MTG1000B Trunk Gateway User Manual V2.0

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1. Product Introduction

1.1 Overview

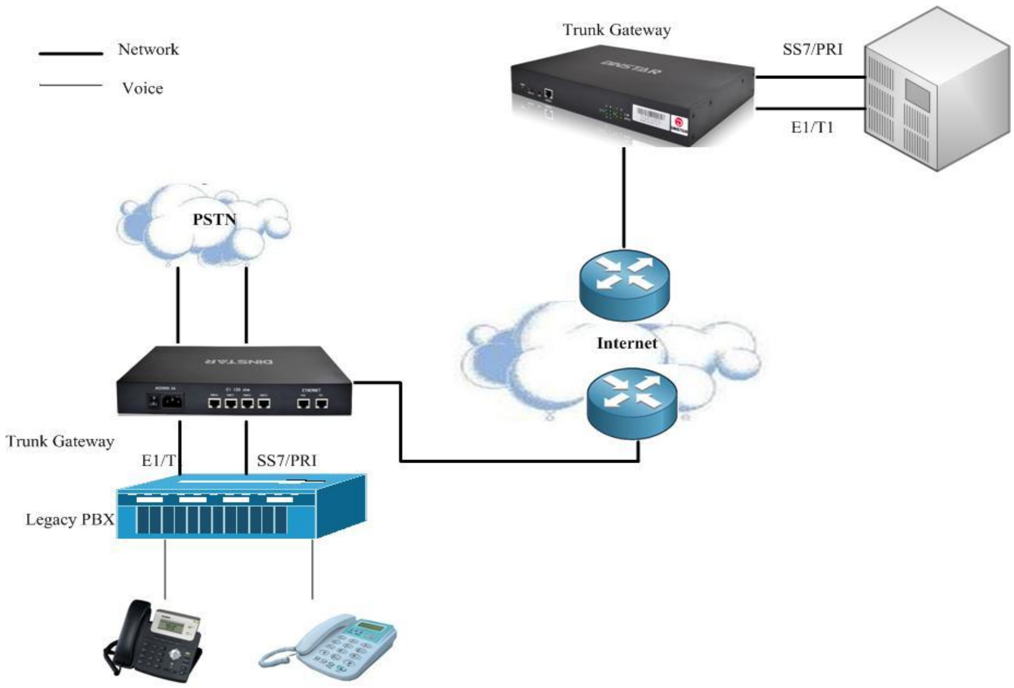
MTG1000B is a trunk gateway aimed at small and medium enterprise, and used to help enterprise to realize the evolution from the traditional PBX to voice IP. On the one hand, it supports PRI/SS7/R2 protocol and adopts standard T1/E1 trunk interface to realize docking with traditional PBX. On the other hand, adopt standard SIP protocol docking with various soft switch to ensure PSTN seamless access to IP voice/NGN network, and achieving VoIP/FoIP and more value-added service. MTG1000B supports intelligent multiple trunk routing technology, makes the operator easy to manage trunk routing by price optimum rule, and the automatic switch-over between multiple trunk routing makes the network have high reliability.

MTG1000B has good call processing ability, and provides 1/2 T1/E1 interface. It is able to handle a variety of signaling protocol and voice decoding. It supports the rich GUI configuration, the user easily set and maintenance system. Mainly includes the following kinds of models:

- MTG1000B-1E1
- MTG1000B-2E1

A typical network diagram shows the function of MTG1000B as below.

Figure 1-1-1 Application topology



1.2 Equipment Structure

1.2.1 Rear View

Figure 1-2-1 MTG1000B Rear View

Table 1-2-1 MTG1000B Rear View Description

PWR	The power interface, 200VAC, 50~60HZ
Port0-Port3	E1/T1 port, 1/2 E1 ports
FE0	The Service Ethernet Interface, standard 10/100BASE-TX Ethernet interfaces. Default IP address is 192.168.1.111， default subnet mask is 255.255.255.0
FE1	Management Ethernet Interface. Default IP address is 192.168.11.1, default subnet mask is 255.255.255.0

1.2.2 Front View

Figure 1-2-2 MTG1000B Front View

Table 1-2-2 MTG1000B Front View Description

LED	Function	Color	Work Status
POWER	Power status indicator	Green	Off：Power is off
			On: Power is on
RUN	Register indicator	Green	Slow blinking: Unregister
			Fast blinking: Register
ALM	The failure of device indicator	Yellow	Off: Normal
			On: Failed
RST	Reset button, it is used to restart the device		
CONSOLE	RS232 console port: it can be used to debug and configure the device. The baud rate is 115200 bps.		
E1/T1	Indicating the connection state of device E1/T1.	Green	Off：E1/T1 port connection normal
			On: E1/T1 port connection and sending/ receiving message normal
			Flash:E1/T1 port connection failed
LINK	Indicating the connection state of the network	Green	Off: Network connection failed
			On: Network connection normal, and 0 indicates FE0 and 1 indicates FE1
SPEED	Indicating the network bandwidth	Yellow	Off:10Mbps bandwidth
			On:100Mbps bandwidth

1.2.3 RJ-48c Line sequence

RJ-48 Pin (on T1/E1 PIC) (Data numbering form)	RJ-48 Pin (Data numbering form)	Signal
1	1	RX, Ring, -
2	2	RX, Tip, +
4	4	TX, Ring, -
5	5	TX, Tip, +
3	3	Shield/Return/Ground
6	6	Shield/Return/Ground
7	No connect	No connect
8	No connect	No connect

MTG1000B trunk gateway adopts standard RJ-48C interface and impedance value is 120Ω. Connected end device by cross lines sequence.

1.3 Functions and Features

1.3.1 Protocol standard supported

- Standard SIP /PRI protocol
- NAT Traversing (STUN)
- Hypertext Transfer Protocol (HTTP)
- Domain Name System (DNS)
- ITU-T G.711A-Law/U-Law、G.723.1、G.729AB、iLBC (optional)

1.3.2 System Function

- Comfort Noise Generation (CNG)
- Voice Activity Detection (VAD)
- Adaptive (Dynamic) Jitter Buffer (DJB)
- DTMF mode: RFC 2833, SIP INFO and INBAND
- T.38/ Pass-Through FAX over IP
- HTTP/Telnet configuration
- Firmware upgrade by TFTP/Web

1.3.3 Industrial standards supported

- Stationary use environment: EN 300 019: Class 3.1

- Storage environment: EN 300 019: Class 1.2
- Transportation environment: EN 300 019: Class 2.3
- Acoustic noise: EN 300 753
- CE EMC directive 2004/108/EC
- EN55022: 2006+A1:2007
- EN61000-3-2: 2006,
- EN61000-3-3: 1995+A1: 2001+A2: 2005
- EN55024: 1998+A1: 2001+A2: 2003
- Certifications: FCC, CE

1.3.4 General hardware specification

- Power supply: 220VAC, 1.2A
- Temperature: 0~40℃ (operational),-20~70℃(storage)
- Humidity: 10%~90%, no condensation
- Max power consumption: 10W
- Dimension (mm): 436*300*44
- Net Weight: 1.9 kg

2. Parameter Setting

2.1 Login

First, device FE0 port connect PC with string, and then fill FE0 IP address in browser, FE0 default IP address is 192.168.1.111. It will request customer to input user name and password. Default user name and password are “admin”.

If customer modified the default IP or forgot the IP, that can’t enter the configuration page. Please connect PC and device serial with the serial line. Enter the CLI to view or modify the equipment IP. Here IP is set to 172.16.88.12. In addition, hold down the RST button to restart the device, customer can regain the port’s default IP. Then enter the IP address of device in the browser address bar. Customer will see the following page.

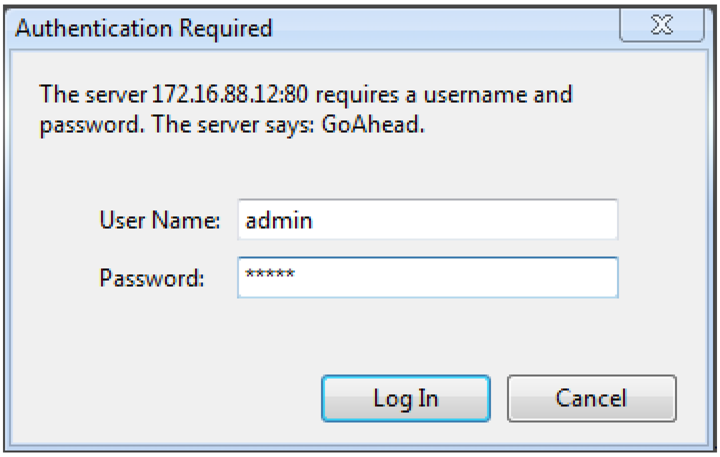


Figure 2-1-1 Login Interfaces

The default user name and password is "admin". To guarantee the system safety, when login for the first time. The system will prompt the user to modify the password. The interface is shown as below.

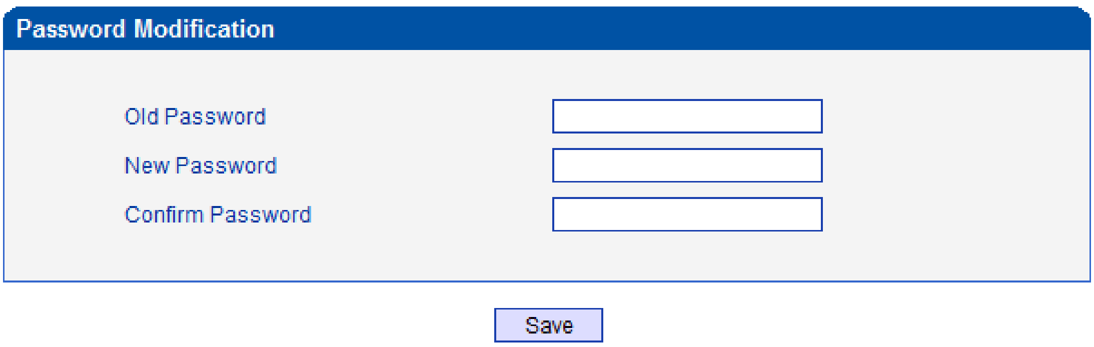


Figure 2-1-2 Modify Password

Users through to traverse the left navigation tree, and can complete view, edit and configuration device in the right configuration interface.

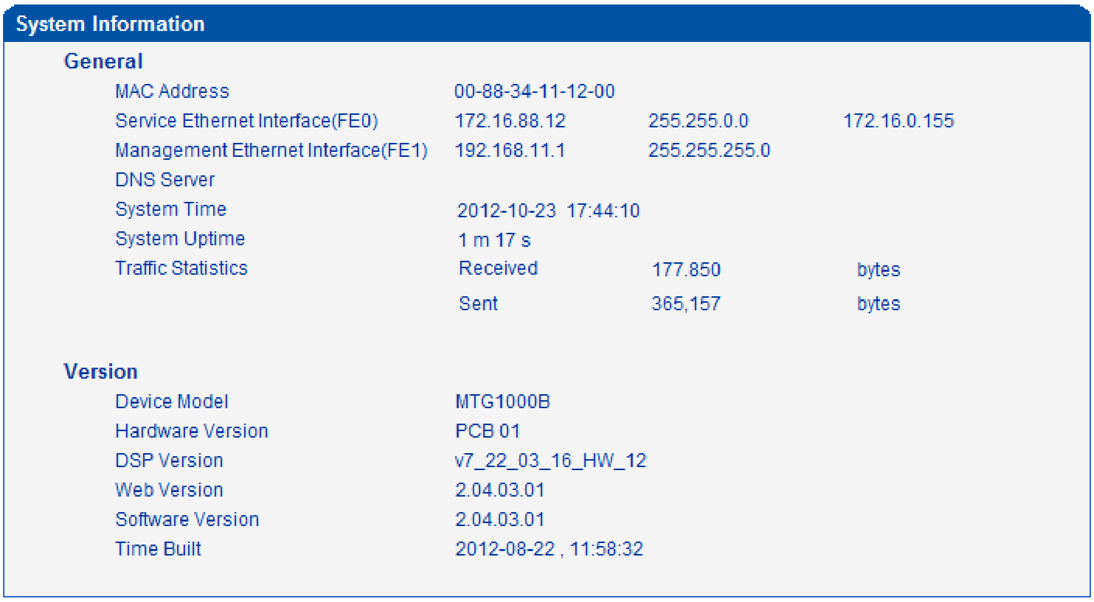


Figure 2-1-3 Description of System Information

2.2 Web interface structure and navigation tree

After entering configuration page, according to demand choose Chinese interface or English interface, the default is English interface.

