
Setup Guide

Panasonic SIP Trunk Service

Setup Reference Guide for KX-NS Series and KX-NSX Series



**NS700/1000
NSX1000/2000**

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Information Page

Executive Summary:

This document is a reference for configuring Panasonic SIP Trunking Service onto Panasonic KX-NS/NSX series phone systems.

SIP trunk details such as account ID, authentication ID, password and DID number will be provided to you by Panasonic.

Attention:

This document was created based on the results of test environment accounts.

Panasonic cannot guarantee SIP Trunk operation in all environments, however as a result of completing this Inter-Operability Test Panasonic will provide technical support for any issues experienced and assist as far as possible in providing a resolution.

Panasonic will not be held liable for any information provided in this document.

Information and Specifications in this document are subject to change without notice.

Document's Purpose:

This technical document is intended for assisting Panasonic certified dealers technical staff in programming the SIP gateway properties of the phone system.

This setup guide takes into consideration that an external router/firewall was used in this setup. Security issues and network infrastructure may change based on real customer services being implemented.

System Requirements:

Model	Firmware version	Activation Keys
KX-NS700/1000	6.0 or higher	IP Trunk
KX-NSX1000/2000	3.0 or higher	IP Trunk

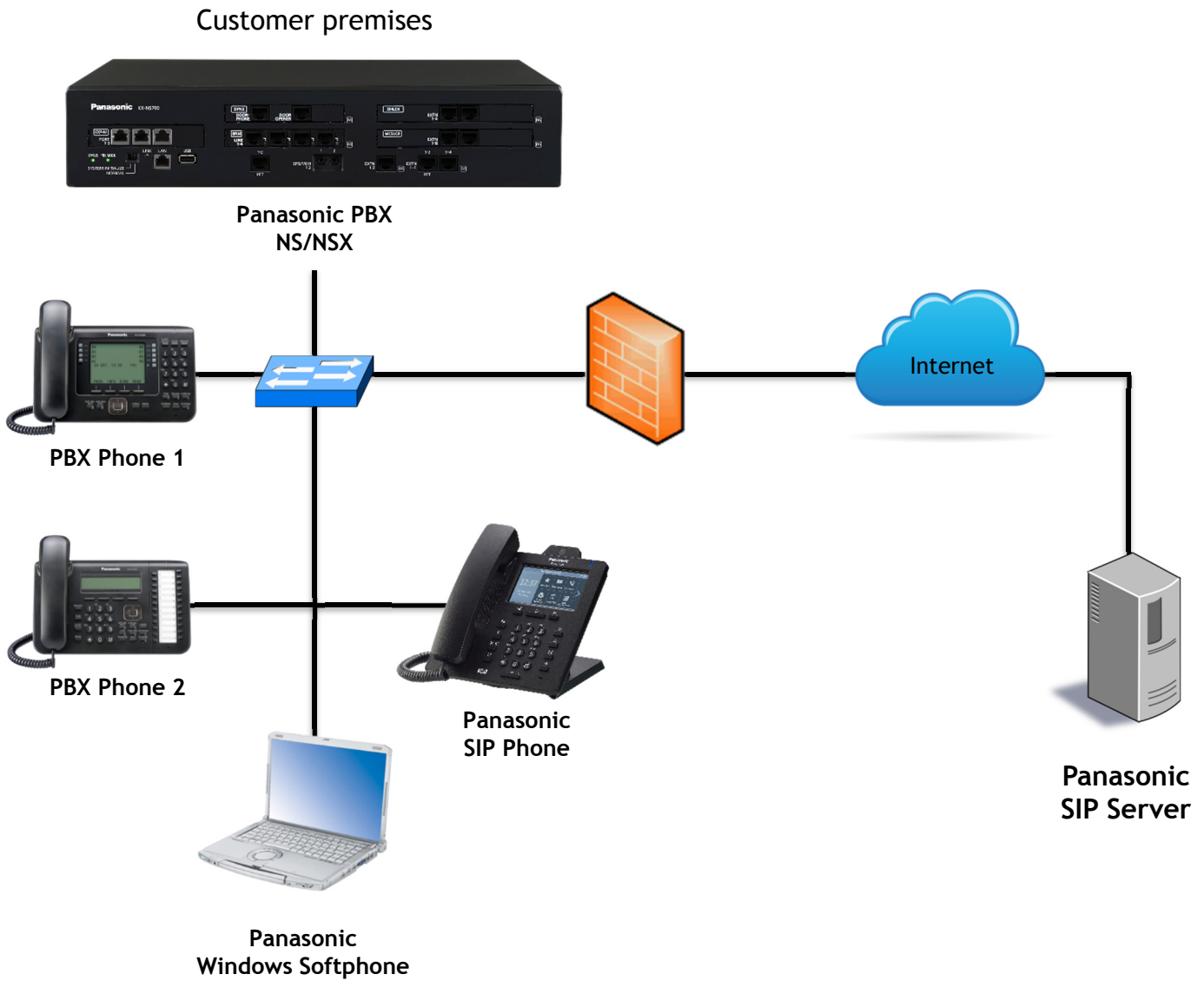
Please note that the latest version of firmware is strongly recommended as it will contain all the latest security patches and features available.

