SIP Trunking using the Optimum Business SIP Trunk Adaptor and the NEC DSX-40 IP-PBX



NEC DSX-40 IP-PBX optimum.

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Overview

The purpose of this configuration guide is to describe the steps needed to configure the NEC DSX-40 PBX for proper operation with the Optimum Business SIP Trunk adaptor. Please note that this guide documents the basic configuration needed in the NEC DSX-40 PBX.

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. Follow the instructions to configure the LAN side settings.

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

The PBX used in the lab comprises of the following:

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 Truck Adaptor Information

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

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NEC DSX-40 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.

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**.

•
Refresh

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.

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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.**

ervice Provider	Generic SP +	Description	
erver Address	10.10.156.1	Domain	10.10.156.1
egistration Type	Common +		
ier	4085555555	Password	4085555555
ollie	1 -	Name	Local (LAN)

WAN Address (1	104)	
WAN Address	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.

SYSTEM VOIP	Default
Setup Profile 1 Profile 2 Profile 3 Profile 4 Providers	
SIP Pots (1801)	
SIP UDP Port 5060 (11024-65556) RTP Range Start 10000 (11024-65472) RTP Range End 10191 (1088-65556)	
SIP Options (1802)	
Multicast IP Address 224.0.0.10 SIP Registration Expiry 40 (30-999 seconds)	
5 IP QoS (1803)	
SIP DSCP Value 0 (0-63) RTP DSCP Value 0 (0-63)	

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 5	Ext 105 Ame Test1	
Setup Options			
Type DID Immediate Start -	Name	Test1	DTMF Dialing PBX Line
	Phone Number	4085555555	

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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**.

alic	ns Lin	es SIP Stations	SIP Lines						
IPI	Line Ass	ignment (1231/12 Name	32/1233) Phone Number	Registered	Provider	Fax/Data	Description	Usemane	Password

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

tio	us Lin	es SIP Stations	SIP Lines						
PL	Line	ignment (1231/12 Name	Phone Number	Registered	Provider	Fax/Data	Description	Username	Password
1	5	Test1	4085555555	Yes	1 -				1
2	6	Test2	408555555	Yes	1 -	2			1
3	7	Test3	4085555557	Yes	1 .	23			12
4	8	Test4	408555558	Yes	1 *	11			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.

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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.

Dialing Plan	Stations	Voice Mail	Lines	Department Groups	Modem	Routing
Assignmen	ts (1311)					
Stations	Extensi	ion Name				
1	301	301				^
2						
3						=
4						
5	305	305				

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.

up					
Configuration	(3301)				
Number of D	ID Digits 3	DID Name Display	Use Incoming DID Nu	mber -	
Translations	(3302)				
Translations DID Entry	(3302) Incoming Digits	Day Translation	Night Translation	DID Name	Schedule
Translations DID Entry 1	(3302) Incoming Digits 556	Day Translation	Night Translation	DID Name	Schedule Use Line 🔻

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**.

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STAT	ON CONFIG	Ext 301 Sta	1	N	ame 301			Copy Default
Setup Option	ns Feature Keys Key Ring	DSS Keys Soft	Keys Ring /	Assign Li	ne Access	Speed Dials	IntraMal, IntraMal.Pro	
Туре	DSX 22 Button	- u	nguage	English	•	Name	301	
						ANI ID	408555556	

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**.

VolP (2106)					
Prolile 1 ·	Local (LAN)	V LAN Muticast	Peer-To-Peer:	V On LAN	Over WAN

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

	ONFIG	THE P	Ede 105	age upper thanke reac		
etup Options						
Type (3101) -						
Type DID Imm	nediate Start 👻	Name	Test1		OTMF Dialing	PBX Line
		Phone Number	6314488980]	
Class of Servic	e 2 🔹 Tol Le	vel 🛛 🕶				
Settings (3103)			0.40			
Settings (3103) Transmit Gain	0.0 dB 👻	Receive Gain 0	0 dB +			

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

Features	Stations SLTs	Caller ID	Distin	ctive	Ring	Cal	Forw	ard	Pagi	ng	Lines	То	Res	strictio	n			
Lines (1	411)												_	_		_		
200.0	Option		1 2	3	4	5	6	7	8	9	10	11	12	13	14	15	All	None
Camp C	n Busy Lines	E	3 6															V
Line Qu	euing Priority	1	3 6	1	1	12	M	23	23	13	23	0	0	0	0			V
Automa	tic Hold	E	1		1	1	1							E	1	1		V
Enhand	e LND	B	/ /	V	V	V	V	V	V	V	V	V	V	V	V	V	V	
Unsupe	ervised Conference	e B	/ /	V	V	1	1	1	1	1	1	1	1	1	V	1	1	

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 Type	m (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.

Aanual DTMF Tone On	400	mS (10 - 2550)	Manual DTMF Tone Off	400	mS (10 - 2550)
peed Dial DTMF Tone On	100	mS (10 - 2550)	Speed Dial DTMF Tone Off	100	mS (10 - 2550)
Door Chimes (1114)	1				

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

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Setup 7	Access		
Type (4101)		
Type	Auto-Attendant Only +	Voice Mail Master Extension	700

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.

stions	1010+XXXX 1+XXXXX 1+XXXXXXXX XXXX XXXXXXXXXX
Setting	s (3511)
-	
Ac	Jive Dial Pad
US/Do	mestic Options (3512)

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

Caller ID	Setup (3121) —
Caller ID	Yes	-

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Backup/Restore

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

DATA	IASE
Edit	
Backup	
Restore	3

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

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