SIP Trunking using the Optimum Business SIP Trunk Adaptor and the Vertical SBX IP320

Table of Contents

1 Overview

The purpose of this configuration guide is to describe the steps needed to configure the Vertical SBX IP320 IP PBX for proper operation Optimum Business Sip Trunking.

2 SIP Trunk Adaptor Set-up Instructions

These instructions describe the steps needed to configure the LAN side of the Optimum Business SIP Trunk Adaptor.

Step 1:

Log on to the Optimum Business SIP Trunk Adaptor

1. Connect a PC to port 4 of the Optimum Business SIP Trunk Adaptor, the silver device labeled Edgewater Networks, 4550 series.

2. Open a Web browser and go to IP Address http://10.10.200.1. A login box will appear.

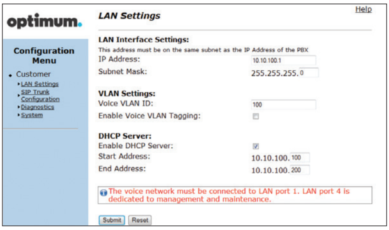
3. Enter login and password and click 'OK'.
   Login: pbxinstall
   Password: s1ptrunk

Step 2:

Click on the LAN Settings Link

1. Assign an IP Address to the LAN interface of the SIP Trunk Adaptor. The IP address must be on the same subnet as the IP PBX. This changes the address on port 1 of the Optimum Business SIP Trunk Adaptor.

   Note: This will become your local SIP proxy IP address. No other IP addresses will be provided by Cablevision.



2. Optional: Specify a VLAN for your voice traffic. Click the 'Enable Voice VLAN Tagging' check box. The default VLAN ID is 100.

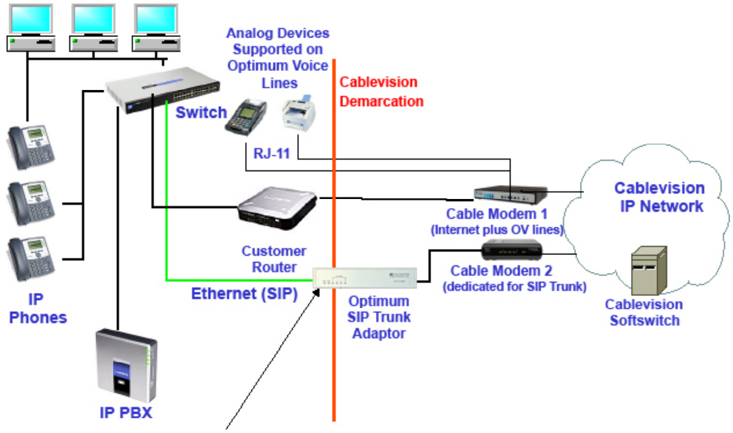
   Note: VLAN 200 should not be used. It is dedicated to port 4 for management.

optimum. let's connect more

3. Optional: Enable the DHCP server. This will allow the SIP Trunk Adaptor to act as a DHCP server, which will provide IP addresses to the voice network, and create a dedicated voice LAN, as per diagram 2.

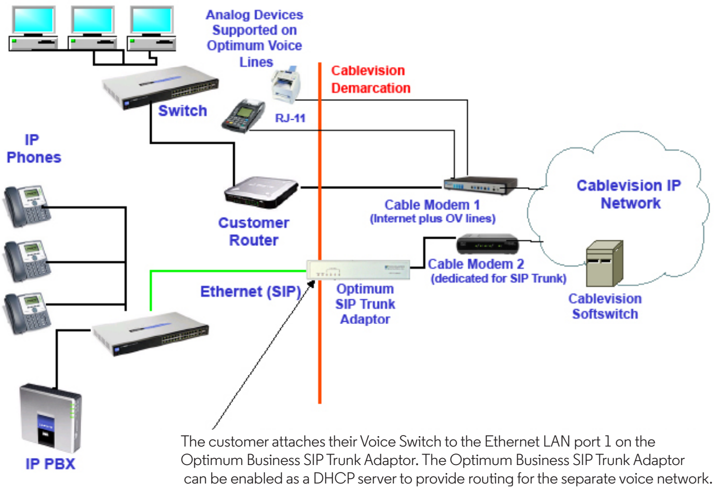
4. Click 'Submit'.

Diagram 1 SIP Trunk Adaptor for IP-PBXs Example: Single LAN Configuration



Using a connection from the customer's LAN, the SIP Trunk Adaptor's address can be a statically assigned private IP address. It may not be assigned a Public IP address.