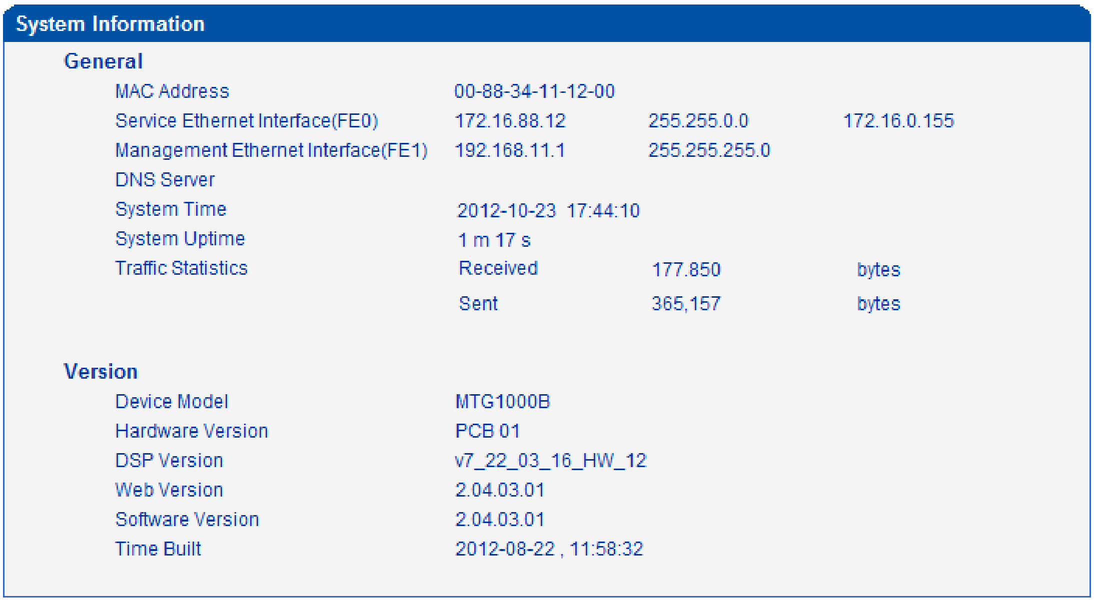
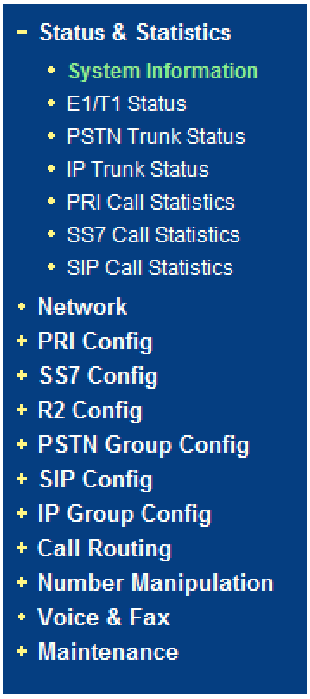


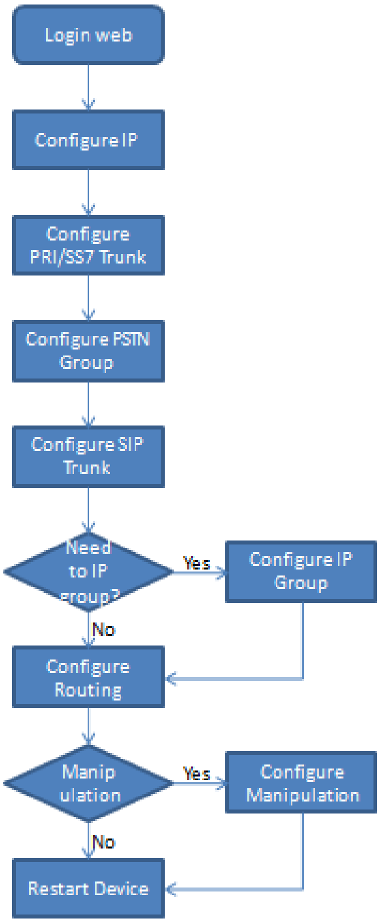
Figure 2-2-1 System Information

Users through to traverse the left navigation tree, and can complete view, edit and configuration device in the right configuration interface.

Figure 2-2-2 Navigation tree



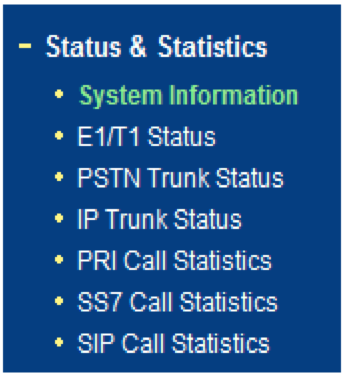
MTG configuration flow chart below:



2.3 Status & Statistics

Open the operation of the navigation tree information node, and can view the device information and state system.

Figure 2-3-1 Status & Statistics



2.3.1 System Information

System information interface shows the general information and version information.

Figure 2-3-1 System Information

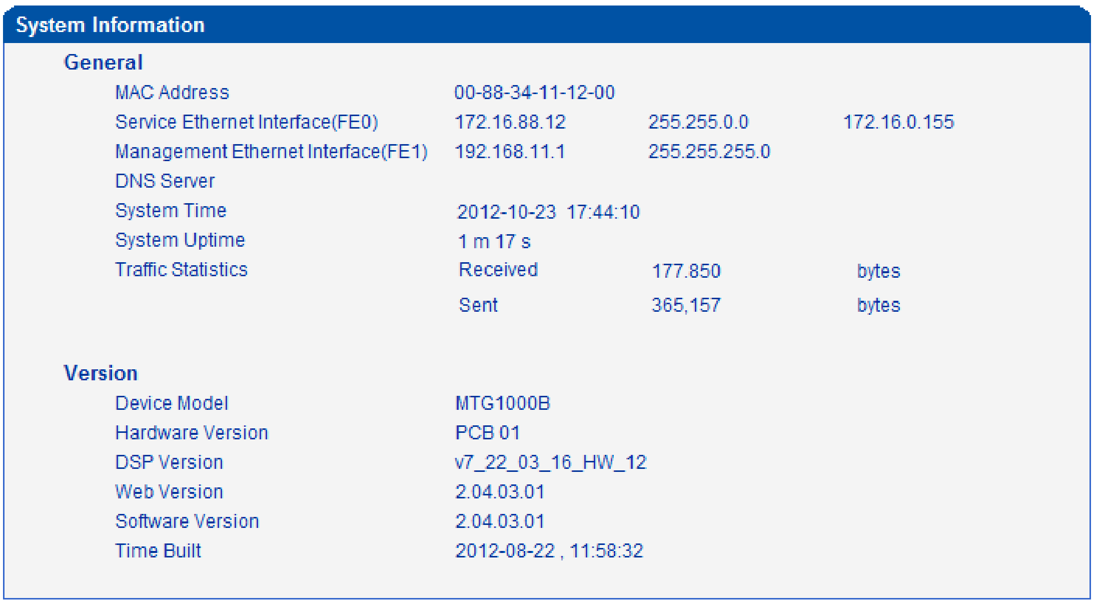


Table 2-3-1 System Information

MAC address	Hardware address of FE0 port
Service Ethernet Mode	Network mode of FE0, include: static and DHCP.
Service Ethernet Interface	Include: IP address, subnet mask, FE0 port default gateway
Management Ethernet Interface	Include IP address、subnet mask of FE1
DNS	DNS server IP address
System Up Time	Time elapsed from device power on to now
Traffic Statics	Total bytes of message received and sent by FE0 port
Equipment Type	Equipment type; this equipment is: MTG1000B
Hardware Version	Hardware version of device
DSP Version	Digital signal processing chip driver version
Web Version	Version of current WEB interface of device
Software Version	Software version of device running currently
Built Time	The build time of current software version

2.3.2 E1/T1 Status

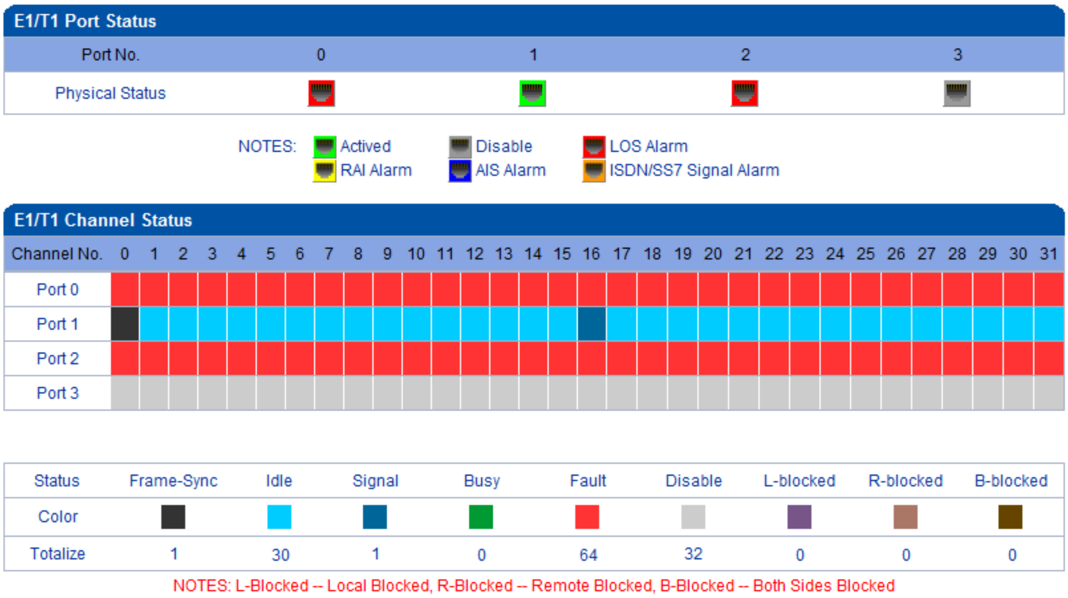


Figure 2-3-2 E1/T1 Status

Table 2-3-2 Description of E1/T1 status

E1/T1 Port Status	**LOS Alarm:** Signal loss alarm, this alarm is created when receiving is lost; please check the physical connection whether disconnected.
	RAI Alarm: Receive remote alarm indication, it is a signal transmitted in the outgoing direction when a terminal determines that it has lost the incoming signal. Receiving remote alarm indication (RAI) means the far-end equipment over the T1 line has a problem with the signal it is receiving from the upstream equipment.
	AIS Alarm: The Alarm Indication Signal (AIS) failure is declared when an AIS defect is detected at the input and the AIS defect still exists after the Loss of frame failure which is caused by the unframed nature of the 'all-ones' signal is declared. The AIS failure is cleared when the Loss Of Frame failure is cleared.
	Disable: Means that this E1/T1 is not used.
	ISDN/SS7 Signal Alarm: Means physical connection is normal, signaling link has problem.
	Active-OK: Means that physical connection and signaling link are normal.
E1/T1Channel Status	**Frame-Sync:** Non voice channel, which used as a synchronization channel
	Idle: Means this channel is idle, when the channel is enabled and the cable is connected OK.
	Signal: Signal channel
	Busy: Means this channel is occupied by voice
	Fault: The channel is enabled but the cable is not connected.
	Disable: Have not use this E1/T1 trunk
	L-blocked: Local blocked, means that communication can only be initiated from local

	R-blocked: Remote blocked, means that communication can only be initiated from remote
	B-blocked: Both Sides blocked, means that the two sides cannot communication

2.3.3 PSTN Trunk Status

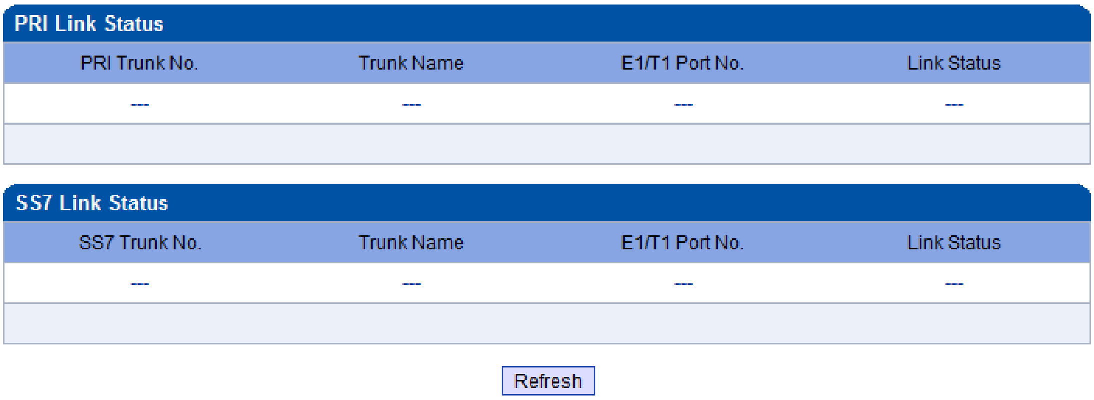


Figure 2-3-3 PSTN Trunk Status

PSTN trunk status description:

1） PRI Link Status

PRI Trunk No.	The number of PRI trunk, each trunk corresponds to a PRI link
Trunk Name	Used to identify the name of the trunk
E1/T1Port No	Indicate the E1/T1 line occupied by the PRI trunk.
Link Status	Indicate whether the PRI link is established.

