How to Configure the NEC SV8100 for use with Integra Telecom SIP Solutions

Overview: This document provides a reference for configuration of the NEC SV8100 IP PBX to connect to Integra Telecom SIP trunks. The document covers a basic setup with required steps for interoperability with Integra Telecom only.

Hardware and Software: The following hardware and software were employed to test interoperability between the NEC IP PBX and Integra.

Manufacturer	Model	Software Version
NEC	UNIVERGE SV8100	5.0
MetaSwitch	MetaSphere	7.2
Adtran	NV3305	17.09.02

Tested Features: The following is a list of interoperability features that were tested. Please note that neither the NEC IP PBX Conference Bridge nor the NEC Inrouter was tested.

Feature	Description	Issue (if any)
Basic Call	Making and receiving a call between the IP-PBX and Integra Telecom service provider with both G.711 and G.729 codec.	None
Call Hold	Placing a call in On Hold state and retreival of a call from same station.	None
Call Transfer	Relocation of an active call from one station to another. Both internal and external, attended and unattended transfers were tested.	None
Call Forward	Forwarding of calls from one station to another.	None
3-Party Conference	Conference call between internal and external participants.	None
Fax	Fax Transmission. Fallback to both G.711 and T.38 were tested.	None

Network Topology: Figure 1 shows how the network was configured for interoperability testing.

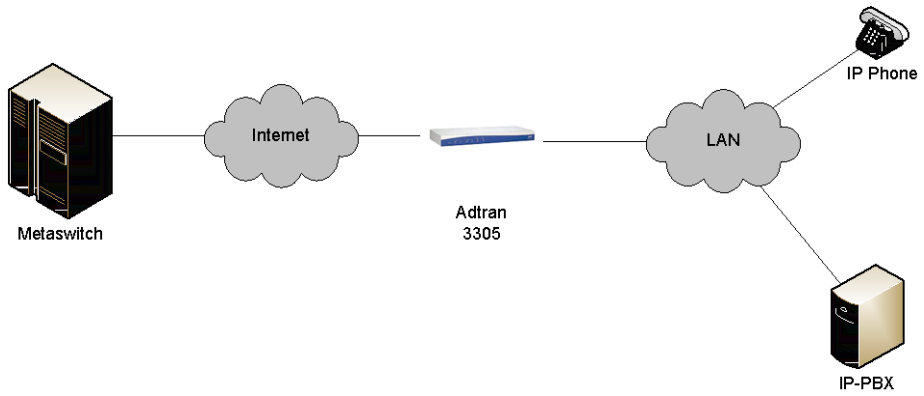


Figure 1: interoperability Network Diagram

Configuration Notes: This section contains a detailed description of how the NEC SV8100 was configured for interoperability testing with Integra Telecom services.

Network Requirements: As in any VoIP deployment there must be adequate bandwidth to support VoIP traffic. A proper network assessment should be performed before any VoIP deployment.

Assumptions:

- All SIP Signaling uses UDP on port 5060
- SIP Signaling packets use Differentiated Services Code Point (DSCP) 24
- Real-Time Transport Protocol (RTP) uses DSCP 46

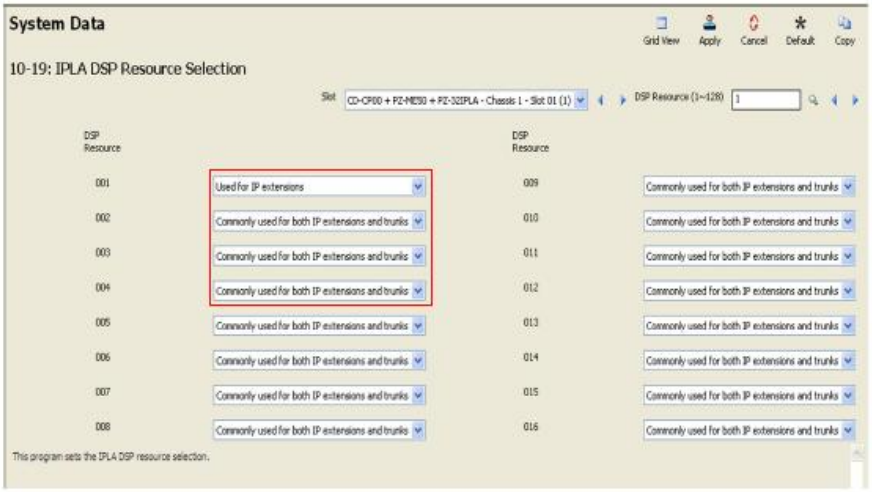
Licenses: The NEC SV8100 must be equipped with licenses to support SIP Trunks.

