InnoMedia ESBC
Quick Configuration Guide

InnoMedia PM Group

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INTRODUCTION

This document provides a quick configuration guide for bringing up the ESBC to interoperate with the service provider network and the enterprise PBX.

Please refer to the ESBC Administrative Guide, and other related Application Notes for detailed configuration information.

The ESBC features the following modes of operation for service providers to offer SIP Trunking voice services:

1. SIP trunking to PRI PBXs
2. SIP trunking to SIP PBXs
3. Hosted voice services with IP Phones

To setup the ESBC, tasks are organized into two steps: (1) configuring parameters related to the operator's service offering and the service provider network; (2) and configuring parameters related to the enterprise equipment and LAN.

Configuration tasks can be achieved by any one of the following approaches:

1. Manually configuring the ESBC via the admin WEB GUI/CLI, or
2. Importing the ESBC configuration in a XML formatted file through the admin WEB GUI, or
3. Auto-provisioning (either XML or INI formatted file)

The Web GUI approach in option 1 above will be covered in this document. Advanced configuration, e.g. using CLI or options above are covered in the Administrator Guide document.

2 THE ESBC DEPLOYMENT SCENARIOS

2.1 SIP Trunking: the ESBC - PRI PBX

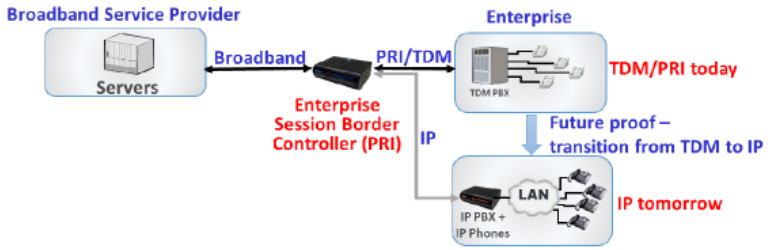


Figure 1. Connecting the ESBC with a PRI PBX.

2.2 SIP Trunking: the ESBC - SIP PBX (w and/or wo transcoding)

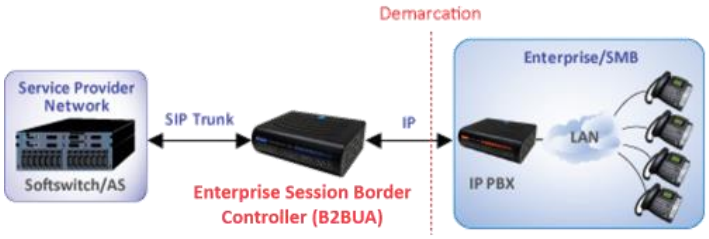


Figure 2. Connecting the ESBC with an IP PBX

2.3 Hosted Voice Service: the ESBC – IP Phones

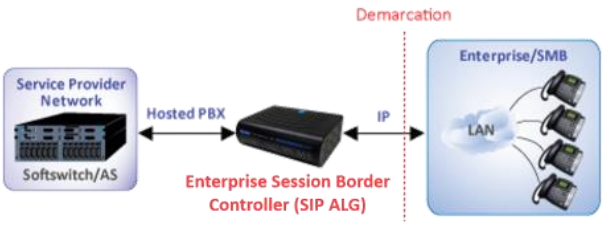


Figure 3. Connecting the ESBC with IP phones for a hosted service

3 CONNECTING THE ESBC AND ACCESSING THE ADMIN WEB CONSOLE

3.1 ESBC hardware interfaces

Figure 4. ESBC9580 Hardware Interfaces

Figure 5. ESBC 9380 Hardware Interface

No	Type of Interface	Description	Default IP Addressing
1	Cable or WAN	ESBC 95xx : DOCSIS 3.0 Cable Modem ESBC 93xx: Gigabit Ethernet port	DHCP Client
2	LAN	4x Gigabit Ethernet ports. These switched ports, by default, share the same IP address.	IP: 172.16.1.1 / 255.255.0.0
3	T1/E1	Applicable to ESBC 9x80 series only. One or two ISDN PRI spans. T1 or E1 can be configured via web admin console.	

3.2 Access the ESBC administrative WEB Console

1. Configure your PC with an appropriate IP address (e.g., 172.16.1.3) within the same IP subnet as the ESBC and connect the administrative computer to any of the ESBC's LAN Ports.