2） SS7 Link Status

SS7 Trunk No.	SS7 trunk number, each relay takes up a SS7 link.
Trunk Name	Used to identify the name of the trunk
E1/T1 Port No	Indicate the E1/T1 line occupied by the SS7 trunk.
Link Status	Indicate whether the SS7 link is established.

2.3.4 IP Trunk Status

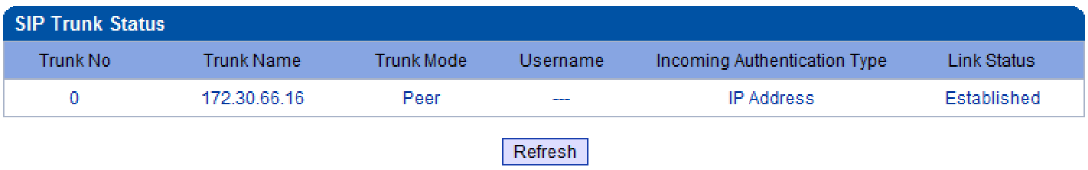


Figure 2-3-4 SIP Trunk Status

IP trunk status

SIP Trunk No	The number of SIP trunk
Username	When SIP trunk is under registered mode, change the value in the

	configuration shown in the account registration, If SIP trunk is under non-registered mode, the value is meaningless, as '---'
Trunk Mode	Peer and Access two modes
Register Status	Indicate the status of SIP trunk（access mode）, register or unregister, when is under peer to peer mode, the values is meaningless, as '---'
Link Status	Established and Fault status.
SIP Trunk No	The number of SIP trunk

2.3.5 PRI Call Statistics

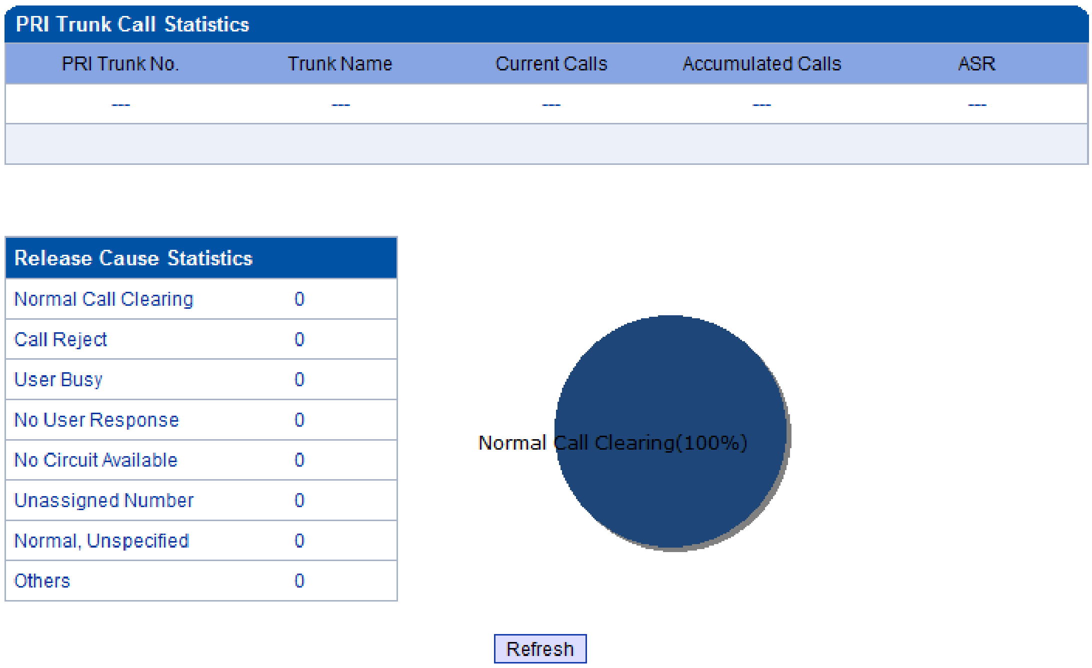


图 2-3-5 PRI Call Statistics description

PRI call statistics description

PRI Trunk No	The number of PRI trunk
Trunk Name	The name used to describe the PRI trunk
Current Calls	Number of lines that are being called currently
Accumulated Calls	Total number of calls from running start of system to current time.
ASR	The percent of calls completed in total calls.

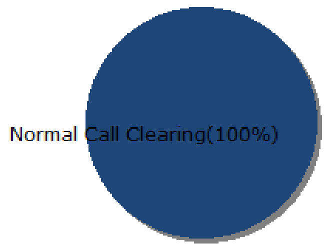
This statistics page show the reasons for release of the call, including: Normal Call Clearing, Call Rejected, User Busy, No User Response, No Circuit Available, Unassigned Number, Normal Unspecified and others. Statistical information in an intuitive would be reflected on the pie char.

2.3.6 SS7 Trunk Call Statistics

SS7 Trunk Call Statistics

SS7 Trunk No.	Trunk Name	Current Calls	Accumulated Calls	ASR
---	---	---	---	---

Release Cause Statistics	
Normal Call Clearing	0
Call Reject	0
User Busy	0
No User Response	0
No Circuit Available	0
Unassigned Number	0
Normal, Unspecified	0
Others	0



Refresh

Figure 2-3-6 SS7 Trunk Call Statistics

The parameters of SS7 trunk call statistics are the same with PRI parameters. Please refer to PRI trunk call statistics.

2.3.7 SIP Call Statistics

SIP Trunk Call Statistics

SIP Trunk No.	Trunk Name	Current Calls
0	172.30.66.16	0

Refresh

Figure 2-3-7 SIP Trunk Call Statistics

SIP call statistics description

SIP Trunk No	The number of SIP trunk
Trunk Name	The name used to describe the PRI trunk
Current Calls	Number of lines that are being called currently

2.4 Network

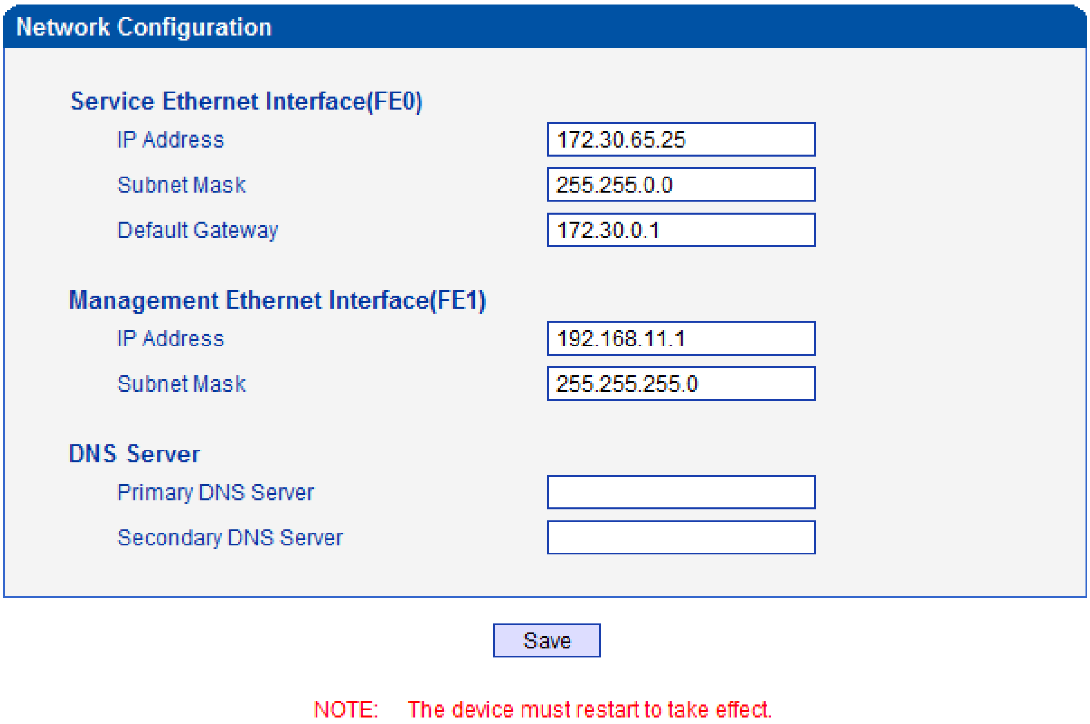


Figure 2-4-1 Network Configuration

Network Configuration

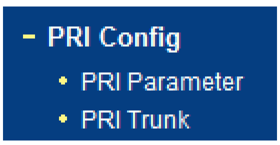
Service Ethernet Interface（FE0）	IP address	Set FE0 port static IP address.
	Subnet Mask	Fill in subnet mask
	Default Gateway	Fill in default gateway
Management Ethernet Interface（FE1）	IP address	Set FE1 port static IP address
	Subnet Mask	Fill in subnet mask
DNS Server	Primary DNS	Fill in DNS Server IP address.
	Secondary DNS	The secondary DNS server is option.

Ntoe： FE0 port IP and FE1 port IP should be set in different segments. After configure the network address, and restart the gateway configuration to take effect.

2.5 PRI Config

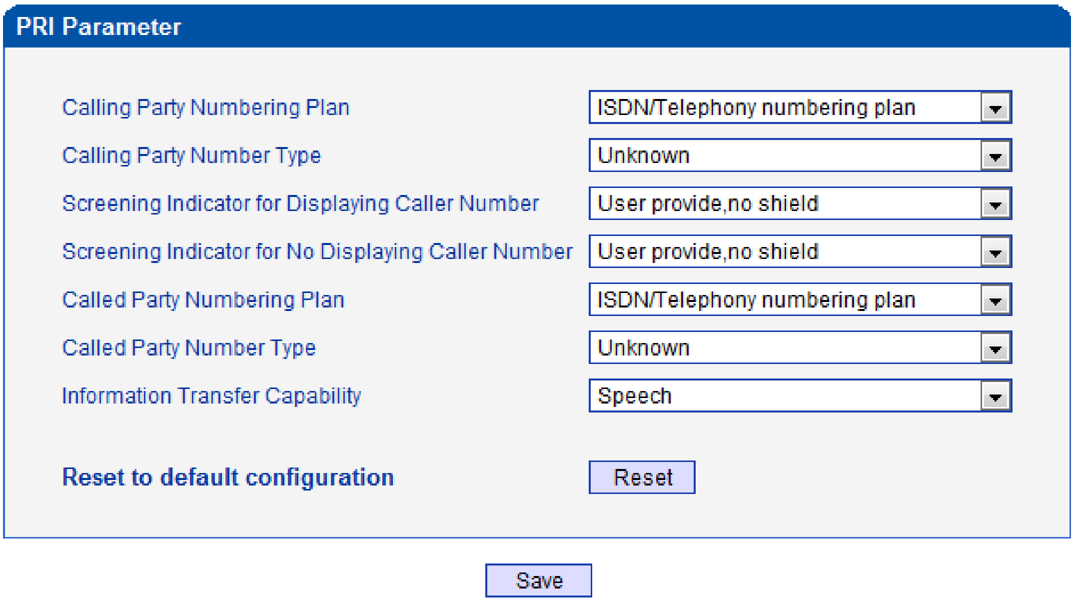
PRI configuration includes PRI parameter and PRI trunk configuration

Figure 2-5-1 PRI Config



2.5.1 PRI Parameter

Figure 2-5-2 PRI Parameter

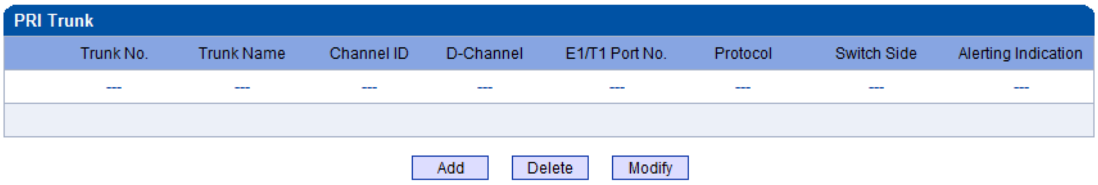


PRI parameter description

Calling Party Numbering Plan	Provide six plans: Unknown, ISDN/Telephony numbering plan, data numbering plan, telegraph numbering plan, national standard numbering plan, private numbering plan. The default is ISDN/Telephony numbering plan.
Calling Party Number Type	Six optional types are provided for calling party: Unknown, International number, National number, Network special number, User number, Short code dialing. The default option is Unknown.
Screening Indicator for Displaying Caller Number	Four options available: User provider, no shield; User provide, check and send; User provide, check and having failure; Network provide. The default option is: User provider, no shield.
Screening Indicator for No Displaying Caller Number	Four options available: User provider, no shield; User provide, check and send; User provide, check and having failure; Network provide. The default option is: User provider, no shield.
Called Party Numbering Plan	Provide six plans: Unknown, ISDN/Telephony numbering plan, data numbering plan, telegraph numbering plan, national standard numbering plan, private numbering plan. The default is ISDN/Telephony numbering plan.
Called Party Number Type	Six optional types are provided for called party: Unknown, International number, National number, Network special number, User number, Short code dialing. The default option is Unknown.
Information Transfer Capability	Support speech and 3.1khz audio. The default option is speech.