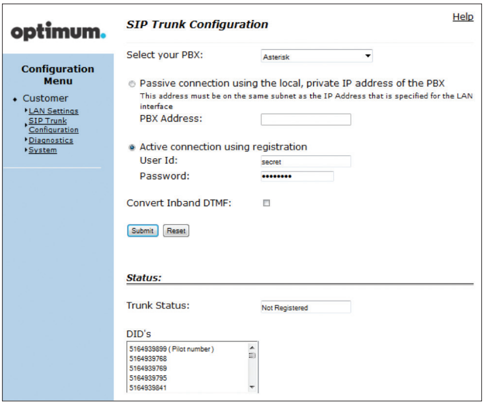
Diagram 2 SIP Trunk Adaptor for IP-PBXs Example: Separate Voice and Data Networks Configuration



The customer attaches their Voice Switch to the Ethernet LAN port 1 on the Optimum Business SIP Trunk Adaptor. The Optimum Business SIP Trunk Adaptor can be enabled as a DHCP server to provide routing for the separate voice network.

Step 3:

Click on the SIP Trunk Configuration Link

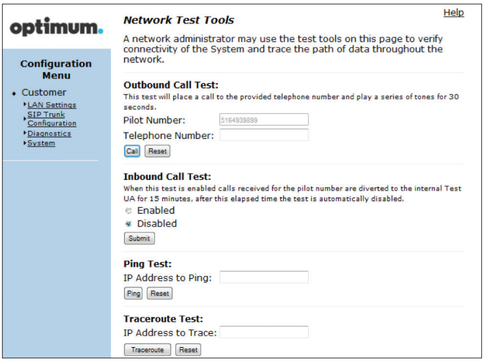


1. Select your IP PBX make and model from the drop-down menu.
2. Specify how the IP PBX will register to the Optimum Business SIP Trunk Adaptor.
3. The Cablevision network only supports Inband DTMF. Click on the check box next to "Convert Inband DTMF" if you cannot configure your IP PBX to send out Inband DTMF. The DTMF tone duration generated by the phones and/or PBX may need to be increased from their default setting. Some phones and/or PBX have a default setting between 180ms to 200ms. This setting is too low. The recommended setting is 600ms.
4. Click 'Submit'.

Step 4:

Diagnostics Link

You can make a test call directly from your phone or use the test call application under the Diagnostics link.



Step 4 continued

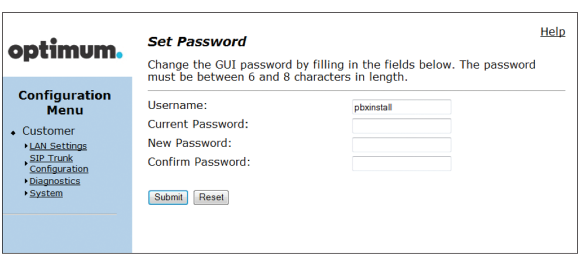
Field	Description
Outbound Call Test TelephoneNumber	Specifies an outside phone number to which an outbound call will be initiated. The pilot telephone number of the SIP Trunk will be prepopulated.
Pilot Number	Displays the provisioned pilot number, which is used for outbound and inbound call tests.
Call	Initiates a call outbound to a telephone number entered or inbound to the pilot number displayed.
Inbound Call Test (radio button)	Indicates whether inbound test call will be enabled or disabled. If inbound test calls are enabled, calls made to the pilot number will be redirected to the test UA for fifteen minutes. When the pilot number is dialed, you will hear a test message play.
Submit	Enables or disables the inbound call test.
IP Address to Ping	Verifies basic connectivity to a networking device. Successful ping test results indicate that both physical and virtual path connections exist between the system and the test IP address.
Ping Button	Sends a ping to the IP address specified in the field "IP Address to Ping".
IP Address to Trace	Tracks the progress of a packet through the network. The packet can be tracked through the WAN or LAN interfaces of the adaptor.
Interface (radio button)	Indicates whether a packet will be tracked through the LAN or the WAN.
Traceroute Button	Initiates a traceroute to the specified IP address on either the LAN or the WAN.
Reset	Clears all fields and selections and allows you to enter new information. Reset applies to outbound call test, ping and traceroute.

3 Additional Set-up Information

Systems

Field	Description
Pbxinstall Link	Select to change the default password for the pbxinstall login ID. Only the password can be changed. The login ID cannot be changed.

Password



Field	Description
Username	Specifies the username for which the password can be changed.
Current Password	Specifies the current password.
New Password	Specifies the new password.
Confirm Password	Confirms the new password.
Submit	Applies the settings configured on this page.
Reset	Clears all fields and selections and allows you to enter new information.

4 International Calling

Optimum Voice Business Trunking offers an optional International Calling Service for direct-dialed calls made from the Customer's business or from any phone via the Optimum Voice International Calling remote access number to destinations outside of the United States, Puerto Rico, Canada and the U.S. Virgin Islands at per minute rates. The Customer must login to the Optimum Business Account Center and activate the service on the Optimum Business Trunk Pilot telephone number to activate the service and manage the monthly International spending limit for the account.