Security:

Please ensure that you download the "Panasonic PBX Security.zip" file from our extranet (techlibrary.panasonic.ca). It contains documentation on how to prevent security concerns and possible hacking of the system.

Network Diagram

Please refer to the diagram below showing basic setup using Panasonic SIP Trunks



Note: Although programming is demonstrated in this document with an NS-series, the same results are also available on the NSX-series with the identical program tables. Therefore it was not necessary to demonstrate programming on both products.

(1) Provisioning the SIP Trunk Gateway – Shelf Property

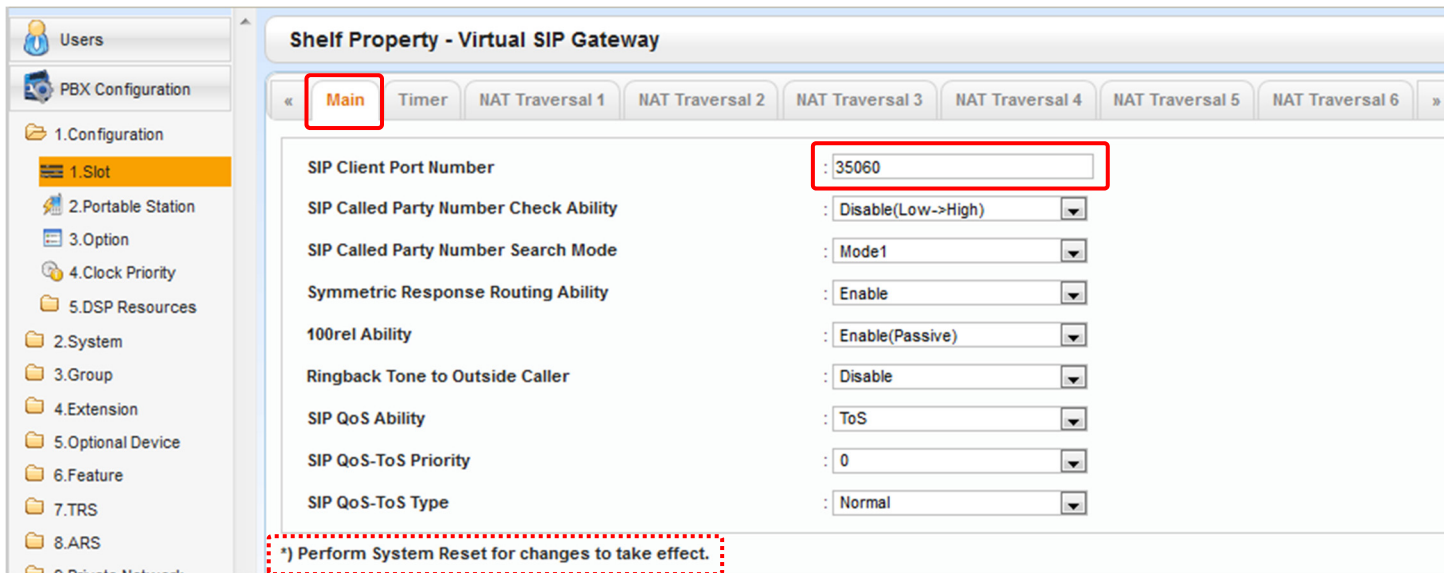
Select the **[V-SIPGW16]** card and put it out of service **[OUS]**, then select **[Shelf Property]**