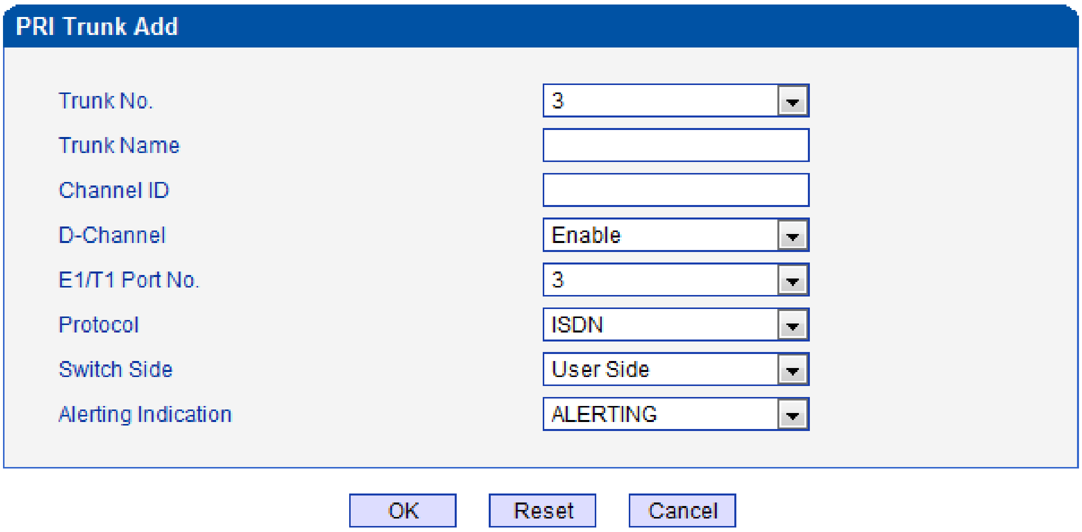
2.5.2 PRI Trunk

Figure 2-5-3 PRI Trunk



Users can add/delete/modify PRI trunk in this configuration option.

Figure 2-5-4 Add PRI Trunk



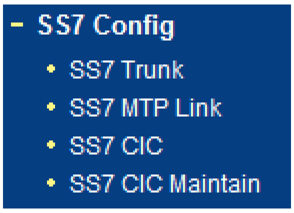
PRI trunk description

Trunk No	The number of PRI trunk; when user add PRI trunk, 0~7 number will appear in the pull-down menu to be selected (the number here depends on E1/T1 physical port number actually existed in equipment). After trunk number is established, filling in corresponding port number in “E1/T1 Port No.”, so as to assign E1/T1 to designated trunk; Each PRI trunk corresponds to a E1/T1 port.
Trunk Name	Description of PRI trunk
Channel ID	Channel ID of E1/T1 ports, this number definition generally starts from 0.
D-channel	Indicate whether E1/T1 supports D channel, the default is Yes.
E1/T1 Port No	E1/T1 port number is numbered according to the physical position of E1/T1, it generally starts from 0.
Protocol	Interface type of PRI. There are two types are available: ISDN and QSIG; the default is ISDN.
Switch Side	Indicate PRI network property of E1/T1, it is divided into: “User side” and “Network side”. When PRI loopback is carried out, the network properties of E1/T1 port at both receiving and sending sides must be different.
Alerting Indication	The ring signal include Alerting and Progress

2.6 SS7 Config

SS7 configuration includes: SS7trunk, SS7 MTP Link, SS7 CIC and SS7 CIC Maintain.

Figure 2-6-1 Add PRI Trunk



2.6.1 SS7 Trunk

Figure 2-6-2 SS7 Trunk

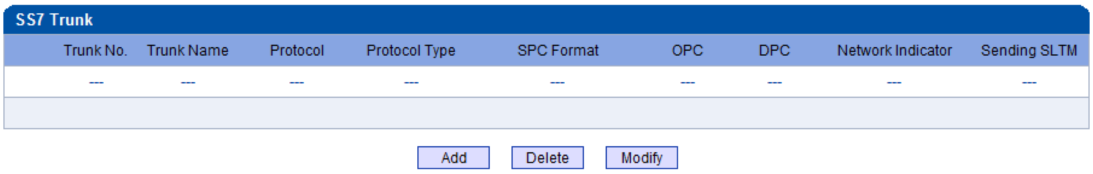
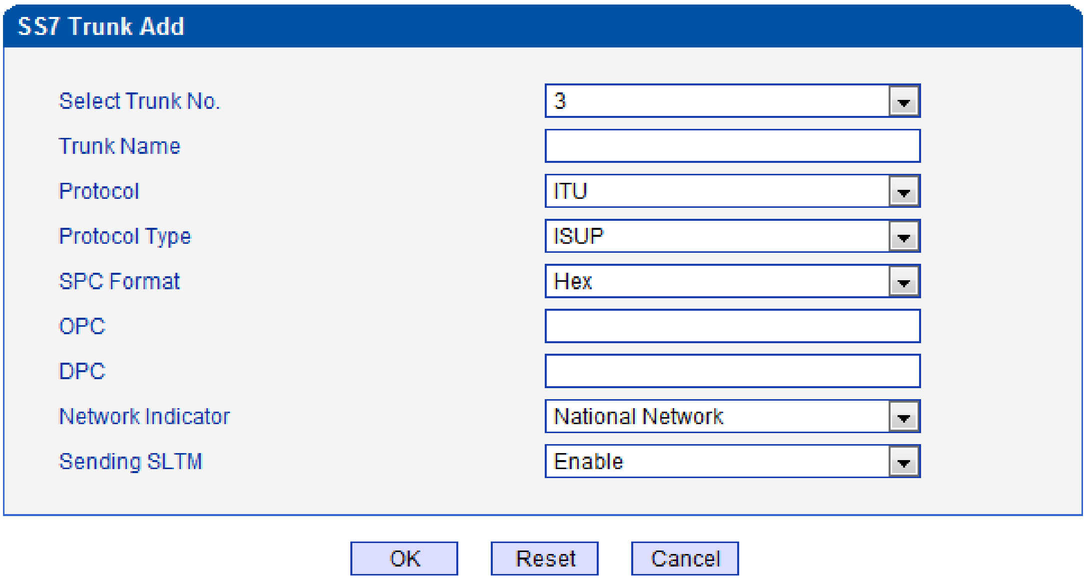


Figure 2-6-3 SS7 Trunk Add



SS7 is a standard protocol to initiate a calling connection with SPC exchange.

Notes:

1. “Trunk No.” is a shared data, therefore, SS7 „Trunk No.‟ can't be the same as PRI “Trunk No.” 2. SPC length is 24bits when option “ANSI” or “ITU-CHINA” is selected in item “Standard Type”.

3. SPC length is 14bits when option “ITU” is selected in item “Standard Type”.

4. SPC Length represents the structure of OPC/DPC. SPC View Mode indicates which input format is selected for OPC/DPC structure.

5. When SPC length is 24bits and 'Hex' are selected, the structure is like xyz, and x,y,z must be hex number between 00-FF. eg., 33AA55.

6. When SPC length is 14bits and 'ITU Pointcode Structure' are selected, the structure is like x-y-z, and x,z must be decimal number between 0-7, and y must be decimal number between 0-255. eg., 6-222-3.

7. When SPC length is 14bits and 'Hex' are selected, the structure is like xyz, and x/z is a 3 bit hex number, y is a 8 bit hex number. eg., 202E(100 00000101 110).

SS7 trunk add

Select Trunk No	The number of SS7 trunk. Generally, a DPC will establish a SS7 trunk number respectively, SS7 trunk number cannot be conflict with PRI trunk number. After SS7 trunk is established, assign E1/T1 to SS7 trunk in “SS7 Circuit” option.
Trunk Name	Name of trunk, it can be edited to any name user want.
Protocol	SPC types: ITU-T (14 bit), ANSI (24 bit), ITU-CHINA (24 bit)
Protocol Type	Supported two protocol types: ISUP and TUP
SPC Format	Signaling Point Code format includes hexadecimal system and ITU pointcode structure (decimal system)
OPC	Original Point Code
DPC	Destination Point Code
Service Type	SS7 service types: ISUP (ISDN User Part) and TUP (Telephone User Part).
Network Indicator	Indicate the network property of SS7, including International Network, International Spare, National Network, National Spare; the default is “National Network” (this type is used in China, USA, and Japan), “International Network” is generally used in inter-office switch room; others will be selected according to physical circumstances.

Note：

1. If protocol standard chose 'ANSI' or 'ITU-CHINA', and then the SPC length is 24 bits.

2. If protocol standard chose'ITU', and then the SPC length is 14 bits.

3. SPC length performance on the OPC/DPC structure; SPC pattern instructions of the different structure OPC/DPC input formats.

4. When the SPC length is 24 bits, and chosen ITU, OPC/DPC structure format is :x-y-z; x、y、z is a number of 0-255, such as: 22-222-77

5. When the SPC length is 24 bits, and chosen Hex, OPC/DPC structure format is :xyz; x、y、z must be Hex number of 00-FF, such as: 33AA55

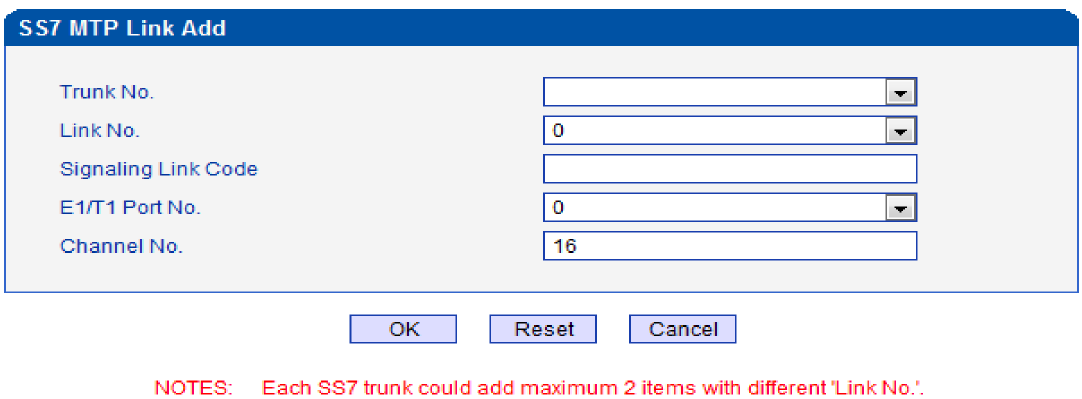
6. When the SPC length is 24 bits, and chosen ITU, OPC/DPC structure format is : x-y-z; x、z must be decimal value; y is decimal number 0-255, such as: 6-222-3

7. When the SPC length is 24 bits, and chosen Hex, OPC/DPC structure format is :xyz; x、z must be three bitts hex value; y is 8 bitts hex value, such as:（202E）100 00000101 110

2.6.2 SS7 MTP Link

Figure 2-6-4 SS7 MTP Link

Figure 2-6-5 SS7 MTP Link Add



SS7 MTP link description

Trunk No	It is consistent with foregoing "Trunk No" of SS7 trunk.
Link No	Equipment maximum support 2 signaling links, these two links share workload, when one link fails, the other link will take over the load until restore from failure, and then they will share the load again.
Signaling Link Code	If a signaling point has established several signaling links, then the code of each signaling link will begin from 0.
E1/T1 Port No	Indicate which E1/T1 this link is established on, it is stipulated that such numbering is carried out according to the physical position of E1/T1.
Channel No	Indicate time slot that link is established on. It is assigned to 1 or 16 for time slot, the default is 16 time slot.