Activating International calling on the Pilot TN will enable International calling for all Direct Inward Dial (DIDs) telephone numbers as well. Blocking International calling for one or more DIDs is managed by the customer directly from the PBX phone system configuration. To minimum the exposure to fraudulent calling, It is recommended to limit International calling capability to those DID's that require it and set up an account spending limit that reflects what is necessary to run the business.

It is the Customer (and/or the Customer Agent's) responsibility to properly secure the customer's PBX to prevent the PBX from being compromised and fraudulent calls from being made by unauthorized (internal or external) users. If fraudulent calls are detected, Cablevision reserves the right to disable International Calling until the PBX is properly secured by the customer.

Goal

The purpose of this document is to describe the steps needed to configure the Vertical SBX IP320 IP PBX for proper operation with Optimum Business SIP Trunking.

Prerequisites

Please follow the instructions in the Optimum Business SIP Trunk Set-up Guide. The Set-up Guide was left by the Optimum Business technician at installation. If you do not have the Set-up Guide, go to **optimumbusiness.com/sip** to download a copy.

This configuration guide provides the configuration steps for both PBX registration and static or non-registration modes of PBX operation.

IP PBX Information

Manufacturer:	Vertical Communications
Model:	Vertical SBX IP320
Software Version:	MPB-VD78P-4.0Ad APR/13 PC ADM-GSVAD D.0Aa 2012.08.30
Does the PBX send SIP Registration messages (Yes/No)?	Yes

Vertical SBX IP320 Configuration

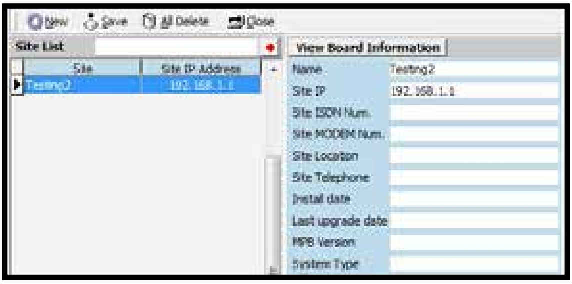
The steps below describe the minimum configuration required to enable the PBX to use a SIP trunk for inbound and outbound calling. Please refer to the Vertical SBX IP320 product documentation for more information on other advanced PBX features.

Network Settings

You need to install PCADMIN on your PC. This will be the tool you will use to configure the KSU device. Programming through the phones is possible, but PCADMIN is a much easier option. You will first need to create a site for the KSU and assign an IP address. For the certification test, the IP address was left at its default of 192.168.1.1 and the Optimum Business SIP Trunk Adaptor was configured with 192.168.1.11. The VoIB card was configured for 192.168.1.2. This is the IP address that will essentially be used for SIP signaling with the Optimum Business SIP Trunk Adaptor. As for the KSU address of 192.168.1.1, this will be used to access the device and manage configuration.

Navigate to **“Tools”** from the top and select **“Site Information”**.

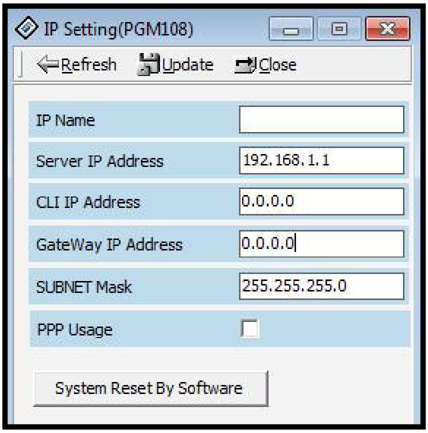
Then click **“New”** and you will be prompted to enter information for your KSU. For simplicity we just gave it a random name and assigned it an IP address of 192.168.1.1.



When finished, save changes. Then right click the site and select **“Connect (LAN)”** to connect to the KSU through PCADMIN. When connected to the KSU you will be prompted for a password, by default it is 0000.

When you see the Connect icon turn green it means you have successfully connected.

Navigate to **“Pre-Programmed ▸ IP Settings”** and enter the IP address of the KSU next to **“Server IP Address”** along with the subnet. You can leave other fields as 0.0.0.0 for now.