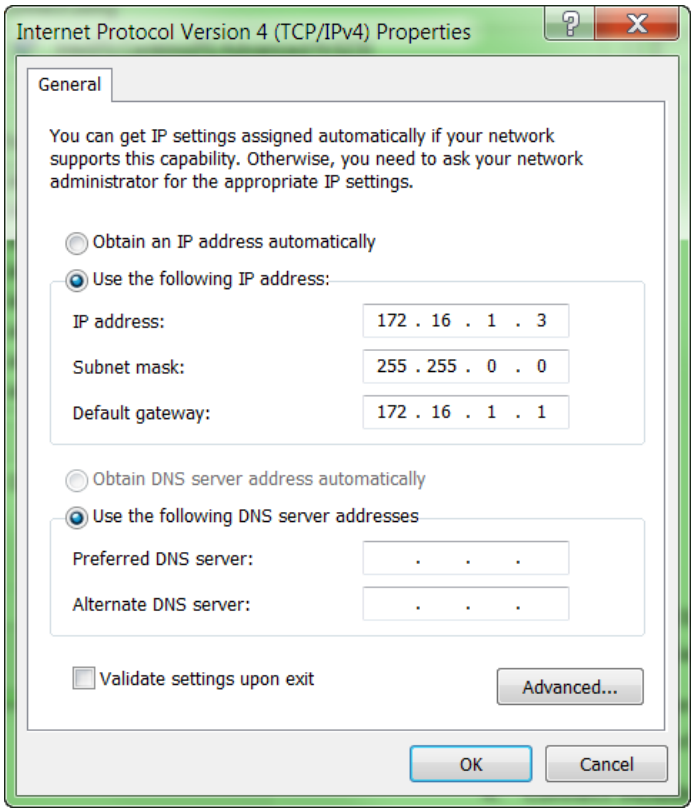


Figure 6 Configuring the PC's Network Properties to access the ESBC LAN Interface

2. For the ESBC 93xx, connect a RJ-45 cable to the WAN interface. For the ESBC 95xx, connect the active RF coaxial cable to the "CABLE" connector.
3. Optionally, open the battery compartment and insert the battery completely until it is secured properly with the plastic latch. Put the cover back in place.
4. Connect the included AC power cable to the electrical outlet and its cable to the ESBC's "12V DC" interface. Secure the AC power cord in the plastic cable harness designed for power cable on the back of the unit. For the ESBC 95xx series, wait for the "ONLINE" indicator light on the front panel of ESBC to become steady green. If the "ONLINE" light is blinking fast(0.5 seconds ON and 0.5 seconds OFF), system provisioning is in progress. Please wait until the "ONLINE" indicator light is steady green, and then proceed to the next step.
5. For the ESBC 9x80, connect the T1/E1 port(s) to the PRI PBX with a shielded crossover cable. Please ensure the cable between the interface port and the PBX is connected correctly. Do not connect T1/E1 Port 2 unless T1/E1 Port 1 is also connected to the same PRI PBX.
6. Launch a web browser and enter "http://172.16.1.1" in the address field to connect to the ESBC. The login page will appear. The default administrator User Name is "**admin**" and the Password is "**123**". Click the <Login> button to enter the ESBC main page.