The screenshot displays a web-based configuration interface for a network device. The top navigation bar includes a user profile 'Login as INSTALLER', a site selector 'Site 1: NS1000', and several utility icons. On the left, a sidebar menu is visible with categories like 'Users', 'PBX Configuration', and '1. Configuration'. The '1. Configuration' section is expanded to show '1. Slot', which is highlighted in orange. The main content area is titled 'Slot' and features a 'Select Shelf' dropdown menu with options 'Physical', 'Virtual', 'Legacy-GW1', and 'Legacy-GW2'. The 'Virtual' option is selected and highlighted with a red box. Below this are several buttons: 'Refresh', 'Close', 'Summary', 'Activation Key', 'IP Phone Registration', 'System Property', 'Site Property', 'UM Card Property', and 'UM Port Property'. A card selection bar shows 'V-SIPGW16' as the active card, also highlighted with a red box. The main display area is titled 'Virtual 16-Channel VoIP SIP Gateway Card' and shows a 'Total number of cards' dropdown set to '1'. A grid of blue cards is visible, with the first card (slot 1) having a context menu open over it. The context menu options are 'Shelf Property', 'Card Property', 'Port Property', and 'Delete'. The 'Shelf Property' option is highlighted with a red box.

[Main] Tab

1. SIP Client Port Number:

Enter SIP Port Number



The screenshot displays the 'Shelf Property - Virtual SIP Gateway' configuration page. The 'Main' tab is selected, and the 'SIP Client Port Number' is set to 35060. Other settings include 'SIP Called Party Number Check Ability' (Disable(Low->High)), 'SIP Called Party Number Search Mode' (Mode1), 'Symmetric Response Routing Ability' (Enable), '100rel Ability' (Enable(Passive)), 'Ringback Tone to Outside Caller' (Disable), 'SIP QoS Ability' (ToS), 'SIP QoS-ToS Priority' (0), and 'SIP QoS-ToS Type' (Normal). A red dashed box highlights a note at the bottom: '*) Perform System Reset for changes to take effect.'

IMPORTANT!

To secure the PBX from illegal attacks, please restrict the above port forwarding ports to ***only*** be accessible from the ***Panasonic*** source IP address: ***199.48.100.2***

(2) Provisioning the SIP Trunk Gateway – Port Property

Select the **[V-SIPGW16]** card and put it out of service **[OUS]**, then select **[Port Property]**

The screenshot displays a web-based configuration interface for a network system. The top navigation bar includes a user profile for 'INSTALLER', a site selector for 'Site 1: NS1000', and several utility icons. The left sidebar contains a tree view of configuration categories, with 'PBX Configuration' and its sub-item '1. Slot' highlighted with a red box. The main content area is titled 'Slot' and features a 'Select Shelf' dropdown menu with 'Virtual' selected, also highlighted with a red box. Below this are several action buttons: 'Refresh', 'Close', 'Summary', 'Activation Key', 'IP Phone Registration', 'System Property', 'Site Property', 'UM Card Property', and 'UM Port Property'. A row of card type buttons is visible, with 'V-SIPGW16' selected and highlighted by a red box. The main display area shows a 'Virtual 16-Channel VoIP SIP Gateway Card' configuration. A 'Total number of cards' dropdown is set to '1'. A table of slots is shown, with the first slot (slot 1) containing a 'V-SIPGW16' card. A context menu is open over this card, with the 'Port Property' option highlighted by a red box. Other menu options include 'Shelf Property', 'Card Property', and 'Delete'.

[Main] Tab

- 1
 - a. Channel Attribute: **Basic Channel**
 - b. Provider Name: **Enter a name – reference only**
 - c. SIP Server Name: **Not Required**
 - d. SIP Server IP Address: **199.48.100.2 – (Provided by Panasonic)**
 - e. SIP Server port Number: **5060**
 - e. SIP Server Domain: **Not Required**
 - f. Subscriber Number: **Required – (This is where you can enter the Company's Main Pilot Number)**

Port Property - Virtual SIP Gateway

Select Provider Add Provider Trunk Adaptor

Main Account Register NAT Option Calling Party Called Party Voice/FAX RTP/RTCP T.38 T.38 Option DSP Supplementary Service Advanced