VERTICAL SBX IP320

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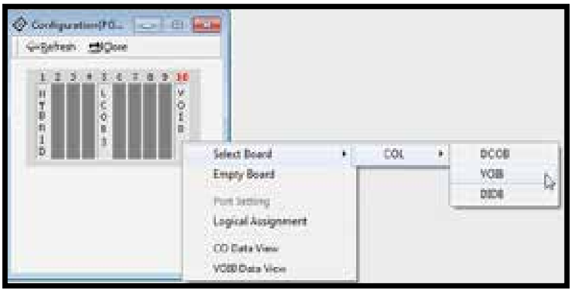
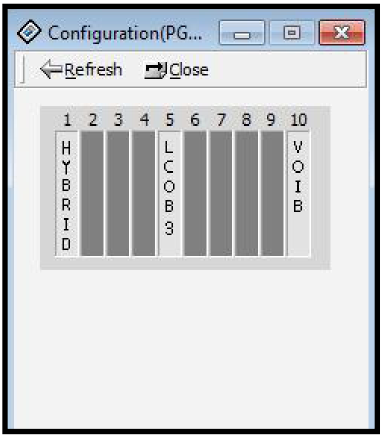
Navigate to **"Pre-Programmed ▸ Configuration(PGM 101-103)"**.
Right click slot 10, go to **"Select Board ▸ COL ▸ VOIB"**.

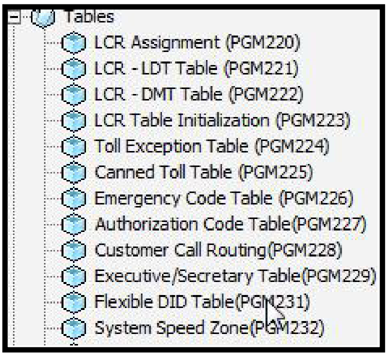


You should see **"VOIB"** written under 10 above after doing this. You must do this to enable the VOIB even if you have it installed on the KSU.

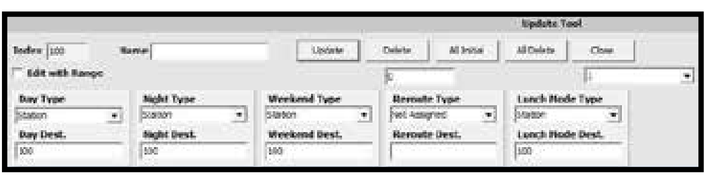


Phone DID and Extension assignment

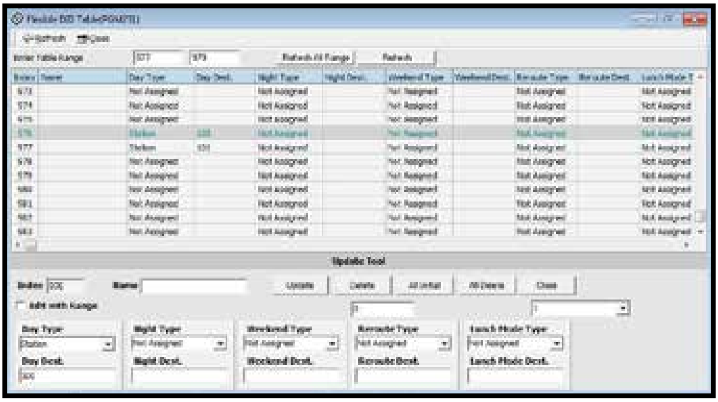
Now navigate to **"Tables ▸ Flexible DID Table"**.



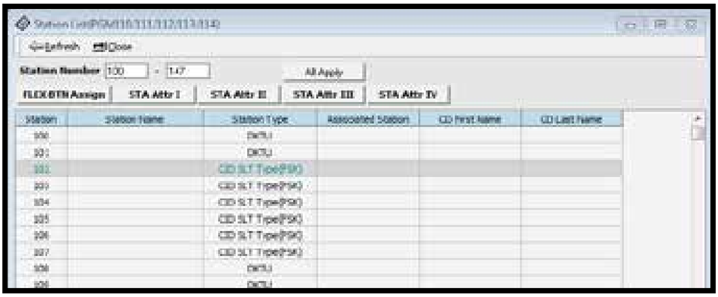
The two station extensions we used were 100 and 101. First, right click Index 100 and select **"Update Tool"**. For **"Day Type"**, **"Night Type"**, **"Weekend Type"**, and **"Lunch Mode Type"** enter **"Station"**. For **"Day Dest."**, **"Night Dest."**, **"Weekend Dest."**, and **"Lunch Mode Dest."** enter 100. Enter 0 and choose 1 as displayed below on top right. When done click **Update** then **Refresh**. Repeat this for station 101.



You will then under **"Flexible DID Table(PGUM231)"** need to assign these extensions to DIDs. The DIDs used were 6314488976 for station 100 and 6314488977 for station 101. To assign to them to their corresponding stations, you need to go to the last 3 digits of each DID, in this case 976 and 977 and assign them to 100 and 101 respectively. Click on 976 and change the **"Day Type"** to **"Station"**, and the **"Day Dest."** to 100. Also enter 0 and 1 at the top as shown below. When done click **Update** then **Refresh**. Repeat for remaining stations.



Navigate to **"Station Base Program ▸ Station List(PGM 110/111/112/113/114)"** and enter 100-107 next to **"Station Number"**. Right click Station 102 and select **"Update Tool"**. Under **"Station Type"** select **"CID SLT Type(FSK)"** then click **Update**. We did this for Stations 102-107 for visual purposes. When done click **Refresh**.