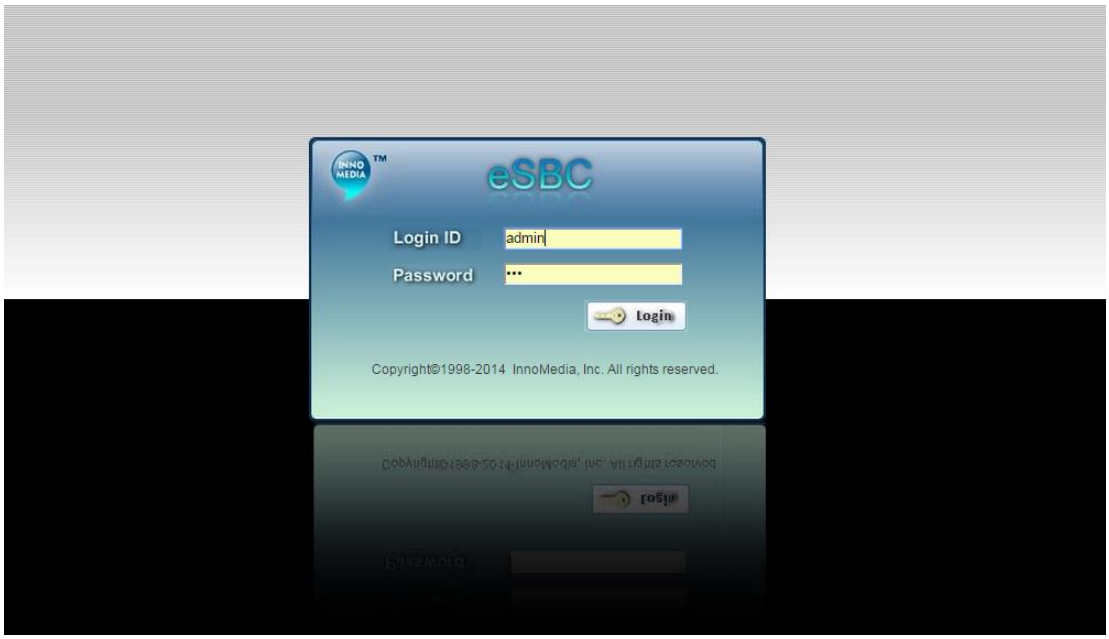


Figure 7. The ESBC login page

7. Navigate from the <Home> page to view and modify the various parameters within the ESBC GUI.

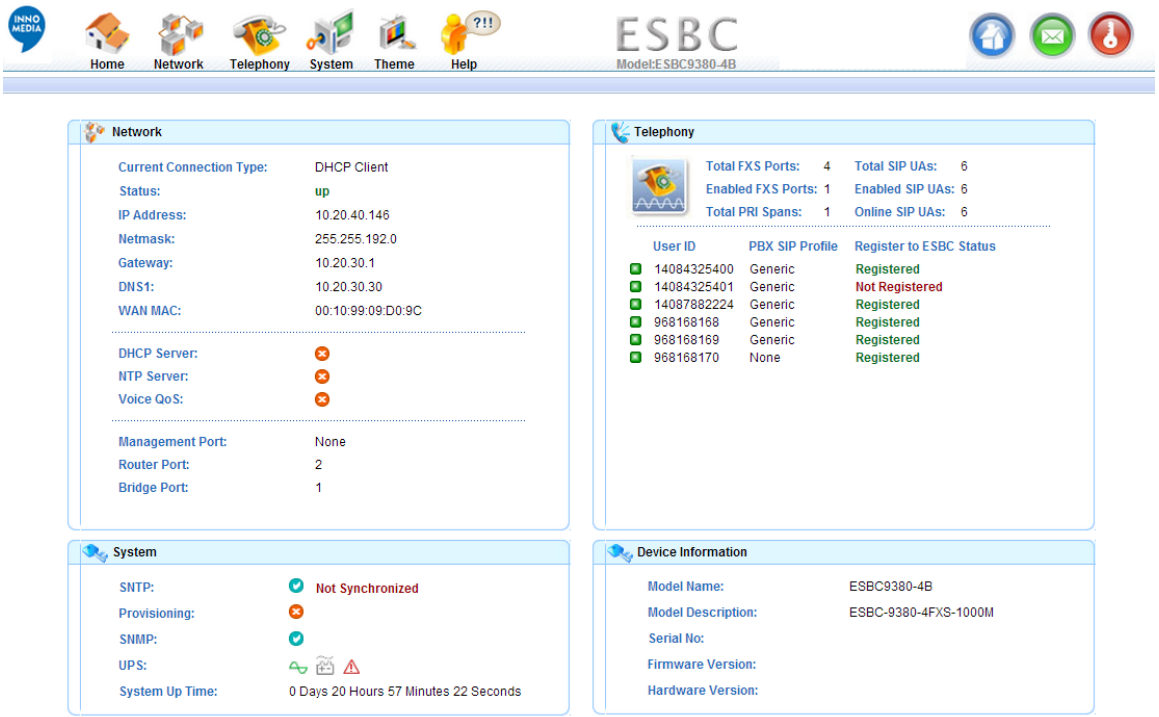


Figure 8. The ESBC dash board: system information display

4 SIP TRUNKING: CONFIGURING THE SERVICE PROVIDER RELATED PARAMETERS

The service provider related parameters are categorized as follows:

- Service provider's IP network
- Core SIP server
- SIP signaling to the core SIP server
- User Accounts

4.1 Connecting to Service Provider's IP network

The ESBC WAN interface is by default configured as a DHCP client to obtain an IP address from the data network. It can also be configured with a static IP address if necessary.

Navigate to the **Network** > **Settings** > **Monitor** page to view the ESBC network connection status.

Navigate to the **Network** > **Settings** > **WAN (or Internet Connection)** page to configure the WAN IP address.

4.2 Configuring Core SIP Server Parameters

The ESBC supports multiple trunk SIP proxy profiles. This flexibility allows the service provider to configure up to 8 profiles for different subscribed services. Each profile can be associated to a group of SIP UAs (User Accounts).

To configure a trunk profile, navigate to **Telephony > SIP TRUNKS > Trunks Setting.**

Note 1. When "TLS" is selected as the transportation protocol for secured communications, the SIP Proxy Port has to be updated accordingly. The default port used by the ESBC for secured SIP traffic is "5061".

