

NEC

DSX

Broadvox SIP Trunk Setup

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Issue 1.05

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Revision History		
Issue	Date	Revisions
1.04	1/19/11	<ul style="list-style-type: none"> • Corrected typo: Available SIP line numbers in a DSX-40 without a COIU expansion card are 5-12. • In the System Administrator, <i>Single</i> registration mode is called <i>Common</i>.
1.05	4/22/11	<ul style="list-style-type: none"> • Updated required software level, expanded RTP port forwarding range, and added System Administrator screen shots. • Removed requirement for 1104-09.

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1 Overview

The DSX is compatible with Broadvox GO! SIP Trunking. This setup guide summarizes the account information you will receive from Broadvox and provides step-by-step instructions on how to program that information into the DSX.

You can set up SIP trunks as standard loop start lines or DID lines. All the feature available with other types of loop start and DID lines are also available with Broadvox SIP trunk lines. For details on the features available with loop start and DID lines, refer to the on-line DSX Software Manual at:

http://www.necdsx.com/docs/dita/dsx_v3_complete/index.html

Note: DSX does not currently support T.38 fax and multiple host names.

2 Method 1: Broadvox Static Setup

To set up your GO! SIP Trunking account, contact Broadvox at <http://www.broadvox.com>. Once your account is set up they will provide you with the following service information:

Table 1: Broadvox Static Method Account Information

Option	Description
Hostname	The Hostname is the SIP registration domain for your Broadvox SIP trunks. When your SIP trunks initially register they use this domain.
DID(s)	These are the telephone numbers that users will dial to reach you over your Broadvox SIP trunks.

2.1 System Router Setup

2.1.1 NAT and SIP

In the router to which the DSX is connected, enable NAT and disable all special SIP management features (such as SIP ALG). **The DSX router must have a fixed public WAN IP address to use Broadvox Static Method.**

2.1.2 Port Forwarding

Forward UDP ports 5060 and 1024 through 1215 to the DSX system's IP address.

2.2 DSX Setup

2.2.1 Software Level

3.31.96 or higher.

2.2.2 Assign SIP Lines

IP Line Assignment (1231/1232/1233)

Line	Name	Phone Number	Registered	Provider	Fax/Data	Description	Username	Password
1				None	<input type="checkbox"/>			
2				None	<input type="checkbox"/>			
3				None	<input type="checkbox"/>			
4				None	<input type="checkbox"/>			
5				None	<input type="checkbox"/>			
6				None	<input type="checkbox"/>			
7				None	<input type="checkbox"/>			
8				None	<input type="checkbox"/>			

1231-01: IP Lines [SYSTEM: PORTS: IP LINES: IP LINE ASSIGNMENT]

The first DSX SIP line is the first line beyond the last assigned line. Each SIP line uses an IP resource (licensed VoIP port) in DSX. The maximum number of VoIP licenses is 8 in DSX-40 and 16 in DSX-80/160.

Example with DSX-40:

- The first SIP line in a DSX-40 without a COIU expansion card is line 5. Available SIP line numbers are 5-12.
- With the COIU expansion card installed, the first SIP line is line 9. Available SIP line numbers are 9-16.
- DSX-40 supports a maximum of 8 VoIP licenses. When the total number of licenses are in use, only Peer-to-Peer calls are available.

Example with DSX-80/160:

- The first SIP line in a DSX-80/160 with a single 8COIU card is line 9. Available SIP lines are 9-17.
- The last line number in DSX-80/160 is 64. In a system with an 8COIU and two T1/PRI cards, this will limit the available number of SIP lines.
- DSX-80/160 supports a maximum of 16 VoIP licenses. When the total number of licenses are in use, only Peer-to-Peer calls are available.

1232-01: IP Line Provider Number [SYSTEM: PORTS: IP LINES: IP LINE ASSIGNMENT]

Assign each SIP line in DSX to a provider number (1 or 2). DSX supports up to two providers simultaneously.

Example: If Broadvox is your only SIP trunk provider, assign all the SIP lines designated in 1231-01 to provider 1.

1232-02: IP Line Username [SYSTEM: PORTS: IP LINES: IP LINE ASSIGNMENT]

1232-03: IP Line Password [SYSTEM: PORTS: IP LINES: IP LINE ASSIGNMENT]

These options are not used with Broadvox SIP trunks using the Static Method.