Now navigate to **"Flex Button Assignment(PGM115/125)"** and enter 100 next to **"Current Station"**. For flex buttons 1-7 we entered the following:

Current Station 100 **Copy To DSS (PGM125)**

Flex Button	Type	Value
1	{CO xx} Button	4
2	{CO xx} Button	5
3	{CO xx} Button	6
4	{CO xx} Button	7
5	Not Assigned	
6	Not Assigned	
7	{LOOP}	

For station 101 we entered the following:

Flex Button Assignment(PGM115/125)

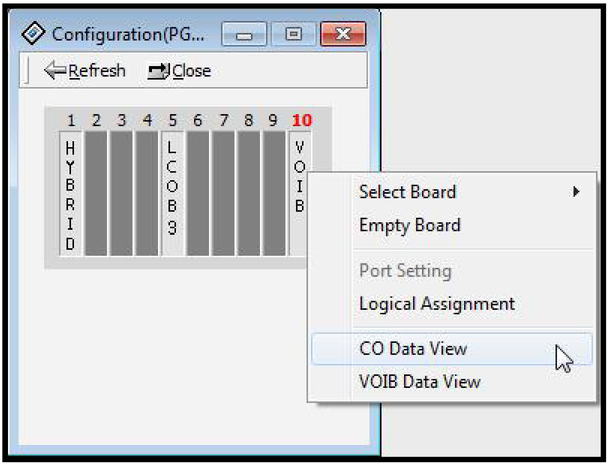
Refresh Close

Current Station 101 **Copy To DSS (PGM125)**

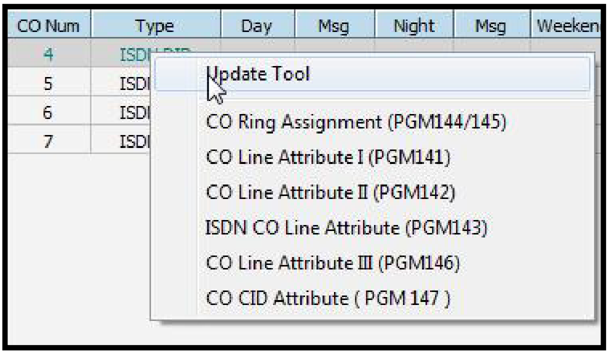
Flex Button	Type	Value
1	{CO xx} Button	1
2	{CO xx} Button	2
3	{CO xx} Button	3
4	{CO xx} Button	4
5	{CO xx} Button	5
6	{CO xx} Button	6
7	{LOOP}	

SIP Registration

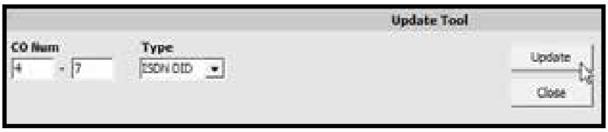
Navigate to **"Pre-Programmed ▸ Configuration(PGM101-103)"**. Right click slot 10 and select **"CO Data View"**.



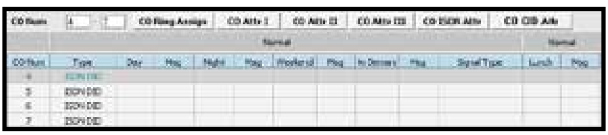
Next to **"CO Num"** enter range 4-7, then click **"Refresh"**. Right click column 4 and select **"Update Tool"**.



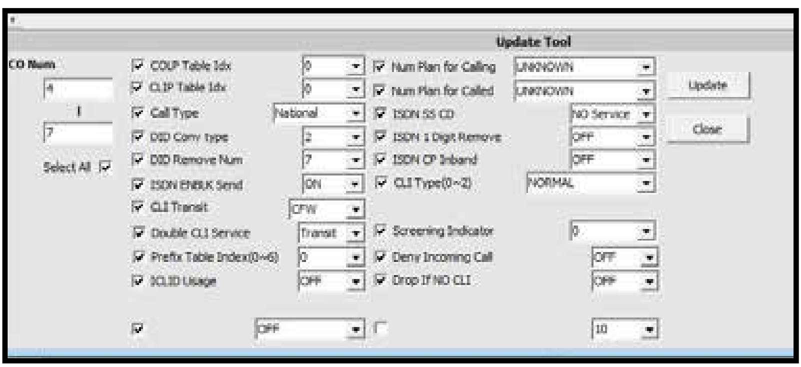
Where it says **"CO Num"** again enter 4-7. Under **"Type"** select **"ISDN DID"**. Click **Update** then **Refresh**.