No.	Shelf	Slot	Port	Connection	Connection Attribute	Trunk Property	Channel Attribute	Provider Name (20 characters)	SIP Server Name (100 characters)	SIP Server IP Address	SIP Server IP Address for Failover	SIP Server Port Number	SIP Service Domain (100 characters)	Subscriber Number	Bac
1	Virtual	1	1	ALL	SIP Provider	Public	Basic channel	Panasonic		199.48.100.2		5060			
2	Virtual	1	2	OUS	SIP Provider	Public	Not Used					5060			
3	Virtual	1	3	OUS	SIP Provider	Public	Not Used					5060			
4	Virtual	1	4	OUS	SIP Provider	Public	Not Used					5060			
5	Virtual	1	5	OUS	SIP Provider	Public	Not Used					5060			
6	Virtual	1	6	OUS	SIP Provider	Public	Not Used					5060			

[Account] Tab

- 1 User Name: Enter the **SIP Account (User Name)** as supplied by Panasonic. (Please note this is the User Name without the “@199.48.100.2”).
For example: SIP Account (User Name) = 1234*000
- 2 Authentication ID: Enter the **Authentication ID** as supplied by Panasonic. (Please note this is the Authentication ID without the “@199.48.100.2”).
For example: Authentication ID = 1234*000
- 3 Authentication Password: Enter the **Authentication Password** as supplied by Panasonic.
For example: Authentication Password= passwordABCD

Port Property - Virtual SIP Gateway

Select Provider Add Provider Trunk Adaptor

Main Account Register NAT Option Calling Party Called Party Voice/FAX RTP/RTCP T.38 T.38 Option DSP Supplementary Service Advanced

No.	Shelf	Slot	Port	Connection	User Name (64 characters)	Authentication ID (64 characters)	Authentication Password (32 characters)
1	Virtual	1	1	OUS	1234*000	1234*000	passwordABCD
2	Virtual	1	2	OUS			
3	Virtual	1	3	OUS			
4	Virtual	1	4	OUS			
5	Virtual	1	5	OUS			
6	Virtual	1	6	OUS			
7	Virtual	1	7	OUS			
8	Virtual	1	8	OUS			

[Register] Tab

- 1 a. Register Ability: Enable
- b. Register Interval: (Failover Timer) **120s**
- c. Un-Register Ability: Enable
- d. Registrar Server Name: Not Required
- e. Registrar Server IP Address: Not Required
- f. Registrar Server Port Number: 5060

No.	Shelf	Slot	Port	Connection	Register Ability	Register Sending Interval (s)	Un-Register Ability when port INS	Registrar Server Name (100 characters)	Registrar Server IP Address	Registrar Server IP Address for Failover	Registrar Server Port Number	Register Resending Interval (s)
1	Virtual	1	1	OUS	Enable	120	Enable				5060	300
2	Virtual	1	2	OUS	Enable	3600	Enable				5060	300
3	Virtual	1	3	OUS	Enable	3600	Enable				5060	300
4	Virtual	1	4	OUS	Enable	3600	Enable				5060	300
5	Virtual	1	5	OUS	Enable	3600	Enable				5060	300