2.2.3 Select the SIP Trunk Provider Type

Provider 1		IP Service (1831) / IP Line Registration (1832)	
Service Provider	Generic Sip	Description	
Server Address		Proxy Address	
Registration Type	None	User	
Profile	4	Password	
SIP TOS	0	Name	SIP Trunk
		RTP TOS	0

1831-01: Provider Number [SYSTEM: VOIP: PROVIDERS: PROVIDER (1 OR 2)]

Select the provider number you want to set up. This selection corresponds to the provider number you assigned to the SIP lines in 1232-01.

Example: If Broadvox is your only SIP trunk provider, and you have chosen provider 1 in 1232-01, select provider 1 for this option also.

1831-02: Provider Type [SYSTEM: VOIP: PROVIDERS: PROVIDER (1 OR 2): SERVICE PROVIDER]

Dial 03 to choose *Broadvox* as the type for the provider selected in 1831-01.

1831-03: Provider Name [SYSTEM: VOIP: PROVIDERS: PROVIDER (1 OR 2): DESCRIPTION]

The provider name is an optional 18-character entry that describes the provider. Enter any name you like – the entry does not affect provider setup or registration.

1831-04: Profile [SYSTEM: VOIP: PROVIDERS: PROVIDER (1 OR 2): PROFILE]

Select the VoIP profile that the system will use when connecting to the SIP trunk provider. The entry you make here corresponds to the profiles set up in programs 1811-1815. **Choose profile 4.**

2.2.4 Set Up the SIP Trunk Registration

1832-01: Provider IP Registration [SYSTEM: VOIP: PROVIDERS: PROVIDER (1 OR 2): SERVER ADDRESS]

Select the provider number you want to set up (see 1831-01) and enter the Table 2 *Hostname* entry as it was provided to you by Broadvox. This option uses the text entry method. You should select a host from the list of servers in your geographical location provided by Broadvox. **Do not** select *fs.broadvox.net*.

1832-02: Registration Type [SYSTEM: VOIP: PROVIDERS: PROVIDER (1 OR 2): REGISTRATION TYPE]

Choose the IP line registration type. For the Broadvox static method, choose 00: *None*.

1832-03: Account Username [SYSTEM: VOIP: PROVIDERS: PROVIDER (1 OR 2): USER]

1832-04: Account Password [SYSTEM: VOIP: PROVIDERS: PROVIDER (1 OR 2): PASSWORD]

1832-05: Proxy [SYSTEM: VOIP: PROVIDERS: PROVIDER (1 OR 2): PROXY ADDRESS]

1832-06: SIP Type or Service (ToS) [SYSTEM: VOIP: PROVIDERS: PROVIDER (1 OR 2): SIP TOS]

1832-07: RTP Type of Service (ToS) [SYSTEM: VOIP: PROVIDERS: PROVIDER (1 OR 2): RTP TOS]

These options are not used with Broadvox SIP trunks using the Static Method.

2.2.5 Codec Setup

Profile Name (1811)

Codecs (1812)

Priority	Codec	Frame Size	Jitter Minimum	Jitter Standard	Jitter Maximum	Silence Compression
1	G.729	40ms	40	80	160	<input type="checkbox"/>
2	G.711	40ms	40	80	160	<input type="checkbox"/>
3	G.722	40ms	40	80	160	<input type="checkbox"/>
4	G.726*	40ms	40	80	160	<input type="checkbox"/>
5	G.723*	60ms	60	120	240	<input type="checkbox"/>
6	ILBC*	30ms	30	60	120	<input type="checkbox"/>

* Additional Codecs provided for 3rd party SIP phones

Settings (1813)

Jitter Mode Silence Threshold Idle Noise Tx Gain Rx Gain

Echo Canceller (1814)

Echo Cancel Enable Echo Tail NLP Enable NLP Noise Mode Auto Gain Control

Payload Types (1815)

DTMF Type DTMF Payload (96 - 127) ILBC Payload (96 - 127) G.726 Payload (96 - 127)

1812: Codecs [SYSTEM: VOIP: PROFILE 4: CODECS]
 For Broadvox SIP Trunks, leave Profile 4 at default.

2.2.6 Assign DID Numbers to your SIP Lines

Type (3101)

Type Name DTMF Dialing PBX Line

Phone Number

3101-07: Telephone Number [LINES: CONFIG: SETUP: TYPE: PHONE NUMBER]
 For each of your SIP lines, enter a telephone number that corresponds to one of the *DID* numbers in Table 2. Each line must have a unique entry. This entry is required for both Loop Start and DID lines.

