

Optimum Business Trunking and the NEC DSX-40 PBX Configuration Guide

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1 Overview

The purpose of this configuration guide is to describe the steps needed to configure the NEC DSX-40 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:

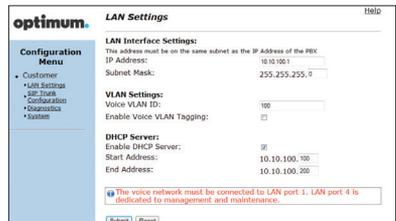
Click on the LAN Settings Link

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.

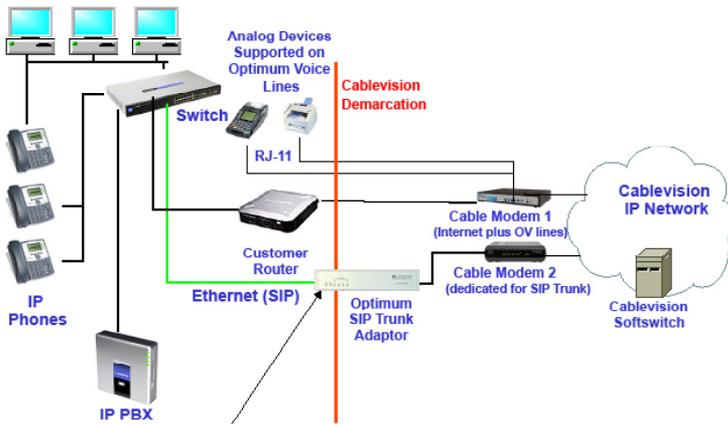
Note: VLAN 200 should not be used. It is dedicated to port 4 for management.



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.

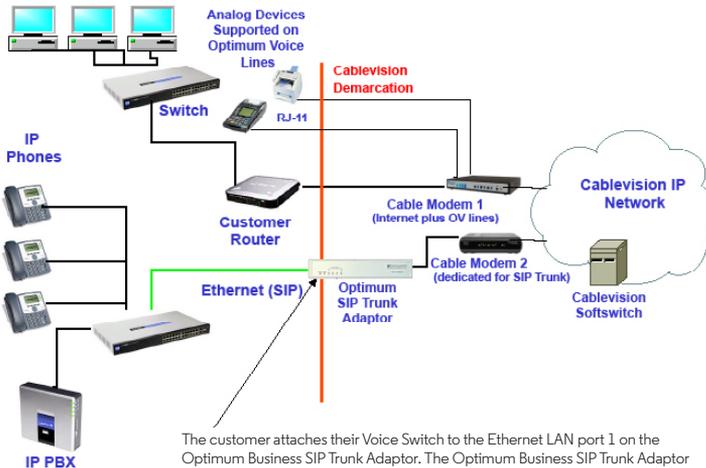
4. Click 'Submit'.

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

System
[Help](#)

Configuration Menu

- Customer
 - ▶ LAN Settings
 - ▶ SIP Trunk Configuration
 - ▶ Diagnostics
 - ▶ System

Software Version:
Version 11.6.14.1 -- Fri Jan 4 17:49:28 PST 2013

Hostname:
5164939899

Model:
EdgeMarc 4552

Vendor:
Cablevision

LAN Interface MAC Address:
A8:70:A5:00:D8:18

Registration Status:
The ALG feature is registered. View [license key](#).

System Date:
02/29/2016 15:03:40 UTC

Change Password:

- [pbxinstall](#)

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

Set Password
[Help](#)

Change the GUI password by filling in the fields below. The password must be between 6 and 8 characters in length.

Configuration Menu

- Customer
 - ▶ LAN Settings
 - ▶ SIP Trunk Configuration
 - ▶ Diagnostics
 - ▶ System

Username:

Current Password:

New Password:

Confirm 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.

5 PBX Configuration

The steps below describe the basic configuration required to enable the PBX to use Optimum Business SIP Trunking for inbound and outbound calling. Please refer to the NEC DSX-40 documentation for other advanced PBX features.

The configuration described here assumes that the PBX is already configured and operational with station side phones using assigned extensions or DIDs. This configuration is based on the NEC DSX-40 version 3.44.

This knowledge base solution provides the configuration steps for PBX registration mode only. Static Mode is not supported.

PBX Information

Manufacturer:	NEC
Model:	NEC DSX-40
System Version:	3.44
Does the PBX send SIP Registration messages (Yes/No)?	Yes
Vendor Contact	www.necam.com

Optimum SIP Trunk Adaptor Information

Manufacturer:	Edgewater Network, Inc.
Model:	4552
Software Version:	11.6.19.0.1

NEC DSX-40 IP-PBX

6 Network Settings

Device configuration requires the “NEC DSX System Administrator” software tool. Once in the system the configuration file can be accessed and edited under **Database ▶ Edit**. To change network settings once in the configuration file navigate to **System ▶ Config ▶ Communication** and enter the address of the PBX next to **IP Address** and the address of the Optimum Business SIP Trunk Adaptor next to **Gateway**. Here the PBX was assigned 10.10.156.11/24 and the Optimum Business SIP Trunk Adaptor was assigned 10.10.156.1/24. To keep these as Static addresses, **DHCP Enabled** above needs to be set to **No**.