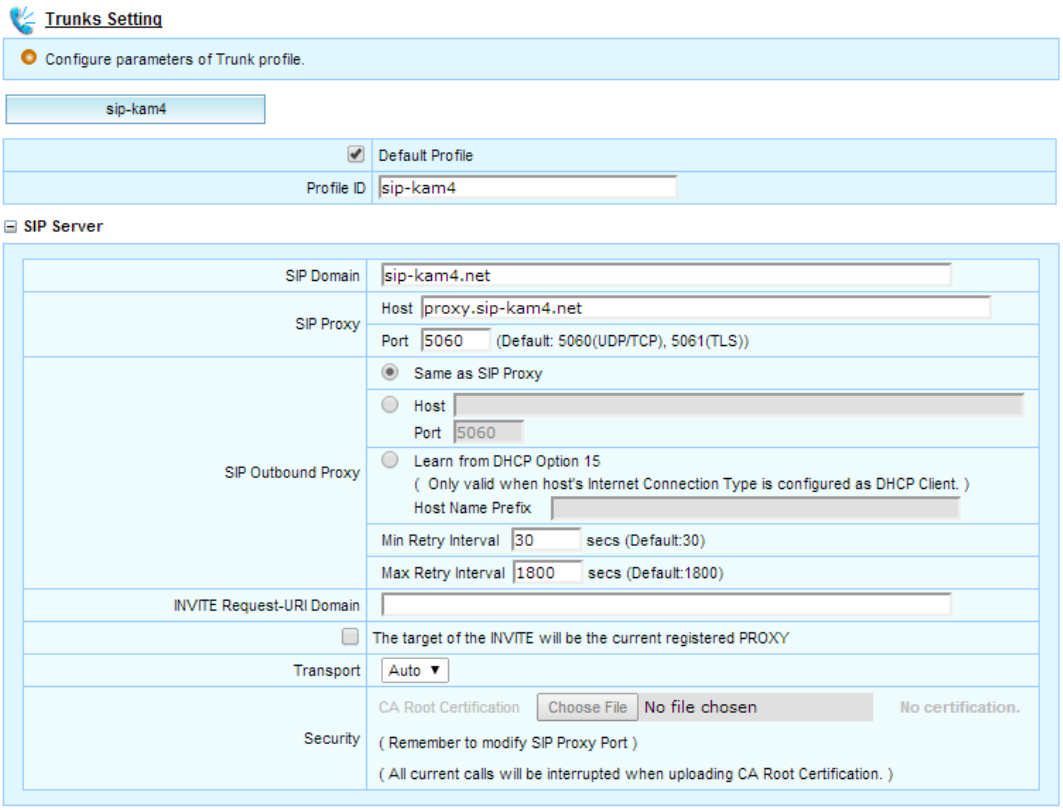


Figure 9. ESBC Trunk Settings

4.3 Configuring SIP Signaling Parameters

The ESBC normalizes SIP signaling from the enterprise network to interwork with servers in the service provider network. To configure the SIP parameters as needed to match the Service Provider's requirements, navigate to **Telephony** > **SIP TRUNKS** > **Trunk SIP Profile**.

Note 2. The ESBC, by default, adopts "registration mode" to register SIP UAs to the core SIP server. If "static mode" is needed, check the "Static Registration" box.

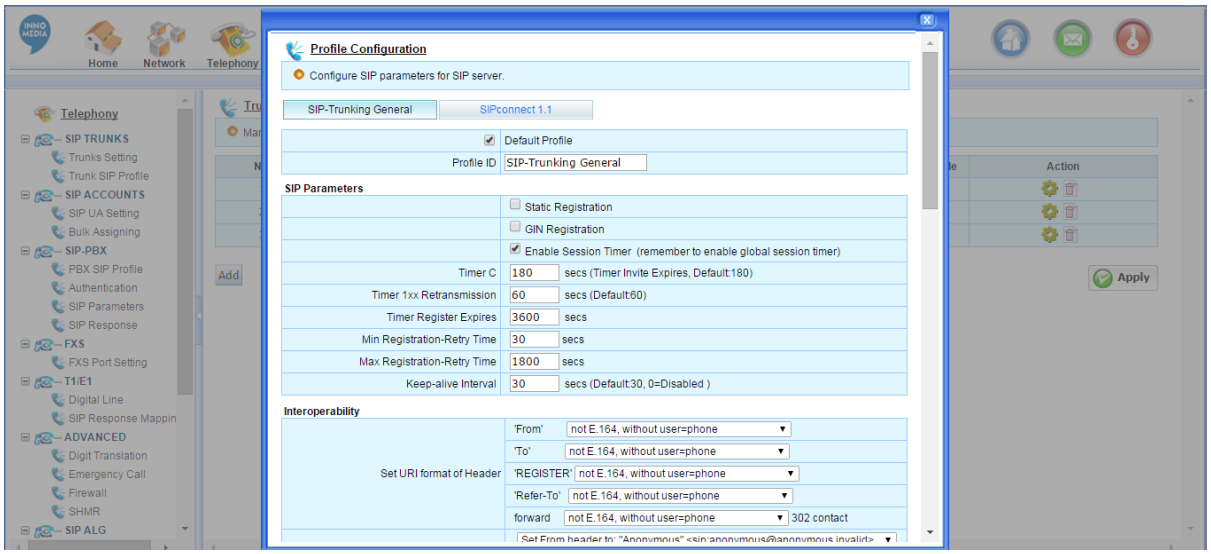


Figure 10. The ESBC SIP Trunk Parameter Settings

4.4 Configuring SIP User Accounts

To configure SIP User Accounts (UAs), navigate to **Telephony > SIP UA Setting > SIP User Accounts.** Click the <Batch Config> button to configure SIP User Accounts in bulk mode, or click the <Setting> icon to configure User Accounts individually.

The Public Identities (i.e., SIP UAs or User Accounts) of a subscribed sip trunk service include

- One Main Public Identity (e.g., pilot number)
- One or more alternate public identities (DIDs)

Configuration of the main public identity as the **Registration Agent** (RA) is needed when (1) implicit registration is required by the core SIP server and (2) one or more DIDs need to be configured on the ESBC SIP UA List. (Usually, a SIP PBX requires all DIDs to be registered on the ESBC.)

When the PRI-PBX is the only equipment connected to the ESBC and no other SIP UAs need to register to the ESBC, configur the Main Public Identity on the ESBC SIP UA list and nominate it as the **Default Route**. There is no need to explicitly configure other DIDs on the ESBC. The ESBC will route all inbound calls according to the routing rules of the **Default Route** to the PRI-PBX.