2.2.7 Fax Setup

1812: Codecs [SYSTEM: VOIP: PROFILE X: CODECS]
1815: DTMF [SYSTEM: VOIP: PROFILE X: PAYLOAD TYPES]
 SIP trunks to be used for fax must be set for *G.711*, *20mS* Frame Size, with *Inband* DTMF. The fax is transmitted in-band DTMF only.

3 Method 2: Broadvox Registration Setup

To set up your GO! SIP Trunking account, contact Broadvox at <http://www.broadvox.com>. Once your account is set up they will provide you with the following service information:

Table 2: Broadvox Registration Method Account Information

Option	Description
Hostname	The Hostname is the SIP registration domain for your Broadvox SIP trunks. When your SIP trunks initially register they use this domain.
BTN and Username	This is the username that Broadvox uses to authenticate your registration.
Password	The Password is the password required with your BTN and Username.
DID(s)	These are the telephone numbers that users will dial to reach you over your Broadvox SIP trunks.

3.1 System Router Setup

3.1.1 NAT and SIP

In the router to which the DSX is connected, enable NAT and disable all special SIP management features (such as SIP ALG).

3.1.2 Port Forwarding

Forward UDP ports 5060 and 1024 through 1215 to the DSX system's IP address.

3.2 DSX Setup

3.2.1 Software Level

3.31.96 or higher.

3.2.2 Assign SIP Lines

IP Line Assignment (1231/1232/1233)

Line	Name	Phone Number	Registered	Provider	Fax/Data	Description	Username	Password
1				None	<input type="checkbox"/>			
2				None	<input type="checkbox"/>			
3				None	<input type="checkbox"/>			
4				None	<input type="checkbox"/>			
5				None	<input type="checkbox"/>			
6				None	<input type="checkbox"/>			
7				None	<input type="checkbox"/>			
8				None	<input type="checkbox"/>			

1231-01: IP Lines [SYSTEM: PORTS: IP LINES: IP LINE ASSIGNMENT]

The first DSX SIP line is the first line beyond the last assigned line. Each SIP line uses an IP resource (licensed VoIP port) in DSX. The maximum number of VoIP licenses is 8 in DSX-40 and 16 in DSX-80/160.

Example with DSX-40:

- The first SIP line in a DSX-40 without a COIU expansion card is line 5. Available SIP line numbers are 5-12.
- With the COIU expansion card installed, the first SIP line is line 9. Available SIP line numbers are 9-16.
- DSX-40 supports a maximum of 8 VoIP licenses. When the total number of licenses are in use, only Peer-to-Peer calls are available.

Example with DSX-80/160:

- The first SIP line in a DSX-80/160 with a single 8COIU card is line 9. Available SIP lines are 9-17.
- The last line number in DSX-80/160 is 64. In a system with an 8COIU and two T1/PRI cards, this will limit the available number of SIP lines.
- DSX-80/160 supports a maximum of 16 VoIP licenses. When the total number of licenses are in use, only Peer-to-Peer calls are available.

1232-01: IP Line Provider Number [SYSTEM: PORTS: IP LINES: IP LINE ASSIGNMENT]

Assign each SIP line in DSX to a provider number (1 or 2). DSX supports up to two providers simultaneously.

Example: If Broadvox is your only SIP trunk provider, assign all the SIP lines designated in 1231-01 to provider 1.

1232-02: IP Line Username [SYSTEM: PORTS: IP LINES: IP LINE ASSIGNMENT]

1232-03: IP Line Password [SYSTEM: PORTS: IP LINES: IP LINE ASSIGNMENT]

These options are not used with Broadvox SIP trunks using the Registration Method.

3.2.3 Select the SIP Trunk Provider Type

Provider 1 IP Service (1831) / IP Line Registration (1832)

Service Provider	Generic Sip	Description	
Server Address		Proxy Address	
Registration Type	None	User	
User		Password	
Profile	4	Name	SIP Trunk
SIP TOS	0	RTP TOS	0

1831-01: Provider Number [SYSTEM: VOIP: PROVIDERS: PROVIDER (1 OR 2)]

Select the provider number you want to set up. This selection corresponds to the provider number you assigned to the SIP lines in 1232-01.

Example: If Broadvox is your only SIP trunk provider, and you have chosen provider 1 in 1232-01, select provider 1 for this option also.

1831-02: Provider Type [SYSTEM: VOIP: PROVIDERS: PROVIDER (1 OR 2): SERVICE PROVIDER]

Dial 03 to choose *Broadvox* as the type for the provider selected in 1831-01.