2.6.3 SS7 Circuit

Figure 2-6-5 SS7 Circuit

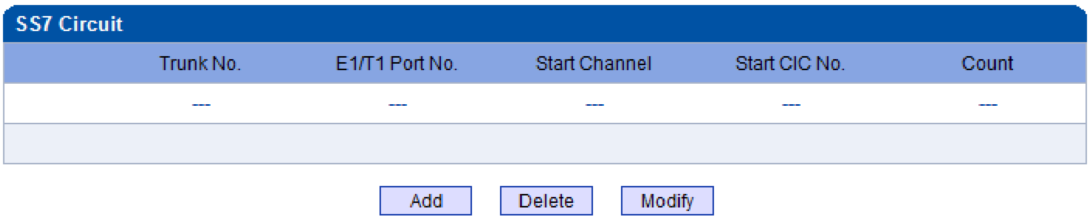
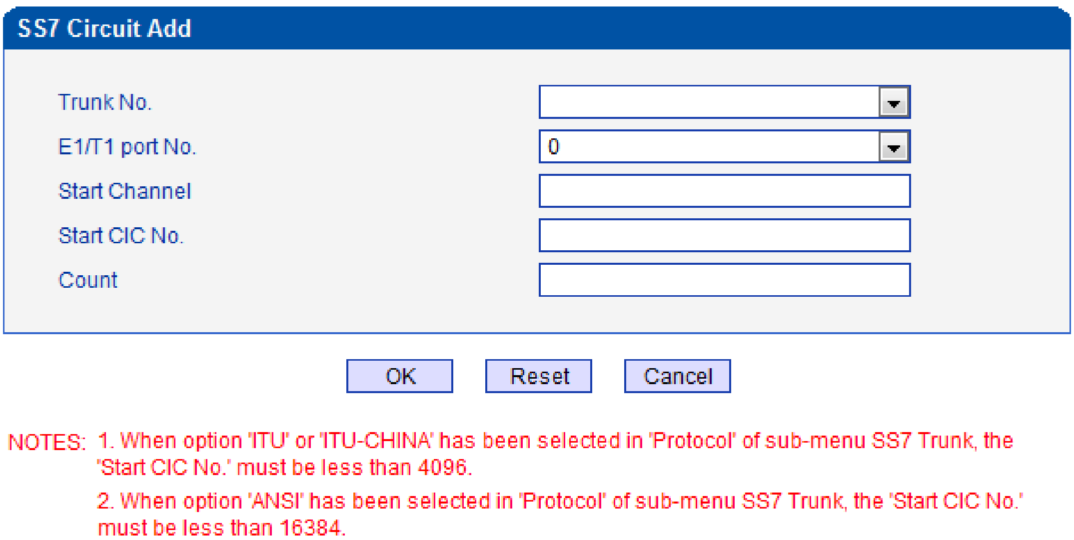


Figure 2-6-6 SS7 Circuit description



CIC (circuit identification code) is an important parameter of SS7 circuit. It should be confirmed with service provider. If the CIC is mismatched, it will result in one-way voice communication.

SS7 Circuit Add

Trunk No	The "Trunk No." here corresponds to the "Trunk No." of SS7 trunk.
E1/T1 port No	Fill in the port number of E1/T1. Assign E1/T1 to selected SS7 trunk.

Start Channel	The start of SS7 channel trunk
Start CIC No	An initial circuit number to this E1/T1 matches by both parties
Count	A total of 32 channels

2.6.4 SS7 Circuit Maintain

According to the different operating modes, 7 circuit maintenance objects into two categories:

ports and channel.

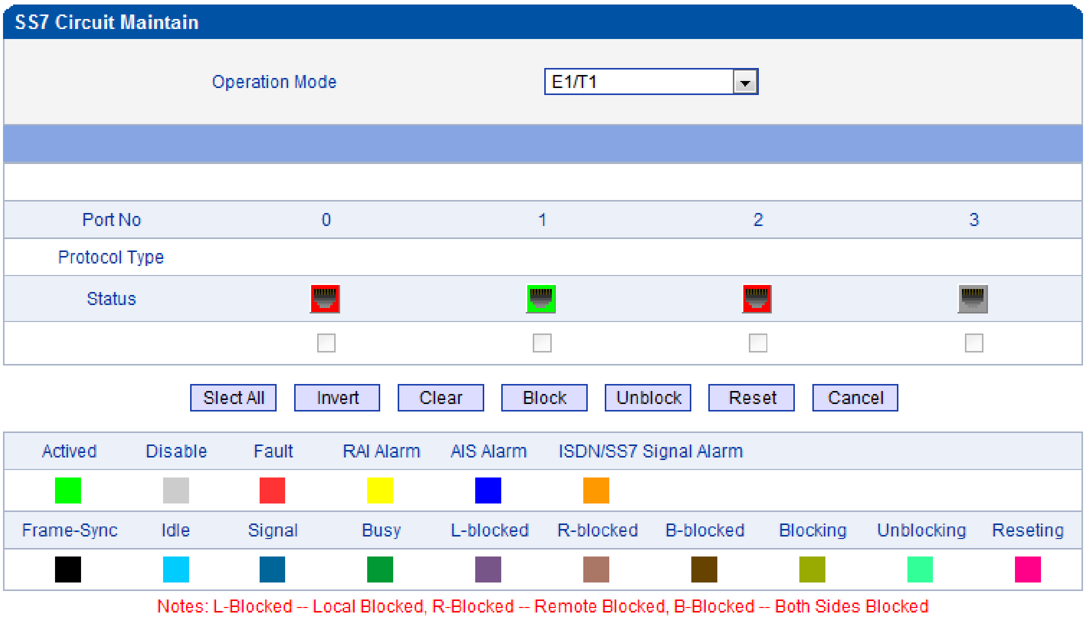


Figure 2-6-7 SS7 Circuit Maintain-E1/T1

SS7 Circuit Maintain-E1/T1 description

Operation Mode	There are port operation and channel optional
Port No	Display the port number
Protocol Type	TUP or ISUP
Status	There are 16 status with ports, each state corresponds to a color: activated, disable, fault, RAI Alarm, ISDN/SS7 Signal Alarm, Frame-Sync, Idle, Signal, Busy, L-blocked, R-blocked, B-blocked, Blocking, Unblocking and Resetting.

These ports can work in many ways: Select All, Invert, Clear, Block, Unblock, Reset and Cancel.

Figure 2-6-8 SS7 Circuit Maintain-Channel

If user wants to manage the channel, please select operation mode to channel.

Select current port, use will see port status and protocol type. The following will show the slot and channel status. There are 16 kinds of channel states and each state corresponds to a color

2.7 R2 Config

2.7.1 R2 Param

R2 Param

	Param ID	Description	CDbits	Req Next DNIS	Request Next ANI	Request Category	DNIS End	ANI End	Adress Complete	Answer Signal
☐	0	ITU	01	A-1	A-5	A-5	I-15	I-15	A-3	Call with charge
☐	1	Argentina	01	A-1	A-5	A-5	INVALID	I-12	A-3	Call with charge
☐	2	Brazil	01	A-1	A-5	A-5	INVALID	I-15	A-3	Call with charge
☐	3	China	11	A-1	A-1	A-6	INVALID	I-15	A-3	Call with charge
☐	4	Czech	01	A-1	A-5	A-5	I-15	I-15	A-3	Call with charge
☐	5	Colombia	01	A-1	A-5	A-5	I-15	I-15	A-3	Call with charge
☐	7	Mexico	01	A-1	INVALID	INVALID	I-15	I-15	INVALID	Call with charge
☐	8	Philippines	01	A-1	A-5	A-5	INVALID	I-15	A-3	Call with charge
☐	9	Venezuela	01	A-1	A-9	A-5	INVALID	I-15	A-3	Call with charge
☐	11	Bolivia	01	A-1	A-5	A-5	I-15	I-15	A-3	Call with charge
☐	14	India	01	A-1	A-4	A-5	INVALID	I-10	A-3	Call with charge
☐	15	Indonesia	01	A-1	A-6	A-6	I-15	I-15	A-3	Call with charge
☐	16	Korea	01	A-1	A-5	A-5	INVALID	I-15	A-3	Call with charge
☐	17	Malaysia	01	A-1	A-6	A-6	I-15	I-15	A-3	Call with charge
☐	18	Panama	01	A-1	A-5	A-5	INVALID	I-15	A-3	Call with charge
☐	19	Singapore	01	A-1	A-6	A-6	I-15	I-15	A-3	Call with charge
☐	20	Thailand	01	A-1	A-1	A-6	I-15	I-15	A-3	Call with charge

Figure 2-7-1 R2 Parameter

It is the default configuration for MTG1000B. Description says the state name, means the different countries supported R2 parameters standards. According to demands add R2 parameters of user countries.

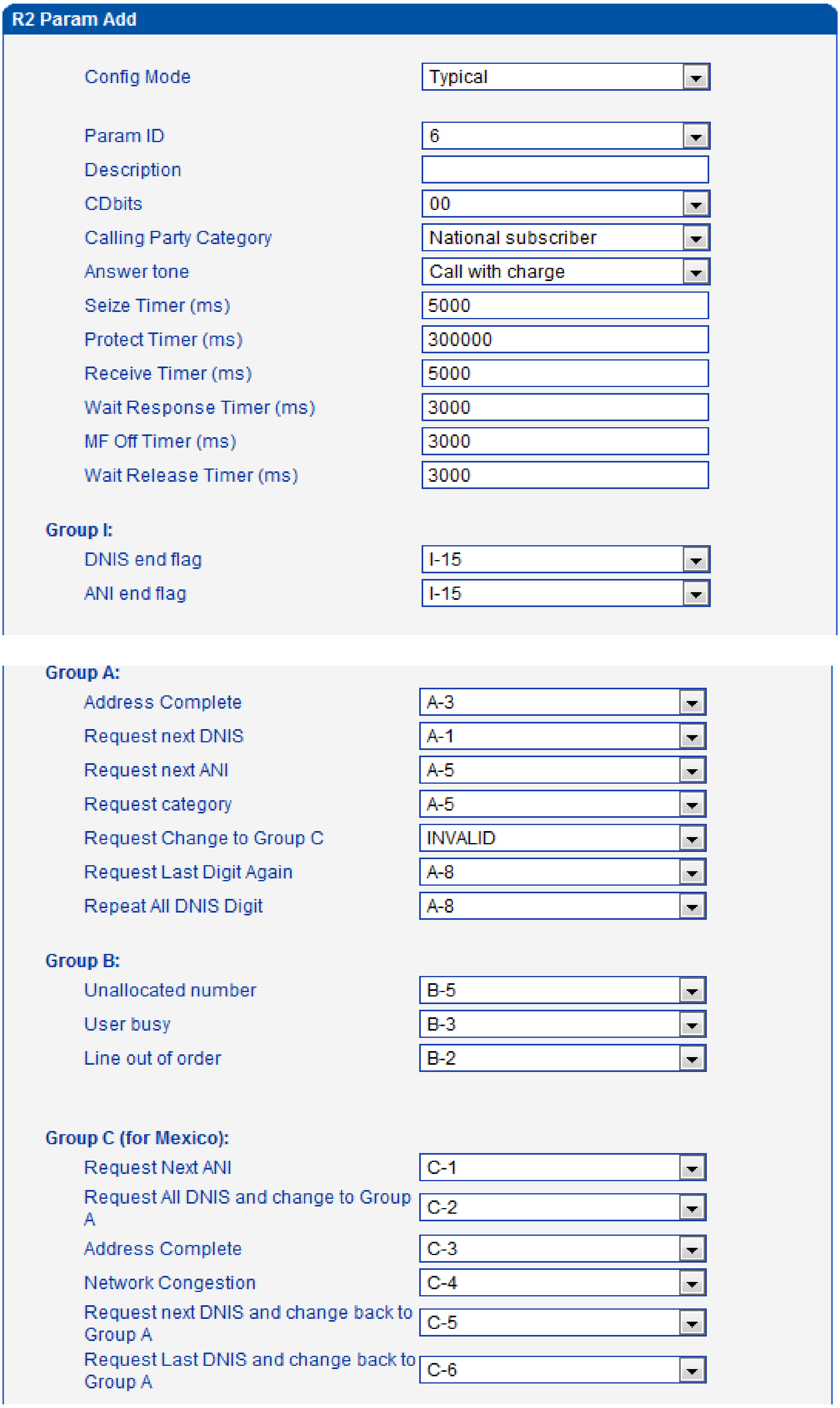


Figure 2-7-2 R2 Parameter Add

Parameter Description

Param ID	Identification parameter group
Description	Description parameter information, Points out which countries standard the parameters are.
CDbits	C, Dbit value of A, B, C,Dbit in R2 lines of signaling.
Request Next DNIS	The rear party notices the front party ahead called number has received, and each other can send a next number.
Request Next ANI	The rear party notices the front party ahead callee number has received, and each other can send a next number.
Request category	Means KA request code of R2 lines signaling
DNIS end flag	The front party notices the rear party that the called numbers send completely.
ANI end flag	The front party notices the rear party that the callee numbers send completely.
Address Complete	The rear party notices the front party that the called and the callee num bers received completely.
Answer Tone	The general calls is free of charge or not.

