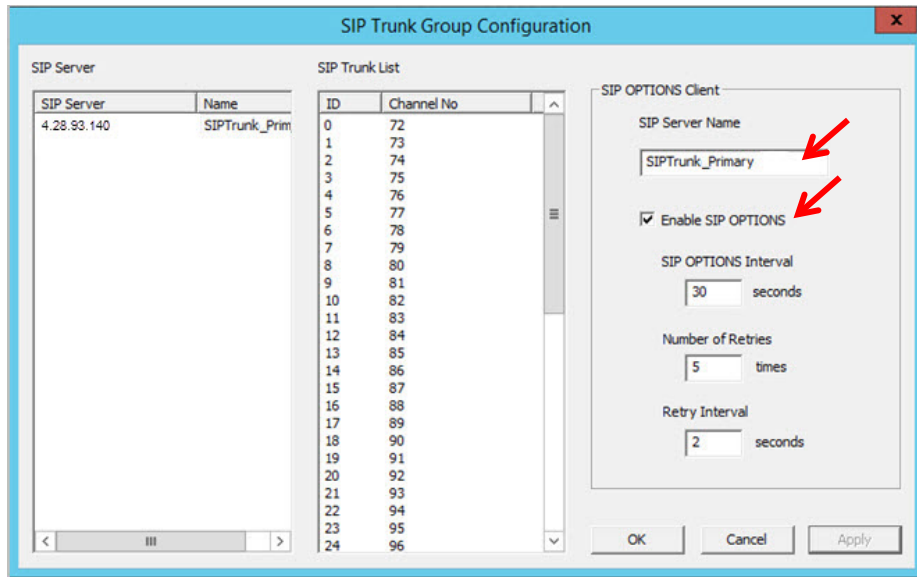
4. Close the various panels until you return to Trunk View. The first channel and ChannelB should both be green with a status of *Idle*. If one of these channels does not show as Idle, check your configuration.

2.13. Configure Out Call Routing

Finally, configure out-call routing rules.

1. Select **PBX** > **Out Call Routing Configuration**. On the *Route Definition* tab, add a route called *Primary*:

    a) Click **Add**. Leave the index number as is and enter the name *Primary*.

    b) To add member trunks, select the channels that are assigned to the first server in the Not Member list (refer back to page 9, where you identified ChannelB). Click the Left Arrow button to add these channels to the Member Trunks list. Click **Apply**.

2. Follow the same process as the preceding step to add another route, called *Secondary*. This time, add the channels that are assigned to the second server. Click **Apply**.
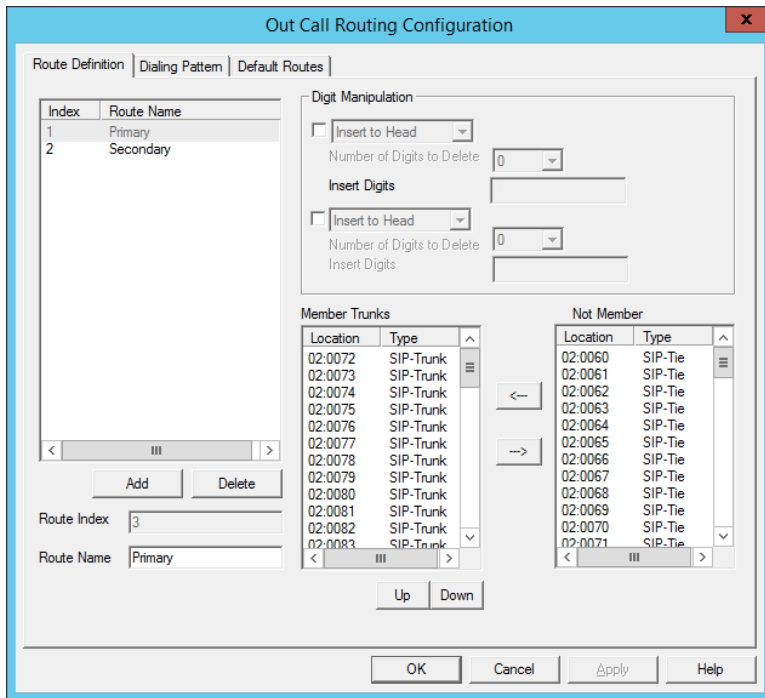
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Figure 11: Out Call Routing configurations

3. Switch to the Default Routes tab. Set the following routes and click **OK**.
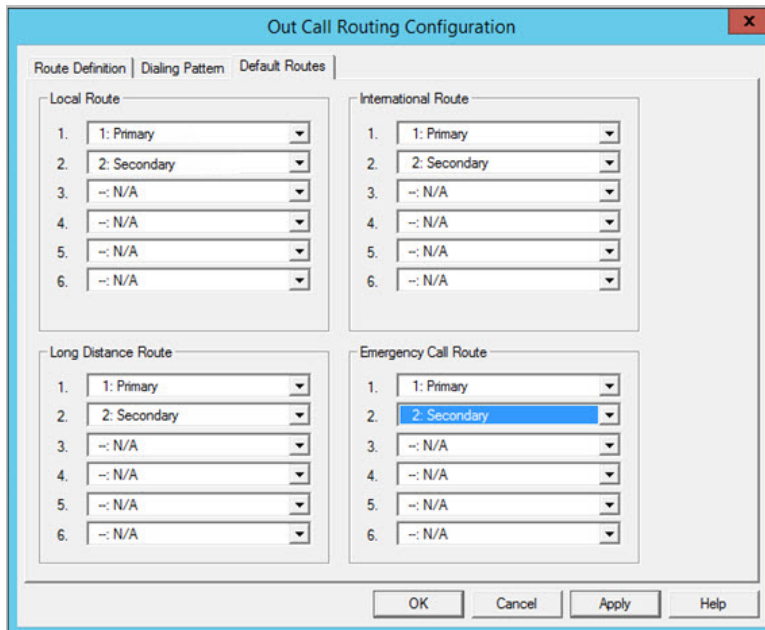

Figure 12: Default route configuration

- Set *Local Route 1* to **3: Primary**
- Set *Local Route 2* to **4: Secondary**

- Set *International Route 1* to **1: Primary**

- Set *International Route 2* to **2: Secondary**

- Set *Long Distance Route 1* to **1: Primary**

- Set *Long Distance Route 2* to **2: Secondary**

- Set *Emergency Call Route 1* to **1: Primary**

- Set *Emergency Call Route 2* to **2: Secondary**

2.14. Configure Inbound Routing

Carriers send 10 digits as DNIS; configure your inbound routing rules accordingly.

2.15. Test the SIP Trunks

We recommend that you perform basic tests to confirm that the SIP Trunks are correctly configured; test inbound calls, outbound calls, and extension-to-extension calls.

2.16. Additional Notes

If the customer needs the ability to modify their outbound caller ID using the Order Portal, contact SoTel and ask them to disable their "Calling number / connected line ID screening" setting.