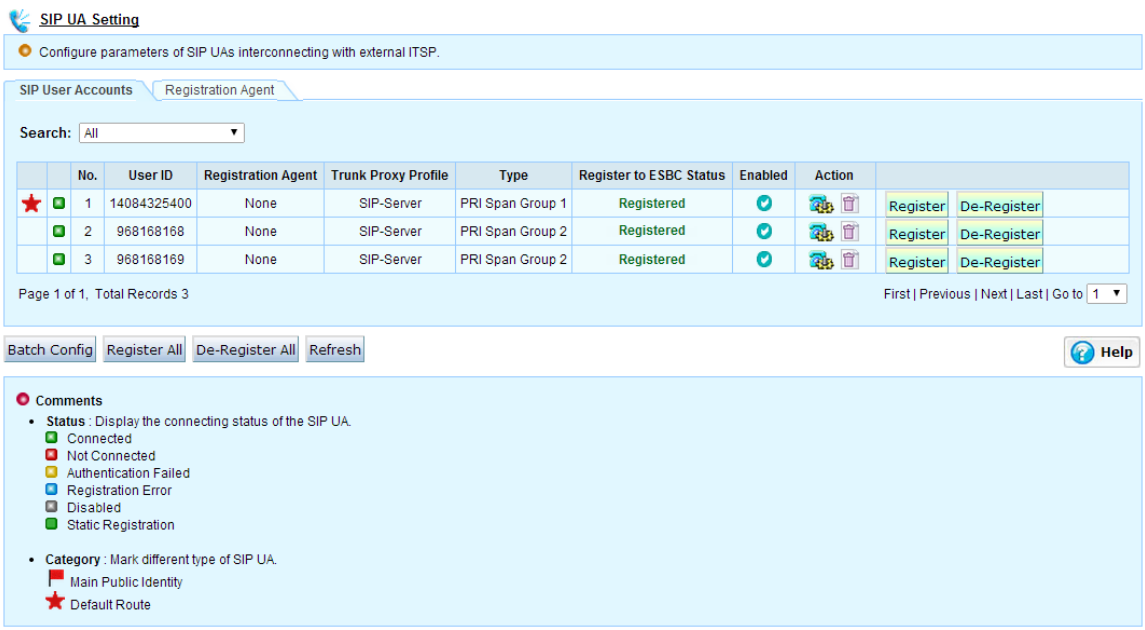


Figure 11. SIP UA Account Overview

Click the <Batch Config> button to add/configure user accounts in bulk mode.

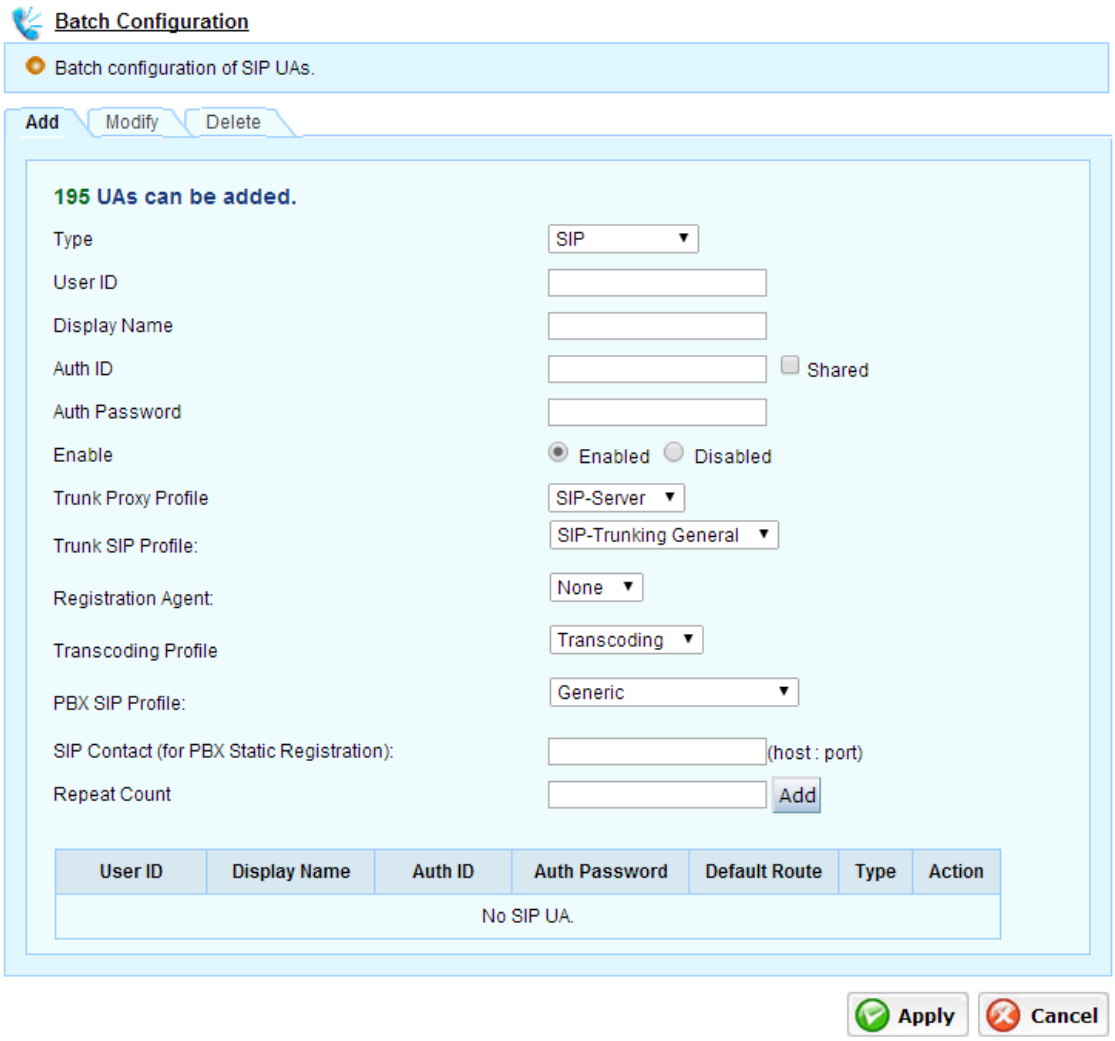


Figure 12. Configuring SIP UAs in bulk mode

Note that the **Transcoding Profile** displayed in Figure 12 is available on the ESBC 9378/9578 models only.