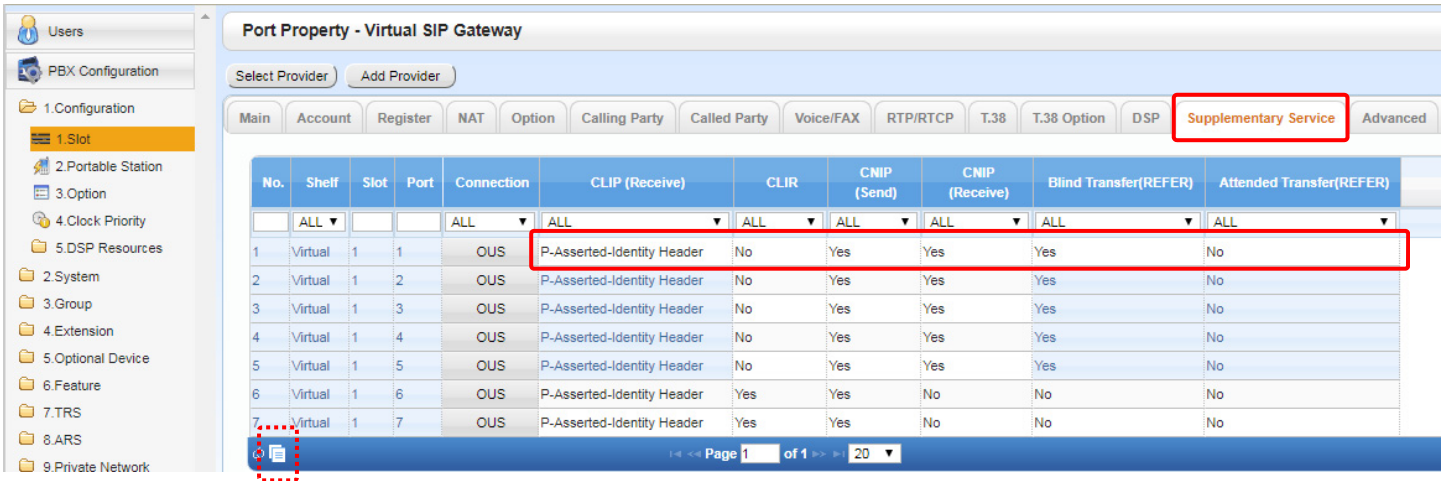
[Calling Party] Tab (outgoing caller CLI)

- 1 a. Header Type: **P-Preferred-Identity Header**
- b. From Header – User Part: **User Name**
- c. P-Preferred-Identity Header – User Part: **PBX-CLIP**
- d. Anonymous format in “From” header: **Display name and SIP-URI**
- e. P-Asserted-Identity header: **Enable**

No.	Shelf	Slot	Port	Connection	Header Type	From Header - User Part	From Header - SIP-URI (100 characters)	P-Preferred-Identity Header - User Part	P-Preferred-Identity Header - SIP-URI (100 characters)	Number Format	Remove Digit	Additional Dial	Anonymous format in "From" header	P-Asserted-Identity header
1	Virtual	1	1	OUS	P-Preferred-Identity Header	User Name		PBX-CLIP		National	0		Display name and SIP-URI	Enable
2	Virtual	1	2	OUS	From Header	User Name		User Name		National	0		Display name and SIP-URI	Disable
3	Virtual	1	3	OUS	From Header	User Name		User Name		National	0		Display name and SIP-URI	Disable
4	Virtual	1	4	OUS	From Header	User Name		User Name		National	0		Display name and SIP-URI	Disable
5	Virtual	1	5	OUS	From Header	User Name		User Name		National	0		Display name and SIP-URI	Disable
6	Virtual	1	6	OUS	From Header	User Name		User Name		National	0		Display name and SIP-URI	Disable
7	Virtual	1	7	OUS	From Header	User Name		User Name		National	0		Display name and SIP-URI	Disable
8	Virtual	1	8	OUS	From Header	User Name		User Name		National	0		Display name and SIP-URI	Disable
9	Virtual	1	9	OUS	From Header	User Name		User Name		National	0		Display name and SIP-URI	Disable
10	Virtual	1	10	OUS	From Header	User Name		User Name		National	0		Display name and SIP-URI	Disable

[Supplementary Service] Tab

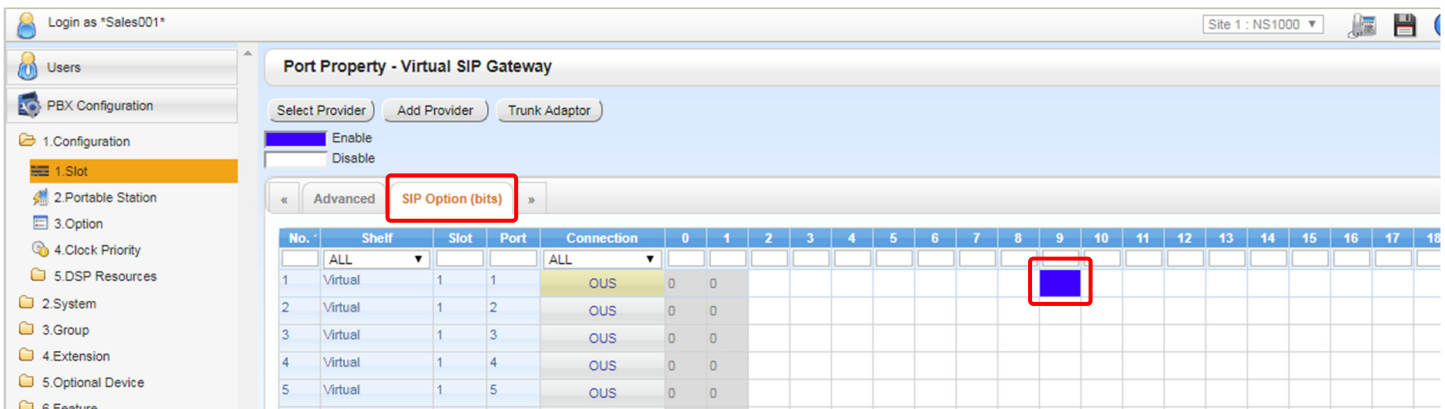
- 1 a. CLIP (Receive): P-Asserted-Identity Header
- b. CLIR: **No**
- c. CNIP (Send): **Yes**
- d. CNIP (Receive): **Yes**
- e. Blind Transfer (REFER): **Yes (for all channels)** (use the “Copy” button)
- f. Attended Transfer (REFER): **No**