The screenshot shows the 'Communication' tab in the NEC DSX-40 IP-PBX configuration software. It features three main sections: RS232 (1101), Modem (1102), and DHCP (1103). The RS232 section has a 'Baud Rate' dropdown set to 38400. The Modem section has a checkbox for 'Unavailable when VoIP Gateway installed' which is unchecked. The DHCP section has a 'DHCP Enabled' dropdown set to 'No'. Below these is the 'Ethernet (1104)' section, which includes fields for 'IP Address' (10.10.156.11), 'Subnet Mask' (255.255.255.0), 'Gateway' (10.10.156.1), 'DNS #1' (8.8.8.8), and 'DNS #2' (4.2.2.2). There are also buttons for 'Release', 'Refresh', and 'Renew'. At the bottom, there are fields for 'System Admin Port' (8000), 'Web Access Port' (80), and 'MAC Address' (00:60:B9:8A:0C:67).

When done click the **Apply** icon from above.



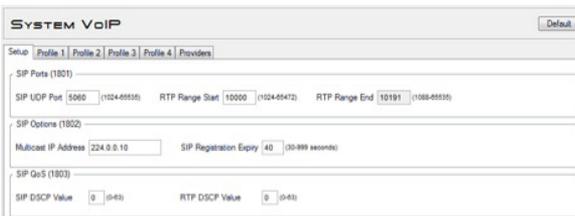
NOTE: Certain changes require disconnecting and resetting the system. The system will prompt this message when required.

7 SIP Programming

To configure SIP navigate to **System ▶ VoIP ▶ Providers** and set the **Service Provider** field to **Generic SIP**. Enter the IP address of the Optimum Business SIP Trunk Adaptor in both the **Server Address** and **Domain** fields. Set **Registration Type** to **Common**. Add the credentials next to **User** and **Password**. Use the same User ID and Password that you configured in the Optimum Business SIP Trunk Adaptor. In this example **1** was selected as the corresponding **Profile**. The **WAN Address (1104)** field should be **0.0.0.0**.



Now navigate to **System ▶ VoIP ▶ Setup**. Enter **5060** next to **SIP UDP Port** and **10000** in the **RTP Range Start** field.



NOTE: The next section is dependent on how many lines are available on the system. In this example four lines were used and began with Line 5.

Navigate to **Lines ▶ Config** and each time the line from above should correspond to the SIP Line being configured. Next to **Type** select **DID Immediate Start**. Enter an appropriate name and next to **Phone Number** enter the Pilot DID. This should correspond to the first line which in this case was SIP Line 5.

LINE CONFIG Line 5 Ext 105 Name Test1

Setup Options

Type (3101)

Type DID Immediate Start Name Test1 DTMF Dialing PBX Line

Phone Number 4085555555

When done click **Apply** from above.

Navigate to **System ▶ Ports ▶ SIP Lines**. As shown **5** was added as the first line. If the registration is successful, **Yes** will appear under **Registered**.

Line	Name	Phone Number	Registered	Provider	Fax/Data	Description	Username	Password
1	5	Test1	4085555555	Yes	1			

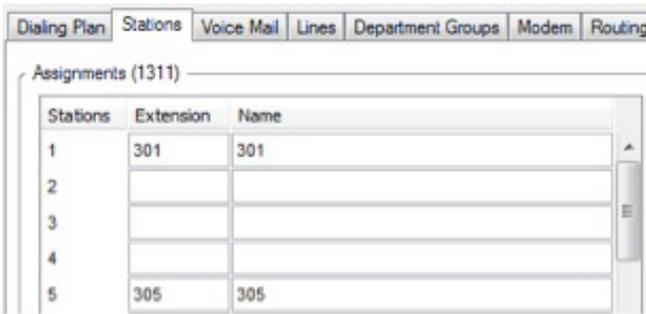
Add remaining DIDs similarly for remaining lines. The **Phone Number** field for these subsequent lines should individually include the remaining DID numbers.

Line	Name	Phone Number	Registered	Provider	Fax/Data	Description	Username	Password
1	5	Test1	4085555555	Yes	1			
2	6	Test2	4085555556	Yes	1			
3	7	Test3	4085555557	Yes	1			
4	8	Test4	4085555558	Yes	1			

NOTE: During Static mode on the PBX, two-way audio is lost. This is because the DSX device automatically enters the Optimum Business SIP Trunk Adaptor’s WAN address under (1104) and therefore uses it as the source RTP address. Nothing can be done to stop the PBX from automatically entering the Optimum Business SIP Trunk Adaptor’s Public address in the (1104) field during Static mode as this originates from the PBX itself. Although the SIP signaling will work, RTP will fail for Static mode and consequently, Static mode of operation is not supported and configuration for it is not included in this document.