1831-03: Provider Name [SYSTEM: VOIP: PROVIDERS: PROVIDER (1 OR 2): DESCRIPTION]

The provider name is an optional 18-character entry that describes the provider. Enter any name you like – the entry does not affect provider setup or registration.

1831-04: Profile [SYSTEM: VOIP: PROVIDERS: PROVIDER (1 OR 2): PROFILE]

Select the VoIP profile that the system will use when connecting to the SIP trunk provider. The entry you make here corresponds to the profiles set up in programs 1811-1815. **Choose profile 4.**

3.2.4 Set Up the SIP Trunk Registration

1832-01: Provider IP Registration [SYSTEM: VOIP: PROVIDERS: PROVIDER (1 OR 2): SERVER ADDRESS]

Select the provider number you want to set up (see 1831-01) and enter the Table 2 *Hostname* entry as it was provided to you by Broadvox. This option uses the text entry method. You should select a host from the list of servers in your geographical location provided by Broadvox. **Do not** select *fs.broadvox.net*.

1832-02: Registration Type [SYSTEM: VOIP: PROVIDERS: PROVIDER (1 OR 2): REGISTRATION TYPE]

Choose the IP line registration type. DSX IP lines can share the same registration (*01: Single*) or have a unique registration for each line (*02: Per Line*). For Broadvox, choose *01: Single (Common* in the System Administrator).

1832-03: Account Username [SYSTEM: VOIP: PROVIDERS: PROVIDER (1 OR 2): USER]

Enter the username for your Broadvox SIP trunk account. This option uses the text entry method and is the *BTN and Username* entry in Table 2.

1832-04: Account Password [SYSTEM: VOIP: PROVIDERS: PROVIDER (1 OR 2): PASSWORD]

This option is the password associated with the Account Username assigned in 1832-03. The password can be up to 24 characters long. This is the *Password* entry in Table 2.

1832-05: Proxy [SYSTEM: VOIP: PROVIDERS: PROVIDER (1 OR 2): PROXY ADDRESS]

1832-06: SIP Type or Service (ToS) [SYSTEM: VOIP: PROVIDERS: PROVIDER (1 OR 2): SIP TOS]

1832-07: RTP Type of Service (ToS) [SYSTEM: VOIP: PROVIDERS: PROVIDER (1 OR 2): RTP TOS]

These options are not used with Broadvox SIP trunks using the Registration Method.

3.2.5 Codec Setup

Profile Name (1811) _____

Name

Codecs (1812)

Priority	Codec	Frame Size	Jitter Minimum	Jitter Standard	Jitter Maximum	Silence Compression
1	G.729	40ms	40	80	160	<input type="checkbox"/>
2	G.711	40ms	40	80	160	<input type="checkbox"/>
3	G.722	40ms	40	80	160	<input type="checkbox"/>
4	G.726*	40ms	40	80	160	<input type="checkbox"/>
5	G.723*	60ms	60	120	240	<input type="checkbox"/>
6	ILBC*	30ms	30	60	120	<input type="checkbox"/>

* Additional Codecs provided for 3rd party SIP phones

Settings (1813)

Jitter Mode Silence Threshold Idle Noise Tx Gain Rx Gain

Echo Canceller (1814)

Echo Cancel Enable Echo Tail NLP Enable NLP Noise Mode Auto Gain Control

Payload Types (1815)

DTMF Type DTMF Payload (96 - 127) ILBC Payload (96 - 127) G.726 Payload (96 - 127)

1812: Codecs [SYSTEM: VOIP: PROFILE 4: CODECS]
 For Broadvox SIP Trunks, leave Profile 4 at default.

3.2.6 Assign DID Numbers to your SIP Lines

Type (3101)

Type Name DTMF Dialing PBX Line

Phone Number

3101-07: Telephone Number [LINES: CONFIG: SETUP: TYPE: PHONE NUMBER]
 For each of your SIP lines, enter a telephone number that corresponds to one of the *DID* numbers in Table 2. Each line must have a unique entry. This entry is required for both Loop Start and DID lines.

3.2.7 Fax Setup

1812: Codecs [SYSTEM: VOIP: PROFILE X: CODECS]
1815: DTMF [SYSTEM: VOIP: PROFILE X: PAYLOAD TYPES]
 SIP trunks to be used for fax must be set for *G.711*, *20mS* Frame Size, with *Inband* DTMF. The fax is transmitted in-band DTMF only.