[SIP Option (bits)] Tab (for outbound caller ID)

Note: Please call Support to configure this setting.

- 1 Bit 9: **Enable**



Outgoing Caller ID Option 1: Company Name and Company Number

Port Property - Virtual SIP Gateway

Select Provider Add Provider

Main Account Register NAT Option Calling Party Called Party Voice/FAX RTP/RTCP T.38 T.38 Option DSP Supplementary Service Advanced

No.	Shelf	Slot	Port	me rs	SIP Server Name (100 characters)	SIP Server IP Address	SIP Server IP Address for Failover	SIP Server Port Number	SIP Service Domain (100 characters)	Subscriber Number	P2P Group	P2P Group Name
	AL										ALL	
1	Virtual	1	1			199.48.100.2		5060		4161234567		
2	Virtual	1	2					5060		9051234567		
3	Virtual	1	3					5060			1	
4	Virtual	1	4					5060			1	
5	Virtual	1	5					5060			1	

Ensure that the "Subscriber Number" is populated under the Port Property of the Virtual SIP GW card.

Extension Settings

Copy to CLIP Generate

Main Intercept Destination Intercept No Answer Time **CLIP** UM Option 1 Option 2 Option 3 Option 4 Option 5 Option 6 Option 7 Option 8

No.	Extension Number	Extension Name (20 characters)	CLIP ID	CLIP on Extension/CO	CLIR	COLR
				ALL	ALL	ALL
1	101	User 1		CO	Disable	Disable
2	102	User 2		CO	Disable	Disable
3	103	User 3		CO	Disable	Disable
4	104	User 5		CO	Disable	Disable
5	105	User 5		CO	Disable	Disable
6			Extension		Disable	Disable
7			Extension		Disable	Disable

Ensure that "CO" is selected for the CLIP of each Extension.

* For the NSX: USERS \ 2.ADVANCED EXTENSION SETTINGS \ EDIT (button) *

CO Line Settings

CO Line Number	Shelf	Slot	Port	Card Type	CO Name (20 characters)	Trunk Group Number
	ALL			ALL		ALL
30	Virtual	1	1	V-SIPGW16	Company Name	1
31	Virtual	1	2	V-SIPGW16	Company Name	1
32	Virtual	1	3	V-SIPGW16		1
33	Virtual	1	4	V-SIPGW16		1
34	Virtual	1	5	V-SIPGW16		1
35	Virtual	1	6	V-SIPGW16		1
36	Virtual	1	7	V-SIPGW16		1
37	Virtual	1	8	V-SIPGW16		1
38	Virtual	1	9	V-SIPGW16		1
39	Virtual	1	10	V-SIPGW16		1
40						
41						

Ensure that the "CO Name" is populated for the SIP Trunks.

Outgoing Caller ID Option 2: Extension Name and DID

The screenshot shows the 'Extension Settings' configuration page. The 'CLIP' tab is selected. The table below lists the configurations for extensions 101 through 105. The 'CLIP ID' column is highlighted with a red box, and the 'Extension Name' and 'Extension Number' columns are also highlighted with a red box.