It should look like this when finished:



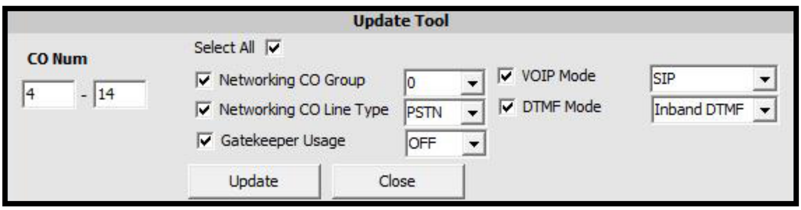
Then select **"CO ISDN Attr"** which is same as PGM143. Enter 4-7 next to **"CO Num"** and simply replicate the following values:



When done click **Update** then **Refresh**.

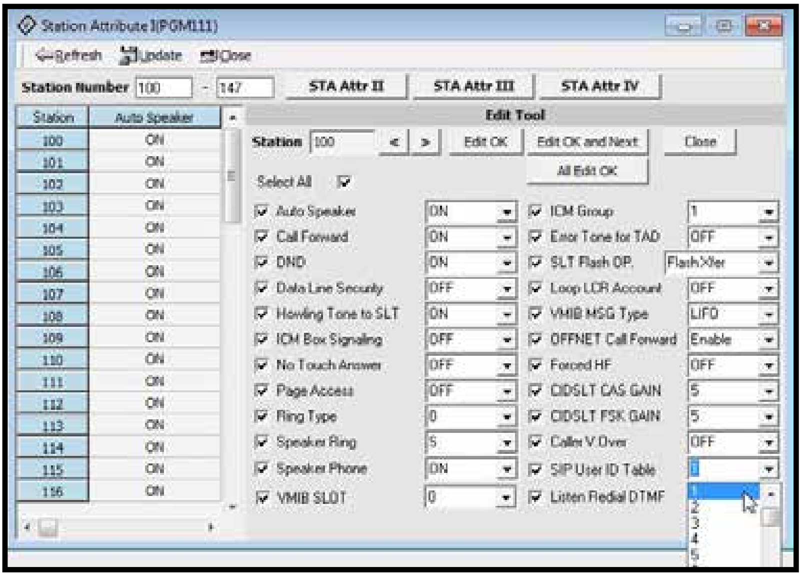
Now navigate to **"Network ▸ Networking CO Line Attribute(PGM322)"** and enter 4-14 next to **"CO Num"**. Right click **"CO Num 4"** and select **"Update Tool"**. Enter 4-14 next to **"CO Num"** and select **"SIP"** next to **"VOIP Mode"**.

Leave **"DTMF Mode"** to **"Inband DTMF"** as shown. The Cablevision network does not support out of band DTMF tones. You must select **"Inband DTMF"**. When done click **Update** then **Refresh**.

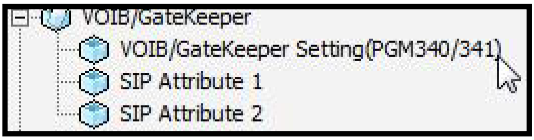


4	0	PSTN	OFF	SIP	Inband DTMF
5	0	PSTN	OFF	SIP	Inband DTMF
6	0	PSTN	OFF	SIP	Inband DTMF
7	0	PSTN	OFF	SIP	Inband DTMF
8	0	PSTN	OFF	SIP	Inband DTMF
9	0	PSTN	OFF	SIP	Inband DTMF
10	0	PSTN	OFF	SIP	Inband DTMF
11	0	PSTN	OFF	SIP	Inband DTMF
12	0	PSTN	OFF	SIP	Inband DTMF
13	0	PSTN	OFF	SIP	Inband DTMF
14	0	PSTN	OFF	SIP	Inband DTMF

Now navigate to **“Station Base Program ▸ Station List (PGM110/111/112/113/114)”** and next **to “Station Number”** enter 100-147 then click **Refresh**. Click on Station 100. Make sure to check the **“SIP User ID Table”** on bottom left corner and to select **“1”**. You may replicate other values then click **“All Edit OK”**. Thereafter click **Update** then **Refresh**.