5 SIP TRUNKING: CONFIGURING THE ENTERPRISE RELATED PARAMETERS

Enterprise related parameters are configured based on:

- Customer equipment such as the PRI PBX or SIP-PBX (or IP-Phones)
- The ESBC LAN Network configuration

The default configuration of the LAN interfaces provides NAT-and-Voice services.

Navigate to **Network** > **Settings** > **LAN** to configure the IP address. By default, the LAN ports are switched ports and share one IP address. The ESBC LAN interface should be configured appropriately in order to allow enterprise voice traffic and PCs to access the ESBC administrative console.

The ESBC LAN interface should be placed on the same LAN segment where the SIP PBX will reside.

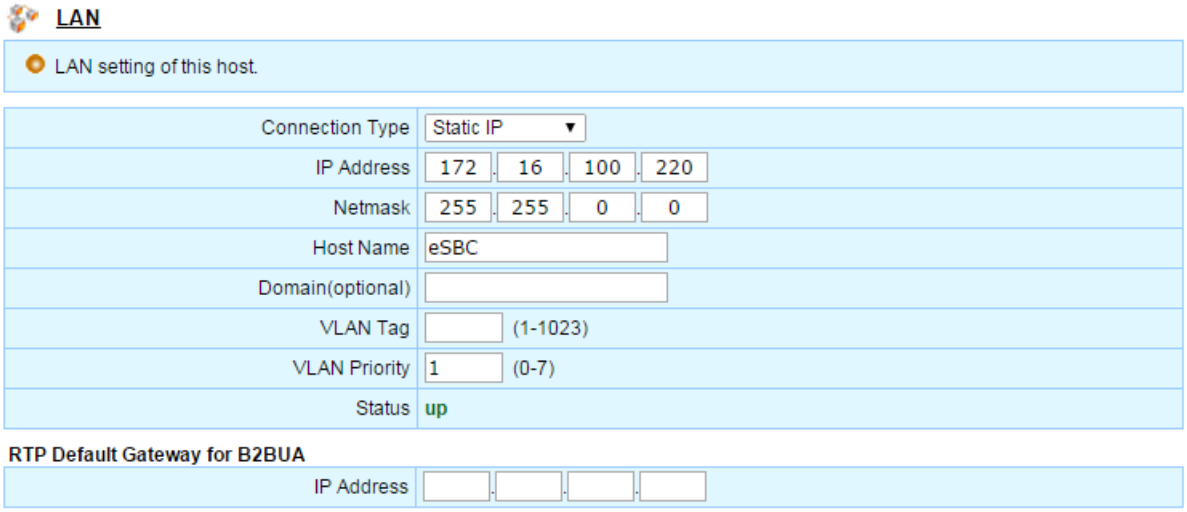
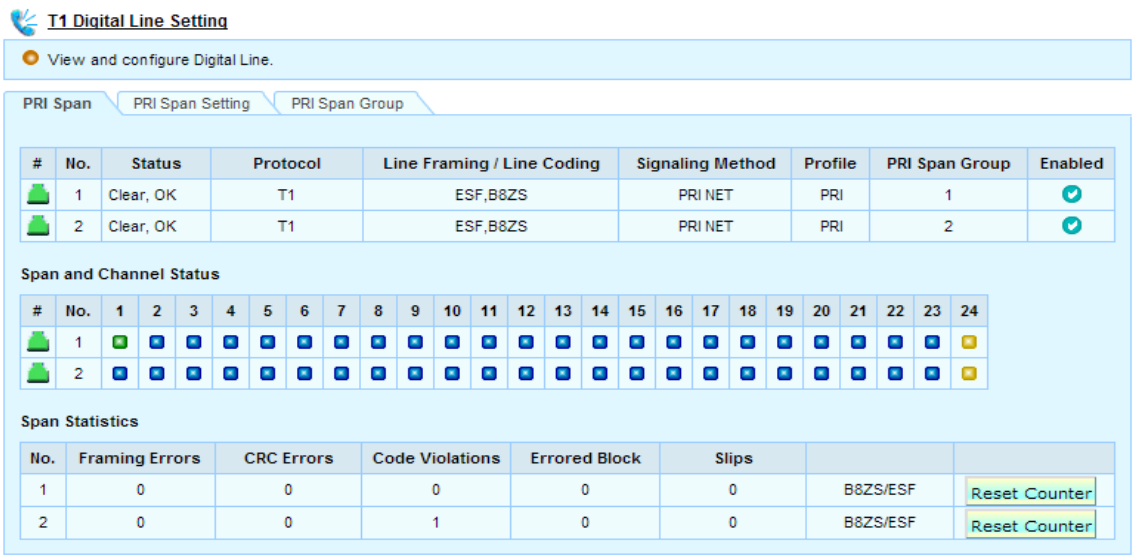


Figure 13. Configuring the ESBC LAN Interface IP

5.1 Configuring the ESBC with the Enterprise PRI PBX

To configure digital lines (PRI T1/E1), navigate to **Telephony** > **T1/E1**> **Digital Line**.