System Data > IPLA Configuration (10-03)

Select Trunk Type “SIP” for trunks to be used.

System Data > IPLA DSP Resource Selection (10-19)

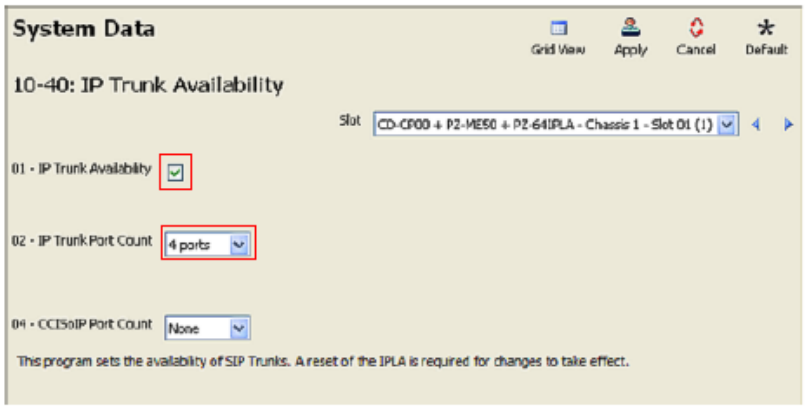
Select the desired operating mode for DSP Resources. Some resources must be allocated as "Commonly used for both IP extension and trunks" or "SIP trunks only"



System Data > IP Trunk Availability (10-40)

Turn on option "IP Trunk Availability"

Select the appropriate "IP Trunk Port Count"



System Data > CD-CP00 Network Setup (10-12)

The values shown are for example purposes only. Actual values will be determined by the local LAN administrator.

Set the LAN IP address for the system Ethernet port (10-12-01) to 0.0.0.0

Set the subnet mask for the system Ethernet port (10-12-02) to be a different subnet than the IPLA blade.

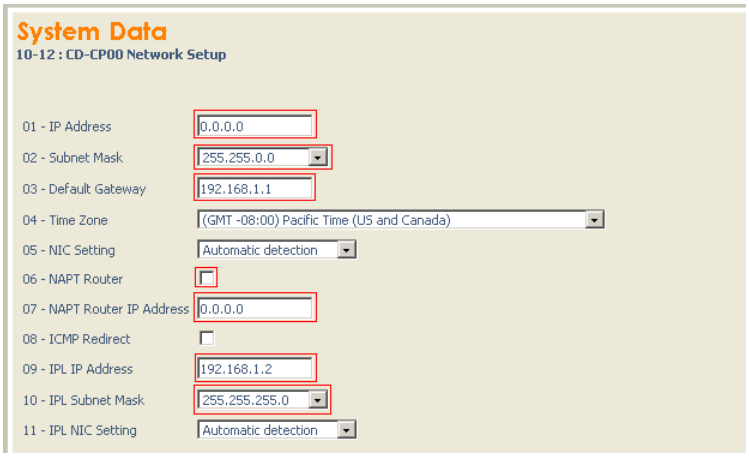
Set the default gateway for the IPLA blade (10-12-03)

Ensure that the NAPT settings (10-12-06 and 07) are not enabled.