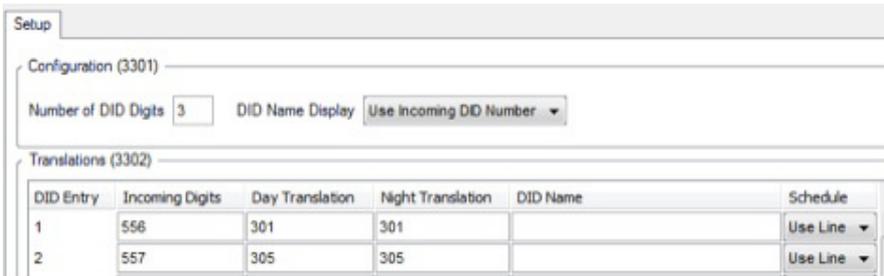
8 Extensions/DID

To configure extensions navigate to **System ▶ Numbering ▶ Stations** and assign extensions to valid station ports along with a name for each. In this case extension “301” was assigned to station port 1 and extension “305” was assigned to station port 5.



When done click the **Apply** from above.

Now navigate to **Lines ▶ DID** and here is where extensions are associated to DIDs for incoming calls. **DID Entry 1** was used for extension 301 which had DID 4085555556 and **DID Entry 2** was used for extension 305 and had DID 4085555557. The last 3 digits of each DID needs to be entered under **Incoming Digits**. Both **Day Translation** and **Night Translation** should contain the extension that the DID should ring.



When done click the **Apply** from above.

Navigate to **Stations ▶ Config** and select the type of phone being used. Then enter the full DID for each extension next to **ANI ID**.

NOTE: The right and left arrow buttons from above may be used to direct to the appropriate extensions.



The VoIP profile under **Stations ▶ Config ▶ VoIP (2106)** should also match the profile currently registered to the Optimum Business SIP Trunk Adaptor, in this example **Profile 1**.

To enable external transfer calls navigate to **Lines ▶ Config ▶ Setup** and for each line make sure **Tandem Calls** is checked under **Settings (3103)**.

To enable conference calls navigate to **System ▶ Class of Service ▶ Lines** and check All next to **Unsupervised Conference**.

Features	Stations	SLTs	Caller ID	Distinctive Ring	Call Forward	Paging	Lines	Toll Restriction	
Lines (1411)									
Option									
Camp On Busy Lines	<input type="checkbox"/>								
Line Queuing Priority	<input type="checkbox"/>								
Automatic Hold	<input type="checkbox"/>								
Enhance LND	<input checked="" type="checkbox"/>								
Unsupervised Conference	<input checked="" type="checkbox"/>								

To modify the DTMF type navigate to **System ▶ VoIP** and click the Profile that is in use. Under **Payload Types (1815)** the **DTMF Type** may be changed.

Payload Types (1815)			
DTMF Type	Inband	DTMF Payload	101 (96 - 127)
		ILBC Payload	98 (96 - 127)
		G.726 Payload	104 (96 - 127)

NOTE: Due to the Cablevision DTMF network requirements, the DTMF tone duration generated by the phones and/or PBX may need to be increased to 400ms-600ms. To modify DTMF tone duration navigate to **System ▶ Config ▶ Tones** and under **DTMF(1111)** is where they may be changed.

Setup	Communication	Email	Password	Tones	
DTMF (1111)					
Manual DTMF Tone On	400	mS (10 - 2550)	Manual DTMF Tone Off	400	mS (10 - 2550)
Speed Dial DTMF Tone On	100	mS (10 - 2550)	Speed Dial DTMF Tone Off	100	mS (10 - 2550)
Door Chimes (1114)					
Chime 1 Tone	Triple	Chime 2 Tone	Triple	Chime 3 Tone	Triple

To enable Auto-Attendant navigate to **System ▶ Voice Mail** and next to **Type** select **Auto-Attendant Only**.

Thereafter the Auto-Attendant extension **700** should be under both **Day Translation** and **Night Translation** in the **Translations (3302)** table with the last 3 digits of the Auto-Attendant’s DID under **Incoming Digits**.

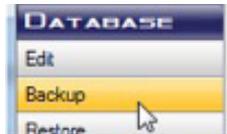
DID Entry	Incoming Digits	Day Translation	Night Translation	DID Name	Schedule
1	556	301	301	301	Use Line ▼
2	557	305	305	305	Use Line ▼
3	558	700	700	700	Use Line ▼

To restrict certain outbound calls navigate to **Lines ▶ Toll Restriction**. Here is where extensions can be restricted from dialing particular numbers.

To enable Caller ID for Incoming calls navigate to **Lines ▶ Config ▶ Setup Tab ▶** and select **Yes** next to **Caller ID** for each Inbound Trunk.

9 Backup/Restore

To backup the configuration file navigate to **DATABASE ▶ Backup**.



To restore the configuration file navigate to **DATABASE ▶ Restore**.



NOTE: This must be performed from the initial page upon connection and cannot be done during Edit mode.