The T1/E1 Status page displays the system configuration and status of all PRI span(s), including D and B channels.



#	No.	Status	Protocol	Line Framing / Line Coding	Signaling Method	Profile	PRI Span Group	Enabled
	1	Clear, OK	T1	ESF,B8ZS	PRI NET	PRI	1	
	2	Clear, OK	T1	ESF,B8ZS	PRI NET	PRI	2	

#	No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
	1																								
	2																								

No.	Framing Errors	CRC Errors	Code Violations	Errored Block	Slips		
1	0	0	0	0	0	B8ZS/ESF	Reset Counter
2	0	0	1	0	0	B8ZS/ESF	Reset Counter

Figure 14 Status display of ESBC digital lines: 2 Span T1 model

5.1.1 PRI digital line settings

Always ensure that PRI Span parameters are consistent or matched with those settings on the peer PBX. **Always start from T1/E1 port 1.** The cable between the interface port and the PBX should be connected properly with a shielded crossover cable. ESBC PRI port 1 synchronizes with the ESBC internal clock source, and port 2 follows the timing of port 1. The PRI cable(s) must be connected to port 1 before port 2 can be used.

The connected PRI-PBX clock settings should follow the ESBC clock. When the ESBC "Clock Source" is configured as "Internal" (which is the default value), the PRI-PBX clock source should be configured as "line". Click the **<PRI Span Setting>** page to configure digital line settings.

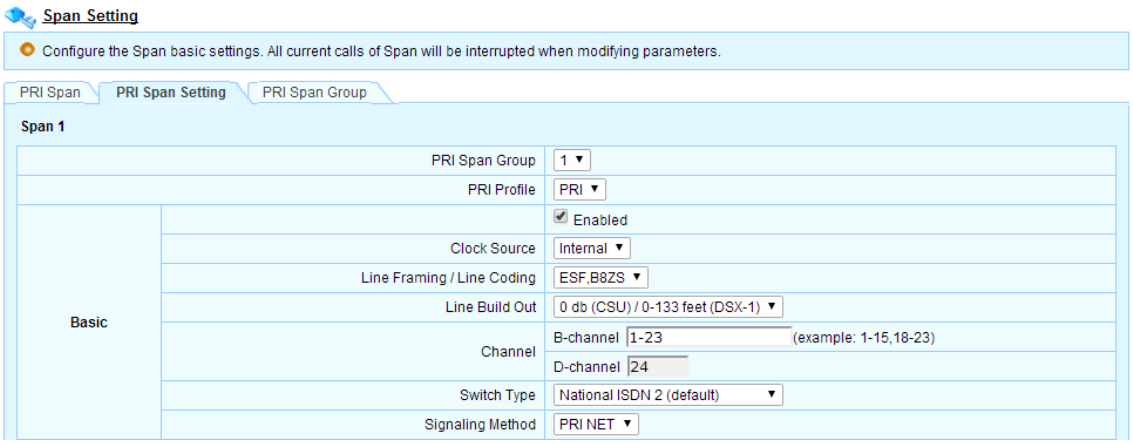


Figure 15 PRI Span Basic Settings

5.1.2 Assigning User Accounts to PRI Span Groups

When SIP UAs are entered onto the ESBC, their associated type (SIP | FXS | PRI) also needs to be configured (see Figure 12. Configuring SIP UAs in bulk mode.) If re-assignment is necessary, click the **Action** button on the "**PRI Span Group**" tab to assign SIP UAs to PRI span groups. Each span group defines its own PRI span settings and hence a span group can allow a connection to a different PRI PBXs.

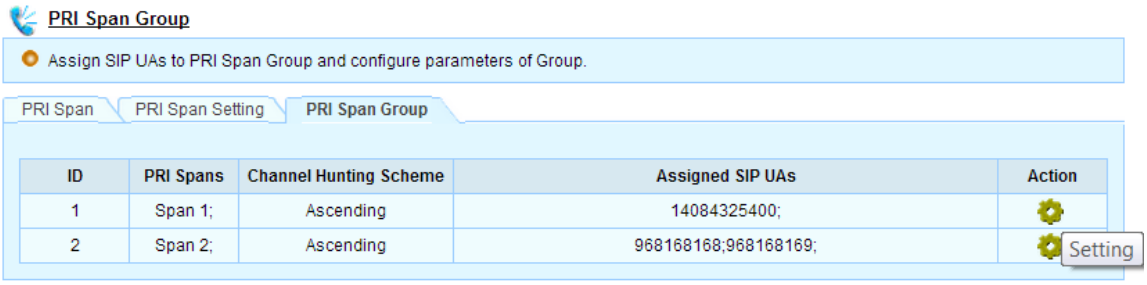


Figure 16. The PRI Span Groups

5.2 Configuring the ESBC with the Enterprise SIP PBX

The following configurations apply to a SIP PBX which needs to register to the ESBC to obtain voice services (the ESBC being used in B2BUA mode).