No.	Extension Number	Extension Name (20 characters)	CLIP ID	CLIP on Extension/CO	CLIR	COLR
1	101	User 1	4161231111	Extension	Disable	Disable
2	102	User 2	4161232222	Extension	Disable	Disable
3	103	User 3	4161233333	Extension	Disable	Disable
4	104	User 4	4161234444	Extension	Disable	Disable
5	105	User 5	4161235555	Extension	Disable	Disable
6				Extension	Disable	Disable
7				Extension	Disable	Disable

Ensure that the "CLIP ID" is populated for each extension.
(And also the Extension Name).

Incoming Caller ID on Forwarding

The screenshot shows the 'System Options' dialog box for 'Option 4'. The 'Send CLIP of CO Caller' section is highlighted with a red box. It contains two sub-sections: 'when call is transferred to CO (CLIP of Held Party)' and 'when call is forwarded to CO'. Both sub-sections have 'Enable' selected. Other options like 'DSS Key', 'Call Pick-up by DSS key for Direct Incoming Call', 'Call Pick-up by DSS key for ICD Group Call', 'Automatic Transfer for Extension Call', 'Caller Information Display before Call Pick-up', 'System Wireless', 'Out of Range Registration', 'Transfer', and 'Display Information from Mobile Extension (MEX)' are also visible. The 'MEX' section has 'Extension Number' selected. The dialog box has 'OK', 'Cancel', and 'Apply' buttons at the bottom right.

System Options

Option 1 Option 2 Option 3 **Option 4** Option 5 Option 6 (CTI) Option 7 Option 8 Option 9 Option 99

DSS Key
DSS key mode for Incoming Call
 On or Flash Off

Call Pick-up by DSS key for Direct Incoming Call
 Enable Disable

Call Pick-up by DSS key for ICD Group Call
 Enable Disable

Automatic Transfer for Extension Call
 Enable Disable

Caller Information Display before Call Pick-up
 Enable Disable

Send CLIP of CO Caller
when call is transferred to CO (CLIP of Held Party)
 Enable Disable

when call is forwarded to CO
 Enable Disable

Send CLIP of Extension Caller
when call is forwarded to CO
 Enable Disable

System Wireless
Out of Range Registration

Minimum Public Caller ID Digits : 9

TIE Call by Extension Numbering
 Enable Disable

Transfer
Automatic Answer for Transferred Call
 Enable Disable

Display Information from Mobile Extension (MEX)
when using Automatic Walking COS
 Extension Number MEX CLIP

OK Cancel Apply

In order to receive the Caller ID of the original Calling Party on Forwarded Calls, please enable the following option.

(3) Direct Inward Dialing (DID)

Go to **[CO & Incoming Call]** and select **[3.DDI/DID Table]**

- 1 DDI/DID Number: Enter the DDI number in the format (as below)
Example: **416 xxx xxxx**
- 2 DDI/DID Name: Optional
- 3 DDI/DID Destination: Extension Number, ICDG, Custom Service.

ID	DDI / DID Number (32 digits)	DDI / DID Name (20 characters)	DDI / DID Destination - Day	DDI / DID Destination - Lunch	DDI / DID Destination - Break	DDI / DID Destination - Night
1	4161234000	Sales	101			101
2	6471234001	Service	102			102
3	9051234002	Development	103			103
4						
5						
6						
7						
8						
9						
10						

NS-series internal SIP Trace

- Download an internal SIP Gateway trace:

V-SIPGW Protocol Trace

Protocol Trace is saved as "PRTSIPC".
To obtain it, please use File Transfer PBX to PC feature in the Utility menu.

File Transfer PBX to PC

File Name	Date	Time	Size
PRT			
PRTSIPC	06/28/2019	11:01:52	918280 bytes

1. click "File Transfer PBX to PC"

2. search for "PRTSIPC"

3. select the "PRTSIPC" file

4. Click "Transfer"

Transfer Cancel

- Use the "NS Unified Web Maintenance Console to convert the PRTSIPC file into a readable Wireshark pcap capture. Please note this only captures Signaling and no RTP.