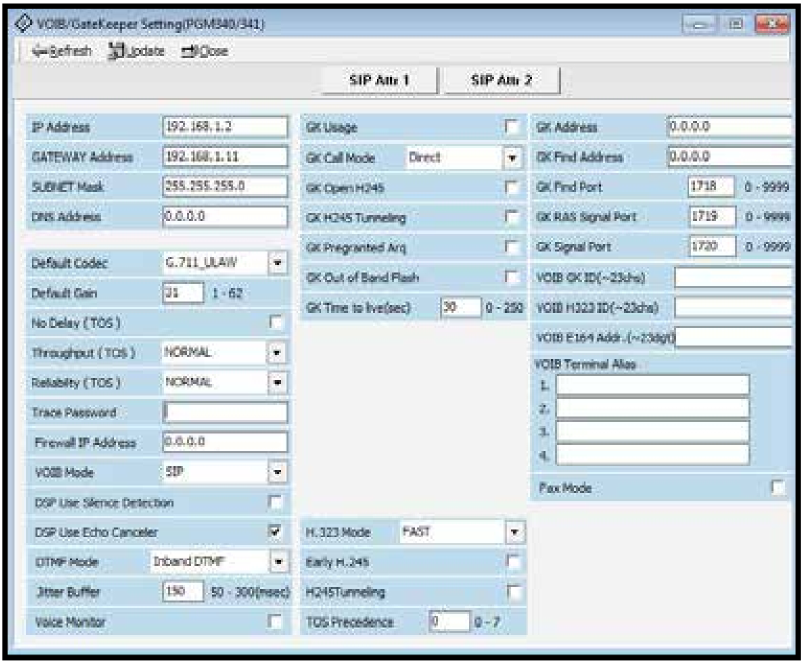


Now navigate to **“VOIB/GateKeeper”** and click **“VOIB/GateKeeper Setting(PGM340/341)”**.

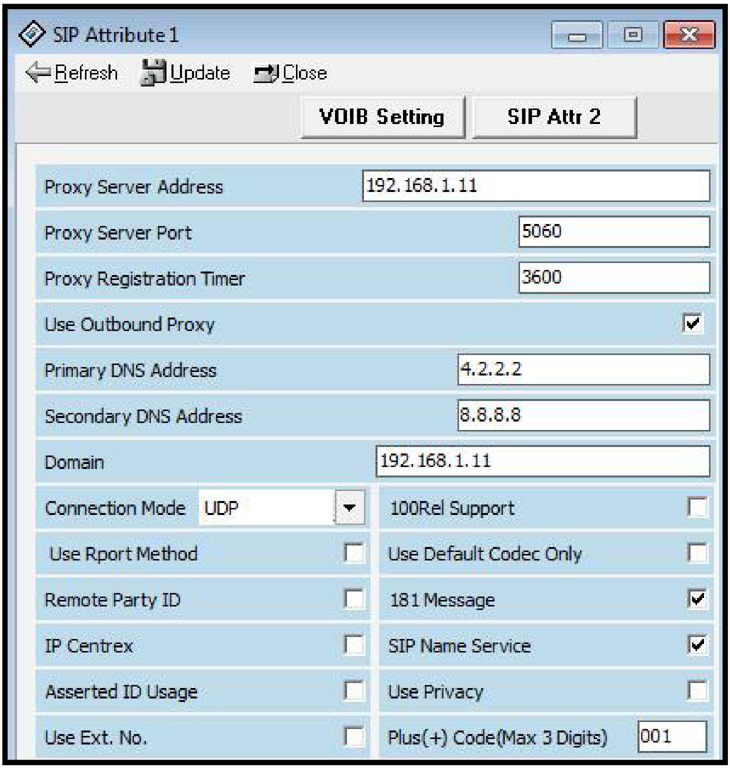


Next to **"IP Address"** will be the address of the VOIB which will be used for SIP signaling. Next to **"Gateway Address"** will be the address of the Optimum Business SIP Trunk Adaptor. The Codec used was G.711Ulaw and next to **"VOIB"** mode make sure **"SIP"** is selected.

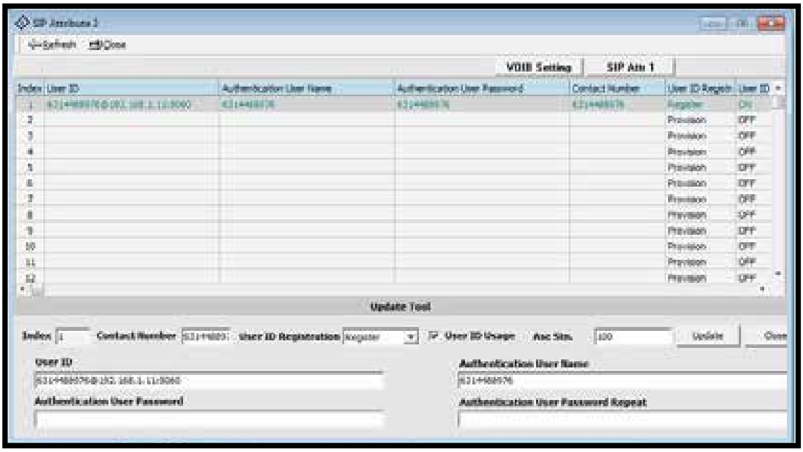
Due to the Cablevision DTMF network requirements, the DTMF tone duration generated by the phones and/or PBX may need to be increased from the default value of 180ms-200ms to 400ms-600ms. If you are interested in modifying DTMF durations, you can change the Jitter Buffer field under DTMF Mode below.