Select a static IP address for the VoIP connection (10-12-09)

Select the subnet mask for the VoIP connection (10-12-10)

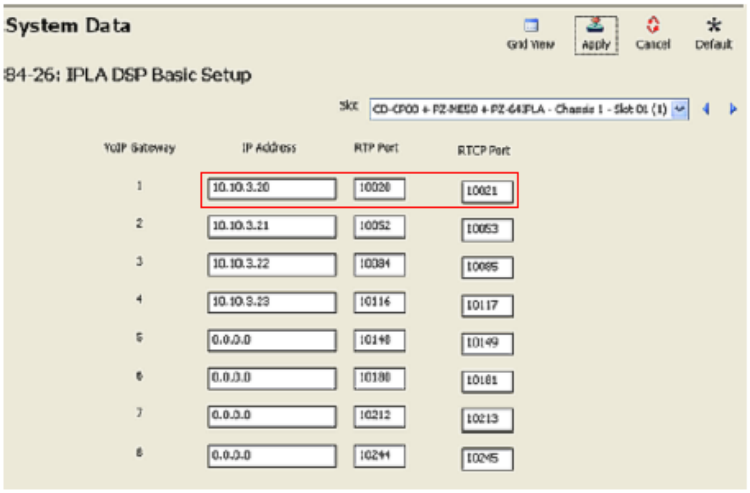
In order for these changes to take effect the SV8100 must be reset.



VoIP Hardware Setup > IPLA DSP Basic Setup (84-26)

The values shown are for example purposes only. Actual values will be determined by the local LAN administrator.

Configure appropriate IP addresses and RTP Port values for each equipped VoIP Gateway.



System Data > SIP System Information Setup (10-28)

The values shown are for example purposes only. Actual values will be determined by Integra Telecom.

Define the Domain Name (10-28-01) as provided by Integra. Note that this field should not include the host name.

Define the Host Name (10-28-02) as provided by Integra

Verify the Transport Type (10-28-03) is set to UDP

Enter the SIP User ID (10-28-04)

Set Domain Assignment (10-28-05) to “Domain Name”

Verify IP Port Trunk Binding (10-28-06) is not enabled.

System Data > SIP Server Information Setup (10-29)

The values shown are for example purposes only. Actual values will be determined by Integra Telecom.

Verify Outbound Default Proxy (10-29-01) is enabled.

Enter the default Proxy IP Address (10-29-03) as provided by Integra

Verify the Default Proxy Port (10-29-04) is set to 5060

Set the Register Method (10-29-05) to “Manual”

Enter the Registrar IP Address (10-29-06; should be same as 10-29-03 above)

Verify the Registrar Port (10-29-07) is set to 5060

Enable DNS Mode (10-29-08)

Enter the DNS IP Address as provided by Integra

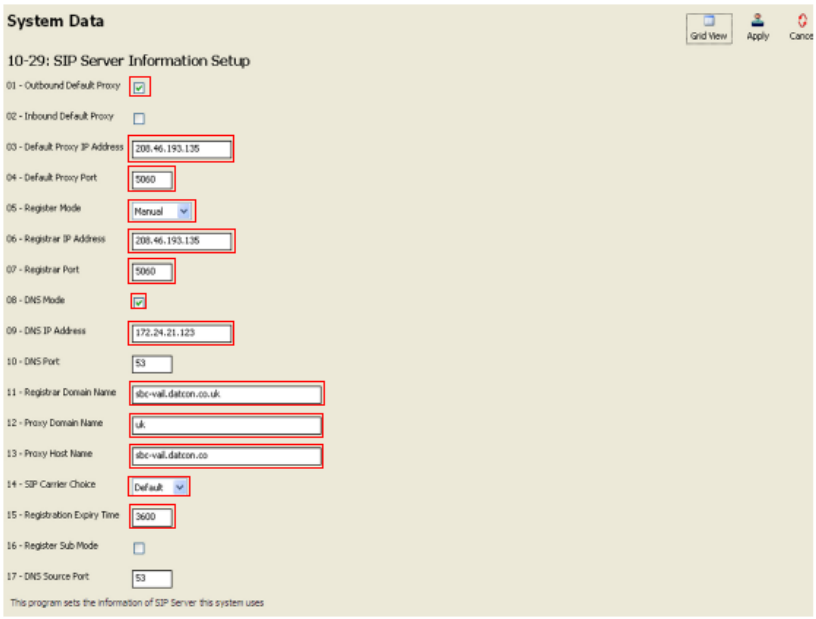
Enter the Registrar Domain Name (10-29-11) as provided by Integra