Choose the target SIP PBX model from the profile list; otherwise choose the "Generic" profile and make the associated configuration changes according to the specific requirements of the SIP PBX.

Navigate to **Telephony** > **SIP-PBX** > **PBX SIP Profile**.

Choose the target SIP PBX model from the profile list as the **Default Profile**. When there is a need to adjust the parameters of any target PBX profile, click the <Setting> icon.

PBX Profile Setting

Manage Profile list and Set default profile.

No.	Profile ID	Default Profile	Action
1	Generic	☑	Import Export
2	InnoMedia-iPBX400	☐	Import Export
3	Cisco Unified CM	☐	Import Export
4	Microsoft OCS	☐	Import Export
5	Cisco UC500	☐	Import Export
6	Allworx	☐	Import Export
7	Digium Switchvox	☐	Import Export
8	Fonality Trixbox	☐	Import Export
9	Pingtel SIPxchange	☐	Import Export
10	IPTel SER	☐	Import Export
11	AastraLink Pro 160	☐	Import Export
12	Cisco/Linksys SPA9000	☐	Import Export
13	Avaya IP Office 500	☐	Import Export
14	Shoretel	☐	Import Export
15	sipXecs	☐	Import Export
16	Microsoft Lync	☐	Import Export
17	Cisco UC320	☐	Import Export
18	Asterisk	☐	Import Export
19	Nortel BCM50	☐	Import Export
20	3CX	☐	Import Export
21	FortiVoice	☐	Import Export

Figure 17. SIP PBX Profile

When the target SIP PBX requires **static registration mode** for SIP communications, the "Enable Static Registration" box has to be checked on the specific profile associated with the PBX. In addition, the associated SIP UAs have to be configured with SIP Contact information, using the SIP PBX's IP address (see Figure 12. Configuring SIP UAs in bulk mode).

Profile Configuration (Generic)

Configure SIP parameters for SIP terminal.

Profile ID	Generic

SIP Parameters

	☐ Enable Static Registration
	☐ Use TCP Transport for SIP Messages
Timer C	180 secs (Timer Invite Expires, Default:180)
Timer 1xx Retransmission	60 secs (Default:60)

Figure 18. A portion of the SIP parameters from a SIP PBX profile

6 HOSTED VOICE SERVICES WITH IP PHONES

The SIP ALG mode of the ESBC offers the service provider the opportunity to deploy **secured and managed** hosted voice services to enterprises seamlessly.

Follow the steps below to allow SIP devices (phones or gateways) on the enterprise network to register and obtain voice service from the service provider via the ESBC.

6.1 Configuring the SIP Phones in the same network of ESBC LAN Interface

Arrange the SIP devices to be located in the same network as the ESBC VoIP port(s). If the SIP devices are configured as DHCP clients and the ESBC LAN port is configured as DHCP server, the SIP devices may obtain an IP address from the ESBC. If the SIP devices are configured with fixed IP, it is necessary to have the default gateway point to the ESBC LAN IP address.

Apart from the IP addresses configured on the sip devices being on the same network as the ESBC LAN, the registering SIP server and other service configurations of the sip devices should be pointed towards the service provider network.

6.2 Configuring the ESBC SIP ALG for Hosted Voice Service

Navigate to the **Telephony** > **SIP ALG** > **Setting** page to Enable ESBC SIP ALG service.

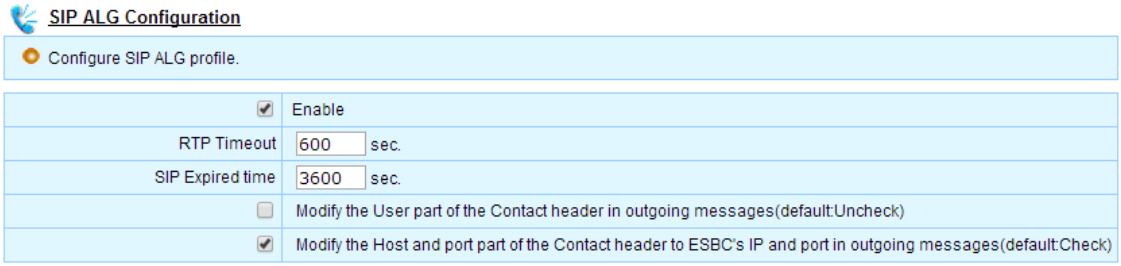


Figure 19. Configuring the ESBC SIP-ALG module

6.2.1 FQDN to IP: Static Mapping

When there is a need to configure unresolved domain names for sip devices, or occasionally if the FQDNs configured on the sip devices are not resolved by the DNS servers configured on the ESBC, the ESBC may be configured to statically map sip domain names to IP addresses and route calls to the designated service provider networks.

Navigate to the **Telephony** > **SIP ALG** > **Setting** page.

Outbound Proxy Mapping

No.	SIP Domain	IP Address[:Port]	Action
1	sip-kam4.net	10.30.18.232:5060	

DNS Static Records

No.	Name	IP Address	Action
1	proxy.sip-kam4.net	10.30.18.232	

Figure 20. The static FQDN – IP mapping table

<End of Document>