Now navigate to **"VOIB/GateKeeper"** and click **"SIP Attribute 1"**. Next to **"Proxy Server Address"** and **"Domain"** enter the address of the Optimum Business SIP Trunk Adaptor. This is the address you entered in step 2 of the Optimum Business SIP Trunk Set-Up Guide. The connection type is UDP and the Server port is 5060. When done click **Update** then **Refresh**.



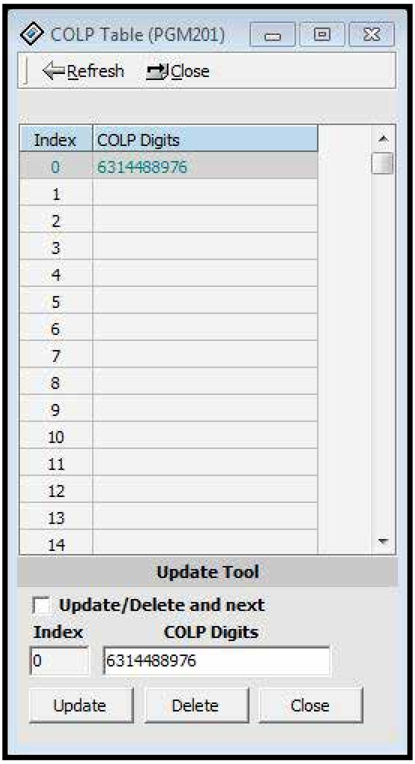
Now navigate to **“VOIB/GateKeeper”** and click **“SIP Attribute 2”**. Enter the PD next to **“Contact Number”**. Next to **“User ID Registration”** select **“Register”**. Check **“User ID Usage”** and enter 100 next to **“Asc Station”**. Just below under **“User ID”** enter the PD username followed by the address of the Optimum Business SIP Trunk Adaptor as the domain. Enter the authentication username and password in the fields that follow. The username and password must match the User ID and Password entered in the Optimum Business SIP Trunk Adaptor. This is step 3 of the Optimum Business Sip Trunk Set-Up Guide.



When done click **Update** then **Refresh**.

If you want to use static mode, change the **“User ID Registration”** from **“Register”** to **“Provision”**.

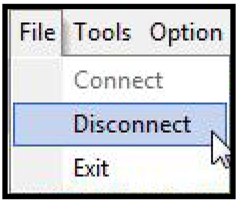
Navigate to **"ISDN System Base Program ▸ COLP Table"**. Right click Index 0 and select **"Update Tool"**. Under **"COLP Digits"** enter the authorization username you used for registration.



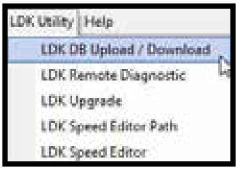
When done click **Update** then **Refresh**.

Backup/Restore

To backup or restore you will first need to disconnect from the KSU. Navigate from the top to **“File”** then click **“Disconnect”**.

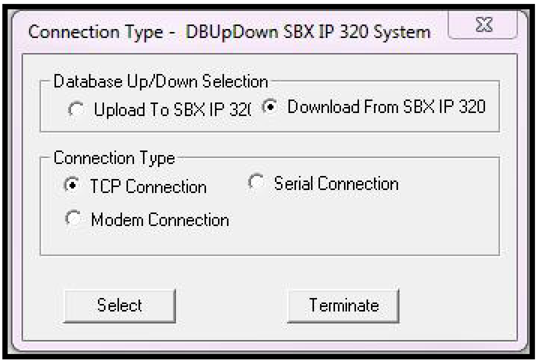


Then when the KSU is disconnected navigate from the top to **“LDK Utility”** and click on **“LDK DB Upload/Download”**.

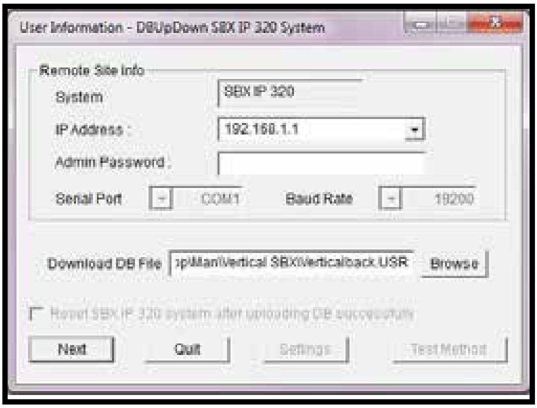


A system selection window will then appear for SBX IP 320. When you see it click **OK**.

When the second window appears, specify whether it is a download or an upload then choose the connection type, which in our case was TCP. If you want to download, select **"Download From SBX IP 320"** then select **"TCP Connection"**.



When the second window appears, type the address of the KSU and leave password blank.



Specify the directory then click **Next** and your download will begin. If you want to upload, simply select **"Upload to SBX IP 320"** and proceed in a similar manner. Be sure that .USR is the extension of your file.