2.7.2 R2 Trunk

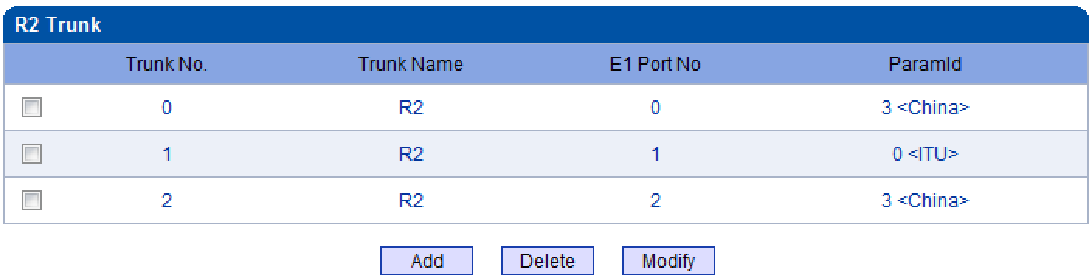


Figure 2-7-3 R2 Trunk

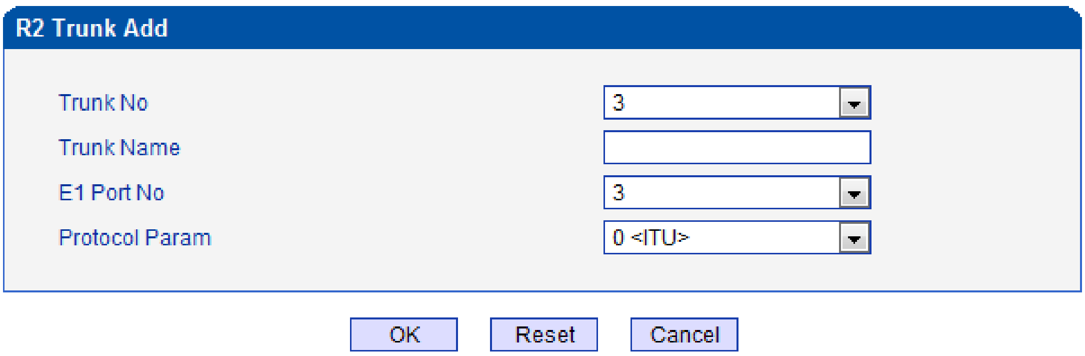


Figure 2-7-4 R2 Trunk Add

PRI trunk description

Trunk No	The unique identifiers of R2 trunk; system customs eight relay index number.
Trunk Name	Used to identify and describe R2 trunk

E1 Port No	According to T1 / E1 port position sequence sort, usually starting from 0
Protocol Param	Select R2 parameter group.

2.8 PSTN Group Config

2.8.1 E1/T1 Parameter

Clock source of E1/T1can be selected “Remote” or “Local”. If selecting E1/T1 port to port0, when user modified port0, port0-3 will be changed together with port0. Port4-7 changed following the port4.

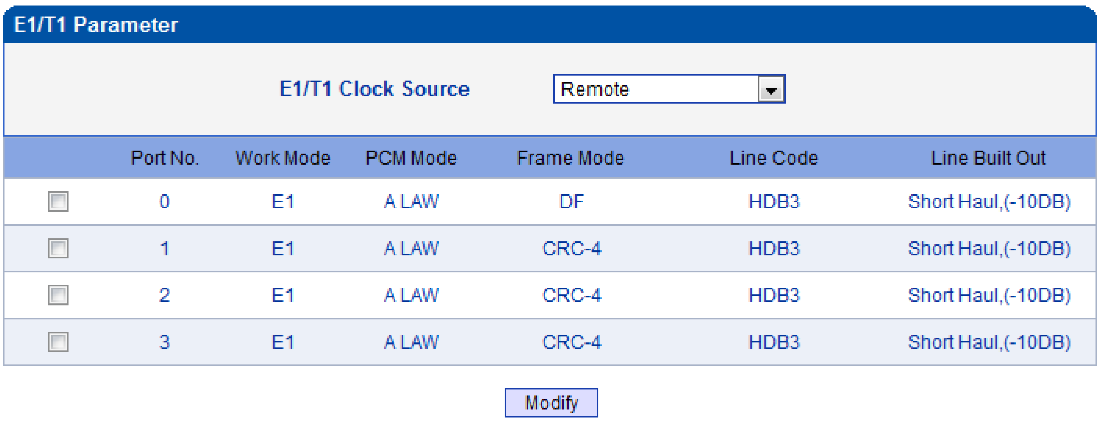


Figure 2-8-1 E1/T1 Parameter

E1/T1 parameter description

Work Mode	E1/T1, the default is E1.
PCM Mode	PCM mode: A LAW and Mu LAW, the default is A LAW
Frame Mode	The frame modes of E1 are: DF, CRC-4, CRC4_ITU, the default is CRC-4; the frame modes of T1 are: F12, F4, ESF, F72, the default is F4.
Line Code	Line codes of E1 are: NRZ, CMI, AMI, HDB3, the default is HDB3. The Line codes of T1 are: NRZ, CMI, AMI, B8ZS, the default is B8ZS.
Line Built Out	Cable length. E1 lines docking, the environment will affect the E1 line signal strength, signal strength according to (DB value) to select the long-term or short-term.

2.8.2 Coder Group

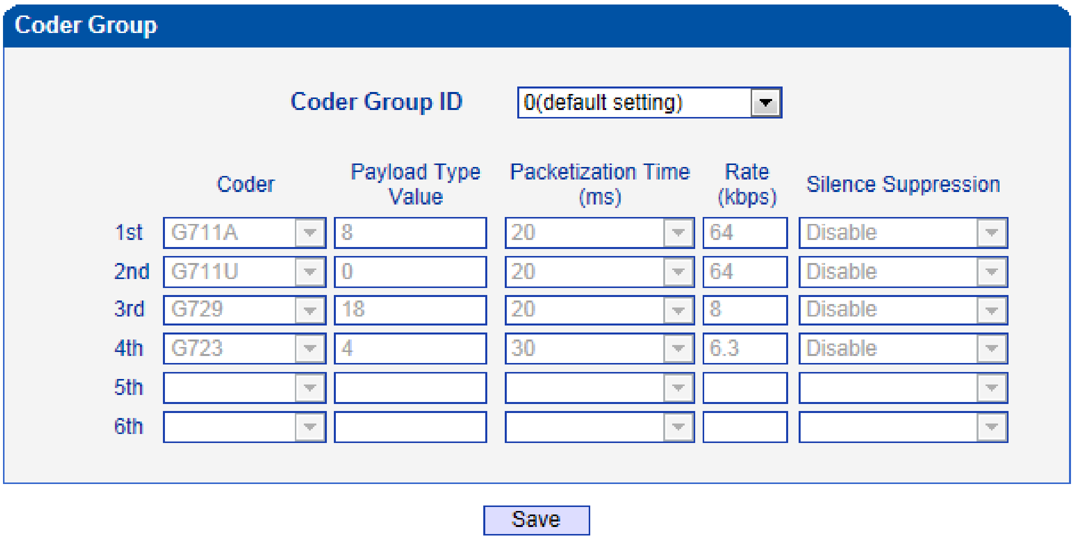


Figure 2-8-2 Coder Group

Coder group description

Coder Group ID	ID standard for Voice ability, total with 8 groups, where 0 is the default group ID number, the codec that equipment supports in the grouping will be displayed in 0 group. Default value cannot be modified.
Coder	Support 3 kinds of voice codec: G.711A/U/G.729/G.723
Payload Type Value	Each codec has a unique value, refer to RFC3551
Packetization Time(ms)	Voice Codec packetization time, user can define different kinds of coding and decoding minimum packetization time
Rate(kbps)	Show the rate.
Silence Suppression	It is disabled by default. During talking, the bandwidth occupied by voice transmission will be released automatically for silence party or when talk is paused.
Coder Group ID	ID standard for Voice ability, total with 8 groups, where 0 is the default group ID number, the codec that equipment supports in the grouping will be displayed in 0 group. Default value cannot be modified.

2.8.3 Dial Plan

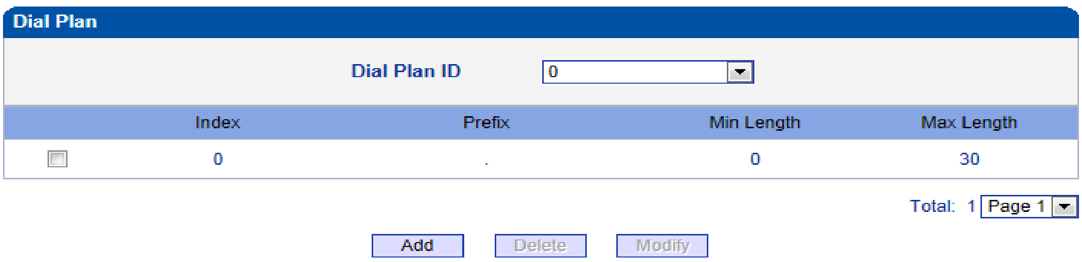


Figure 2-8-3 Dial Plan

Dial plan used for configuring the receiving number, user can configure different prefix number, these rules can be divided into 5 groups with a dial plan ID, where 0 is the default setting.

Notes:

1. In order to ensure each rule can take effect, long matching numbers (prefix) rule dial plan index value need smaller.
2. Maximum length is 30, this value is the number of the total length and including the prefix length.

Click "Add" to add dial plan, configuration page as follow:

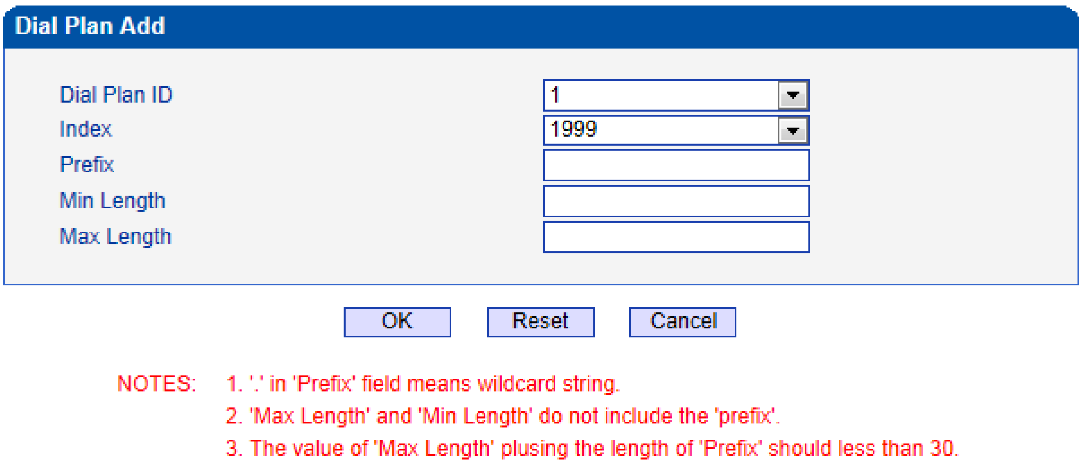


Figure 2-8-4 Dial Plan Add

Dial Plan description

Dial Plan ID	The number to identify a dial plan
Index	Dial plan priority rules take effect in accordance with dial plan index size, and not according to the maximum number received.
Prefix	Match number, "." representative of any number
Min Length	The minimum receiving Number length (0 to 30). If receiving a number equal to the minimum length greater than, less than equal to the maximum length, the number will be used to continue the call. If the maximum length determine the number to receive a complete, will no longer receive a new number, and immediately began to number analysis. If there are numbers continue to be received, the system will give up these numbers.
Max Length	The largest received number length (0 to 30)

special version:

1. Dial plan can be backup and restore in management configuration.
2. "Min Length" and "Max Length" are equal to the total number of possible length minus the prefix length.

3. When overlap dialing, called number length sure, and then the “Min Length” and “Max Length” will

be set to the same value to accelerate connection rate.