Enter the Proxy Domain Name (10-29-12) as provided by Integra

Enter the Proxy Host Name (10-29-13) as provided by Integra.

Verify SIP Carrier Choice (10-29-14) is set to Default

Make sure to leave Registration Expiry Timer (10-29-15) set to the default value of 3600



System Data > SIP Authentication Information Setup (10-30)

The values shown are for example purposes only. Actual values will be determined by Integra Telecom.

Define the User Name (10-30-02) as provided by Integra

Define the Password (10-30-03) as provided by Integra

Ensure that the Authentication Trial Count (10-30-04) is set to 2 or greater on SV8100 release 5.0 systems. If a higher release is installed, a value of 1 may be used.

VoIP Hardware Setup > SIP Trunk Codec Setup (84-13)

The values shown are for example purposes only. Your values may vary.

Set DTMF Relay Mode (84-13-32) to RFC2833

If T.38 fax compression is required enable Fax Relay Mode (84-13-50)

VoIP Hardware Setup > ToS Setup

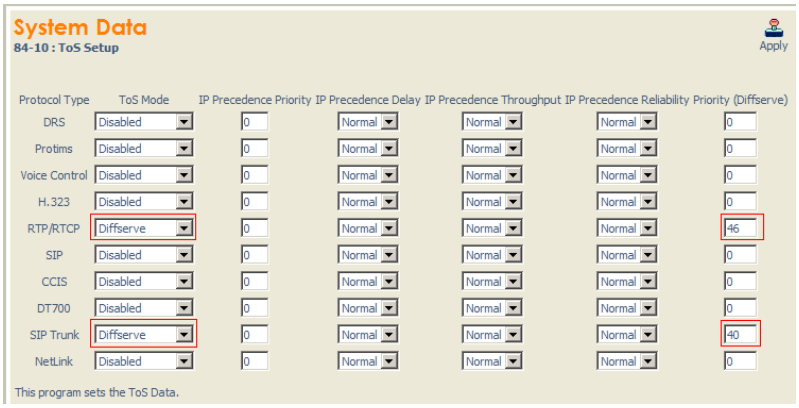
For RTP/ RTCP (Protocol 5) and SIP Trunk (Protocol 9) set the ToS Mode to Diffserv

For each of the following protocol types set the following priorities (Diffserv)

RTC/ RTCP: Priority 46

SIP Trunk : Priority 24

The SV8100 must be reset in order for these changes to take effect.


System Data
84-10 : ToS Setup
Apply
Protocol Type
ToS Mode
IP Precedence Priority
IP Precedence Delay
IP Precedence Throughput
IP Precedence Reliability
Priority (Diffserve)
DRS Disabled 0 Normal Normal Normal 0
Protims Disabled 0 Normal Normal Normal 0
Voice Control Disabled 0 Normal Normal Normal 0
H.323 Disabled 0 Normal Normal Normal 0
RTP/RTCP Diffserve 0 Normal Normal Normal 46
SIP Disabled 0 Normal Normal Normal 0
CCIS Disabled 0 Normal Normal Normal 0
DT700 Disabled 0 Normal Normal Normal 0
SIP Trunk Diffserve 0 Normal Normal Normal 40
NetLink Disabled 0 Normal Normal Normal 0
This program sets the ToS Data.