Panasonic NS Unified Web Maintenance Console

Connect -Online Mode(C) New -Offline Mode(N) Open -Offline Mode(O)

Terminal Label Print(P) IP Terminal(I) Database Converter(D)

IP Trace File Converter(R) VoIP Test Tool(V) Options(T)

Others(H)

IP Trace File Converter

File name: C:\Users\Desktop\PRTSIPC Browse(B) OK(O) Cancel(C)

PRTSIPC

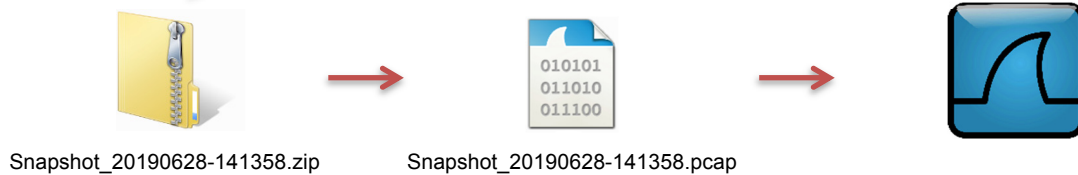
PRTSIPC.pcap

NSX-series internal SIP Trace

- Downloading an internal SIP Gateway trace in the NSX series is available in the same method as the NS series described on the previous page.

The screenshot shows the 'Packet Trace' configuration page. On the left, a navigation tree has 'Utility' and '10. Packet Trace' highlighted with red boxes. The main area shows 'Type' set to 'Signalling', 'Status' as 'Running', and 'Monitor' set to 'Enable'. A table lists a snapshot: 'Snapshot_20190628-141358' created on '2019.06.29 00:13'. Below the table are buttons for 'Create Current Snapshot', 'Trap Settings', 'Delete', 'Move to NAS', 'Move to USB', 'File List View', 'OK', 'Cancel', and 'Apply'. Orange callout boxes with arrows point to these elements:

1. Select "Signalling"
2. Select "Enable" and click Apply
3. Click "Create Current Snapshot"
4. Select the "Snapshot"
5. Click on "File List View", then click the "Download" button to save the pcap file
6. The password to uncompress the .zip file is "NSX_123456"



Port Forward

Please ensure the following Port Forwarding is in place in the customer's Router:

- Panasonic SIP Server 199.48.100.2 (5060) forwarded to the PBX IP Address (35060) ; protocol UDP.
- Panasonic SIP Server 199.48.100.2 forwarded to the DSP IP Address (see below table for RTP port range) ; protocol UDP.

Model	Protocol	Range of Port Number (WAN)	Destination	
NS	RTP	16000-16511 (UDP)	DSP #1, IP Address 1	
		16512-17023 (UDP)	DSP #1, IP Address 2	
		17024-17535 (UDP)	DSP #2, IP Address 1	
		17536-18047 (UDP)	DSP #2, IP Address 2	
NSX	Primary	RTP	21000-21511 (UDP)	DSP #1, IP Address 1
			21512-22023 (UDP)	DSP #1, IP Address 2
			22024-22535 (UDP)	DSP #2, IP Address 1
			22536-23047 (UDP)	DSP #2, IP Address 2
			23048-23559 (UDP)	DSP #3, IP Address 1
			23560-24071 (UDP)	DSP #3, IP Address 2
	Secondary	RTP	24072-24583 (UDP)	DSP #1, IP Address 1
			24584-25095 (UDP)	DSP #1, IP Address 2
			25096-25607 (UDP)	DSP #2, IP Address 1
			25608-26119 (UDP)	DSP #2, IP Address 2
			26120-26631 (UDP)	DSP #3, IP Address 1
			26632-27143 (UDP)	DSP #3, IP Address 2

Shelf Property - Virtual SIP Gateway

Main | Timer | NAT Traversal 1 | NAT Traversal 2 | NAT Traversal 3 | NAT Traversal 4 | NAT Traversal 5 | NAT Traversal 6

1. Slot

SIP Client Port Number : 35060

SIP Called Party Number Check Ability : Disable(Low->High)

SIP Called Party Number Search Mode : Mode1

Symmetric Response Routing Ability : Enable

Shelf Property - Virtual SIP Gateway

Main | Timer | NAT Traversal 1 | NAT Traversal 2 | NAT Traversal 3 | NAT Traversal 4 | NAT Traversal 5 | NAT Traversal 6

1. Slot

Name :

NAT Traversal : Off

NAT - Voice (RTP) UDP Port No. : 16000

NAT - Keep Alive Packet Sending Ability : Enable

End of document