4. Prefix configuration, compatible “digit map” mode.

2.8.4 Dial Timeout

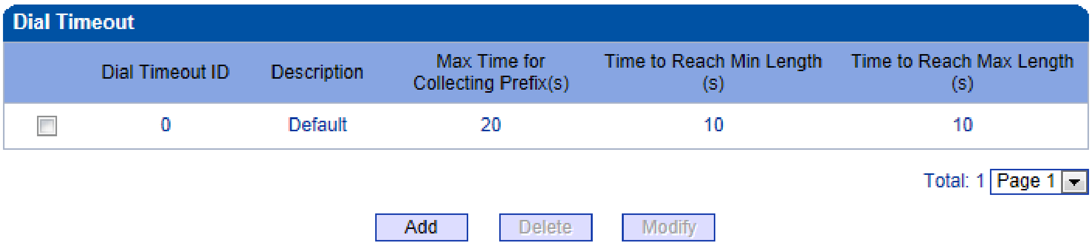


Figure 2-8-5 Dial Timeout

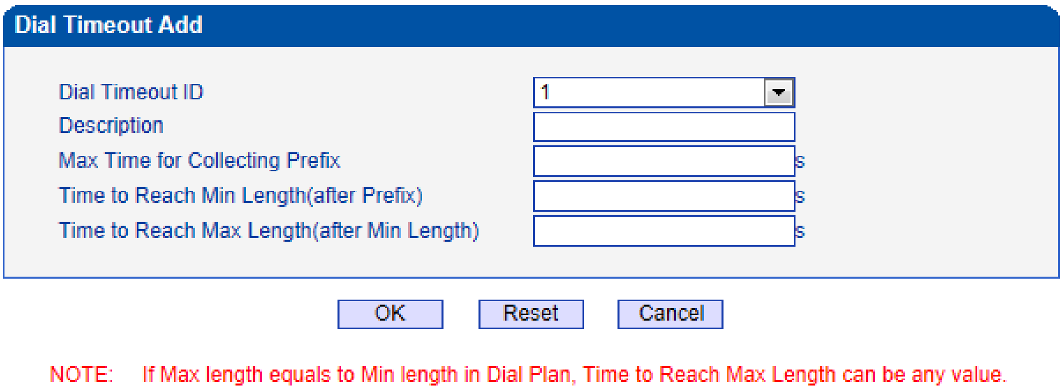


Figure 2-8-6 Dial Timeout Add

Dial timeout description

Dial Time ID	The number to identify a dial timeout rule
Description	Description of dial timeout
Max Time for Collecting Prefix	Generally refer to the time from user dial first digit to harvest in prefix number.
Time to Reach Min Length(after Prefix)	After receiving prefix number, the number has not yet reached the length of the minimum receiving number, the length of timeout
Time to Reach Max Length(after Min Length)	After receiving number, the number has reached the minimum length, but not reached the maximum length of the dial timeout

2.8.5 PSTN Profile

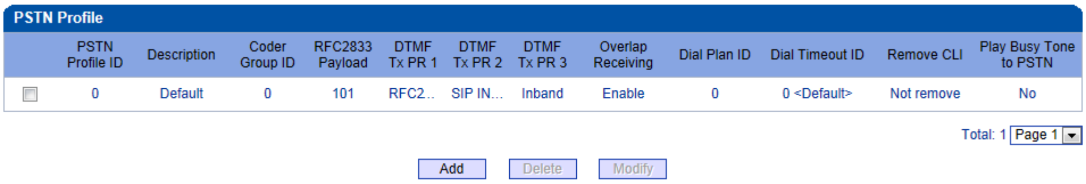


Figure 2-8-7 PSTN Profile

PSTN profile is used to configure PSTN call number rules and parameter.

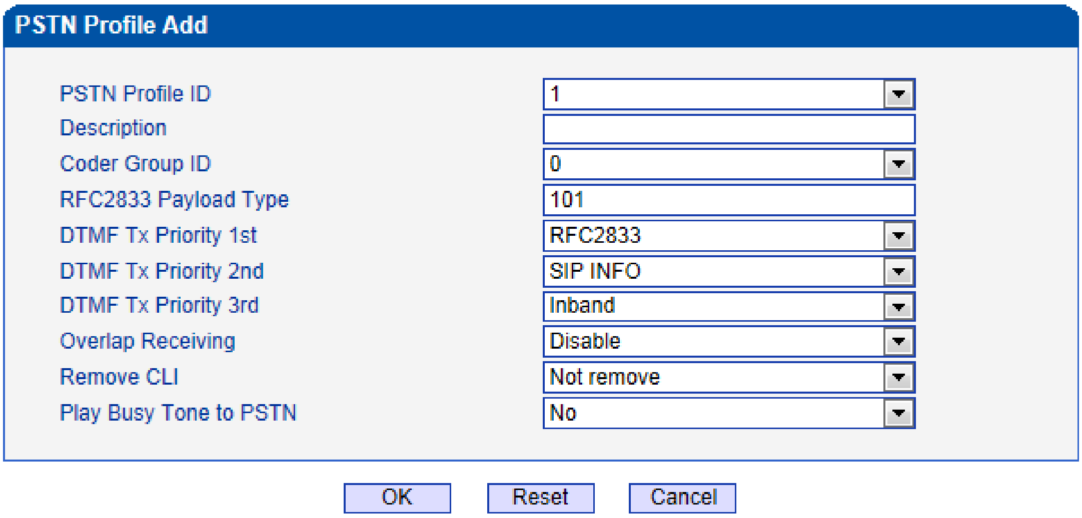


Figure 2-8-8 PSTN Profile Add

PSTN profile add description

PSTN Profile ID	The number to the PSTN Profile
Description	Description of the PSTN Profile
Code Group ID	Refer to "Coder Group"
RFC2833 Payload Type	The item is 101 by default.
$1^{st}/2^{nd}/3^{rd}$ Tx DTMF Option	There are three ways to send DTMF: RFC2833/SIP INFO/ INBAND, in accordance with the priority choice to send the configuration mode
Overlap Receiving	Not enabled by default, only user enables this feature, “Dial plan” and “Dial timeout” would work.
Remove CLI	Default does not remove CLI
Play busytone to PSTN	Equipment will play busy tone from IP to PSTN
PSTN Profile ID	The number to the PSTN Profile
Description	Description of the PSTN Profile

2.8.6 PSTN Group

PSTN group configuration can be different E1/T1ports or the same port in different time slots to form a PSTN trunk group based on different channel selection.

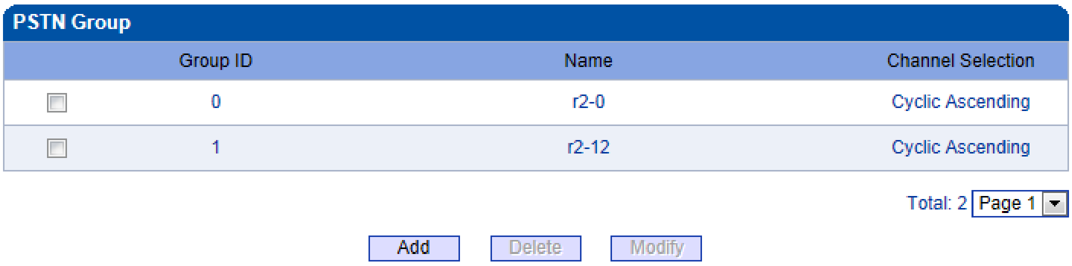


Figure 2-8-9 PSTN Group

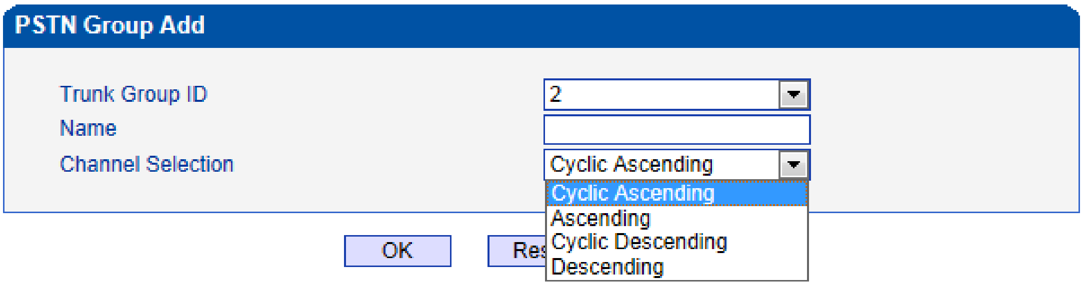


Figure 2-7-10 PSTN Group Add

Adding PSTN group needs to fill three parameters: trunk group Numbers, trunk group Name. Channel selection mode and at most, can add up to 16 set of data. Channel selection mode refers to E1/T1 timeslot allocation strategy in a trunk group. There are four options: Ascending, Descending, Cyclic Ascending and Cyclic Descending for routing.

2.8.7 PSTN Group Management

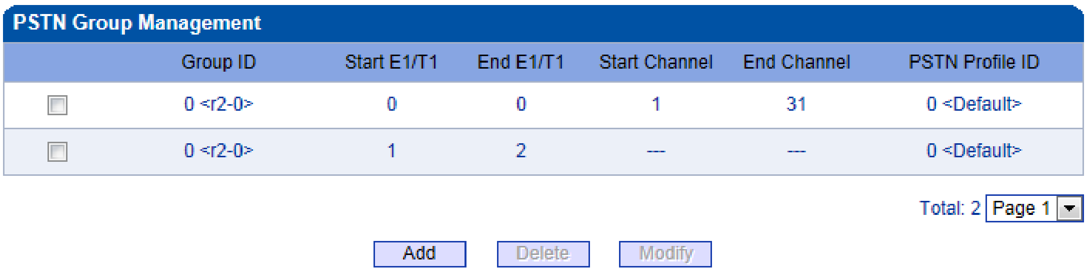


Figure 2-8-11 PSTN Group Management

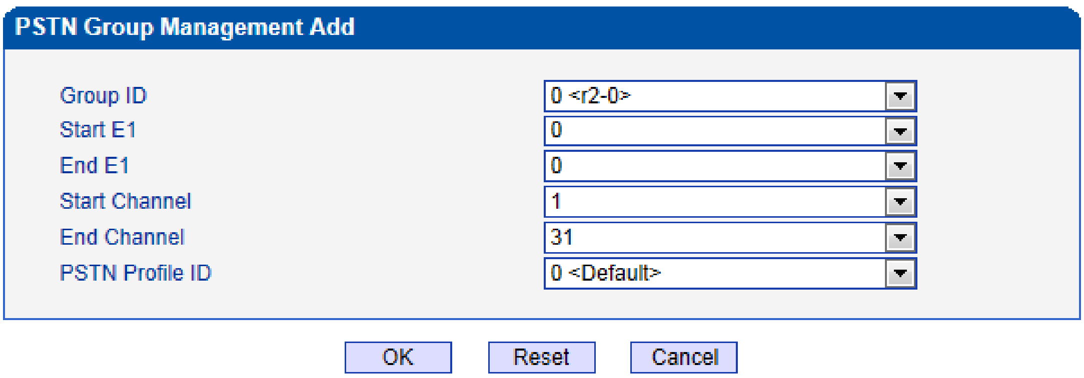


Figure 2-8-12 PSTN Group Management Add

PSTN group management add

Group ID	PSTN group ID
Start E1	E1/T1 trunk group port number in the initial
End E1	Last a E1/T1 trunk group port number
Start Channel	The beginning of time slot, assigned a precise time slot for a group of trunk
End Channel	The end of time slot, assigned a precise time slot for a group of trunk
PSTN Profile ID	Refer to PSTN Profile

When cross E1 port operation, don't choose start/termination of the time.

2.9 SIP Config

2.9.1 SIP Parameter

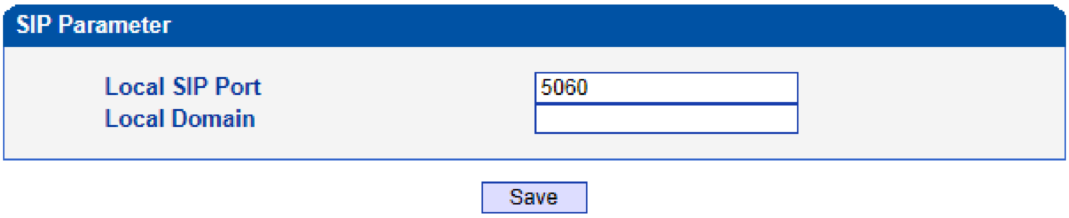


Figure 2-9-1 SIP Parameter

The default Local SIP Port is 5060, and Local Domain set here can replace SIP account.

2.9.2 SIP Trunk

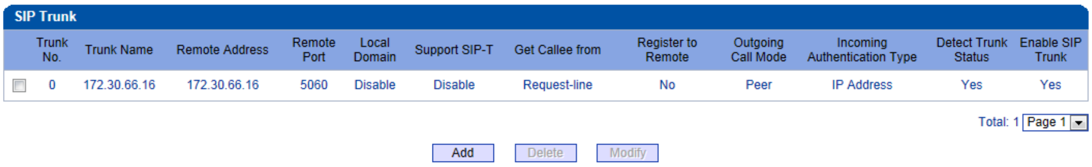


Figure 2-9-2 SIP Trunk

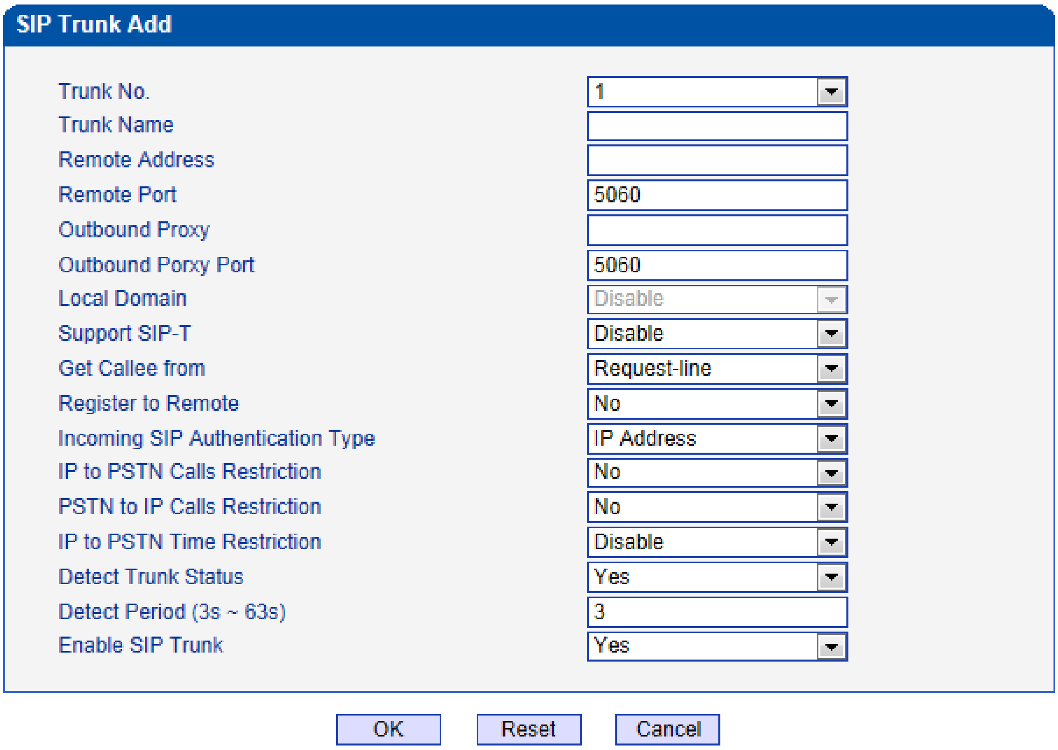


Figure 2-9-3 SIP Trunk Add

SIP trunk description

Trunk No	The range of number is 1~99
Trunk Name	Description the trunk
Remote Address	IP address of remote platform interfacing with this equipment.
Remote Port	Q.931 port of SIP of remote platform interfacing with this equipment, the default is 5060
Outbound Proxy	SIP proxy IP address
Outbound Proxy Port	The default proxy port is 5060.
Local Domain	Refer to SIP parameter
Support SIP-T	Not the target configuration, the parameter is always no. it is for SS7.
Get Callee from	Received the called number from request domain or “To header” filed
Register to Remote	Defined by IETF work group RFC3372, it is a standard used to establish remote communication between SIP and ISUP; the default is “Yes”; if SIP trunk does not support, then set it to “No”.
Incoming SIP Authentication Type	There are two modes: IP address and Password. If user selects “password”, then password will be filled.
IP to PSTN Calls Restriction	IP to PSTN side of the limitation on the number of calls; the range is 0~65535, the default is no limitation; If Yes is selected, then input limitation number of calls in the edit box appeared.
PSTN to IP Calls Restriction	PSTN to IP side of the limitation on the number of calls; the range is 0~65535, the default is no limitation; If Yes is selected, then input limitation number of calls in the edit box appeared.
IP to PSTN Time Restriction	The default setting is disabled. If Enabled is selected, then user can edit the start and stop time of prohibition time interval. Within this time interval, all calls

	from IP to PSTN are prohibited. (Calls from PSTN to IP are not limited)
Detect Trunk Status	Detect the status of SIP trunk. If select it, the equipment will send HEARTBEAT message to peer to make sure the link status is OK.
Enable SIP Trunk	A switch used to enable this SIP trunk or not; user can select "Yes" or "No", when "No" is selected, this SIP trunk is invalid.

2.9.3 SIP Account

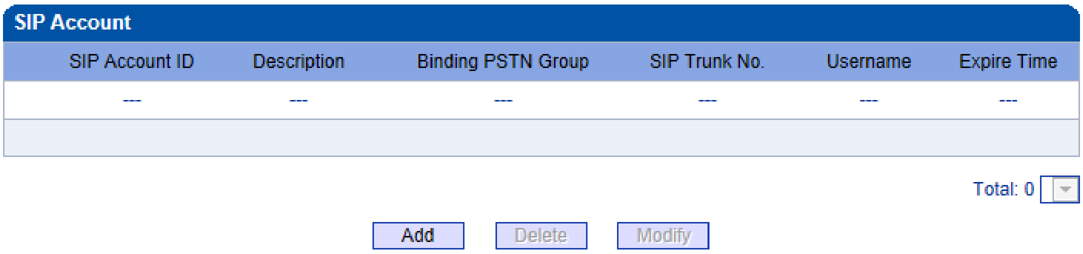


Figure 2-9-4 SIP Account

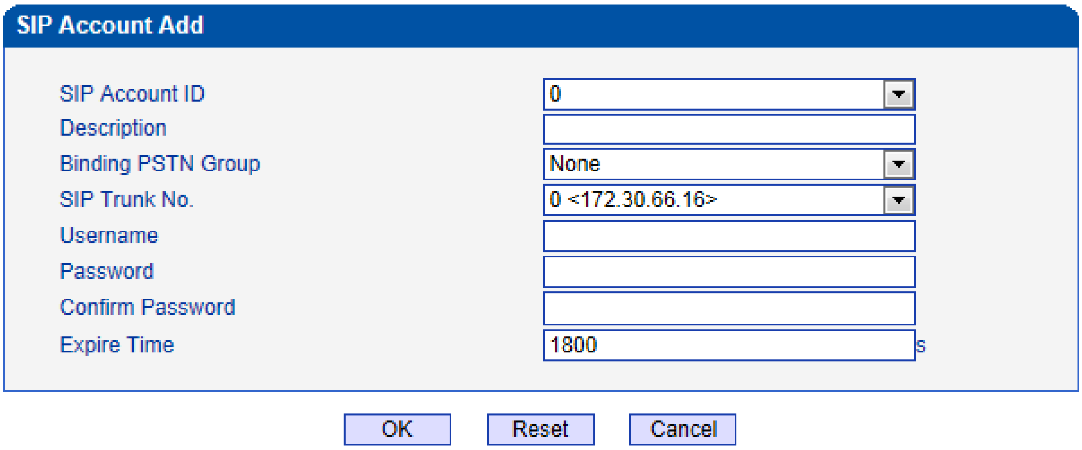


Figure 2-9-5 SIP Account Add

This option is when the equipment is in the registered mode, used to manage SIP trunk account.

SIP trunk account

SIP Account ID	SIP Account Number, from 0-127
Description	Description of the SIP account
Binding PSTN Group	IP trunk group number, "any" indicates any trunk group
SIP Trunk No	The corresponding number and name of the SIP trunk
Username	SIP registration user name, the same SIP trunk can configure multiple SIP accounts, corresponding to different trunk group ID
Password	Registered password
Confirm Password	Enter the password again.
Expire Time	SIP registration interval, default is 1800s

2.10 IP Group Config

The user can group manage SIP/H.323 trunk through IP packet configuration.

2.10.1 IP Profile

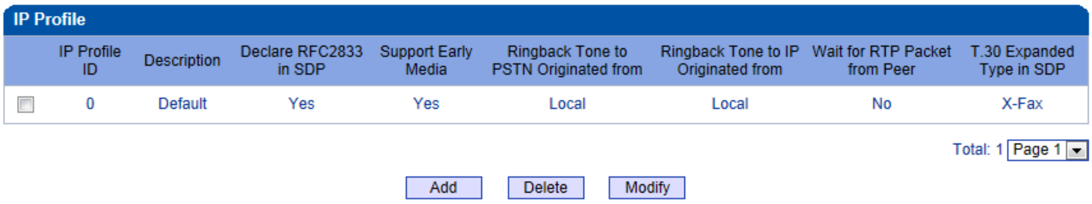


Figure 2-10-1 IP Profile

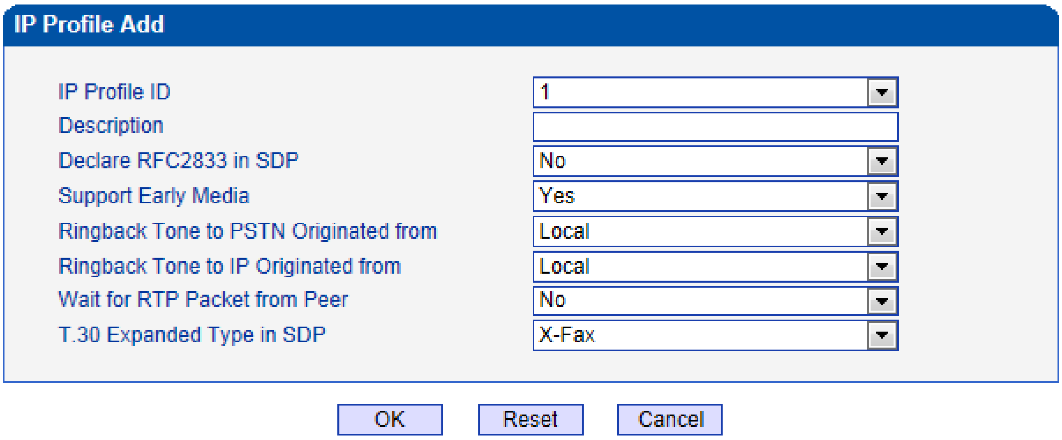


Figure 2-10-2 IP Profile Add

IP profile add

IP Profile ID	IP property identification number can be configured to 15 properties
Description	Description of the IP Profile
Declare RFC2833 in SDP	Default support
Support Early Media	Whether support Early Media(183). If select "Yes", the called side to the early media to provide ring back tone to the caller.
Ring back Tone to PSTN Originated from	IP-> PSTN call ring back tone player side, if setting to local, it will play from the equipment. If setting to IP , it will play by the called
Ring back Tone to IP Originated from	PSTN->IP call ring back tone player side, if setting to local, it will play from the equipment and set to PSTN, it will play by the called
Wait for RTP Packet from Peer	If set to No, it will auto send RTP packets during the call and if set to Yes, it will wait the RTP packet was sent by the back side first ,then send out RTP packets
T.30 Expanded Type in SDP	T30 extended types in SDP: x-fax or fax

2.10.2 IP Group

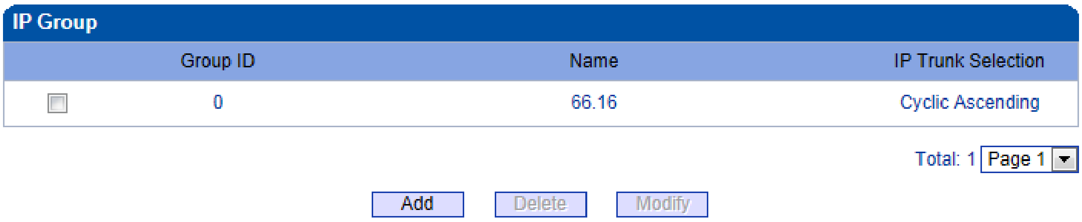


Figure 2-10-3 IP Group

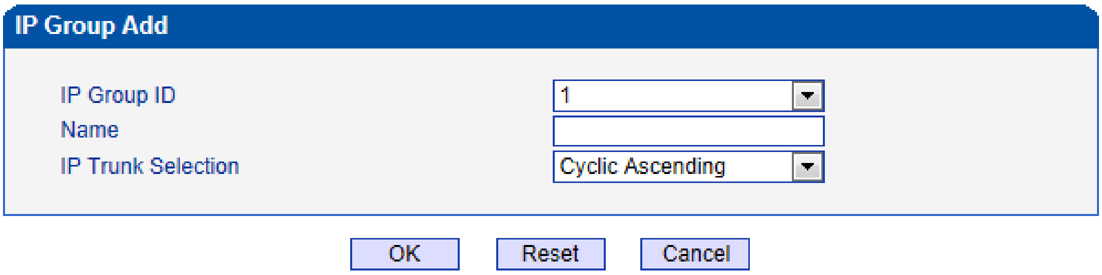


Figure 2-10-4 IP Group Add

Add the IP group including the IP group ID, IP group name, IP trunk selection. User can add a total of 16 IP group. IP routing mod is to show in an IP group SIP time distribution strategy. There are four options: Ascending, Descending, Cyclic ascending, Cyclic descending. (According to SIP trunk number to choice)

2.10.3 IP Group Management

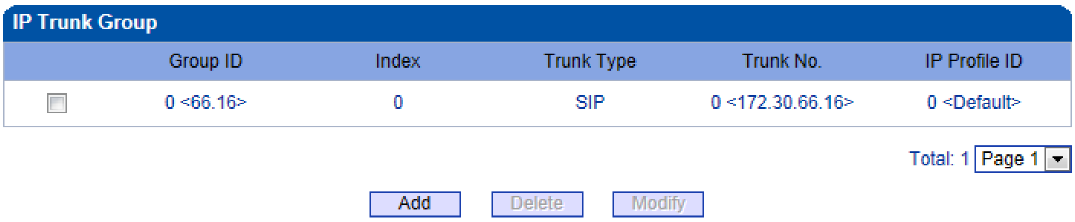


Figure 2-10-5 IP Trunk Group

IP trunk group description

Group ID	IP group ID
Index	The priority value of 0-15
Trunk Type	Currently only supports SIP, H.323 will be also supported in future
Trunk No	SIP trunk number
IP Profile ID	Refer to IP Profile

2.11 Call Routing

2.11.1 Routing Parameter

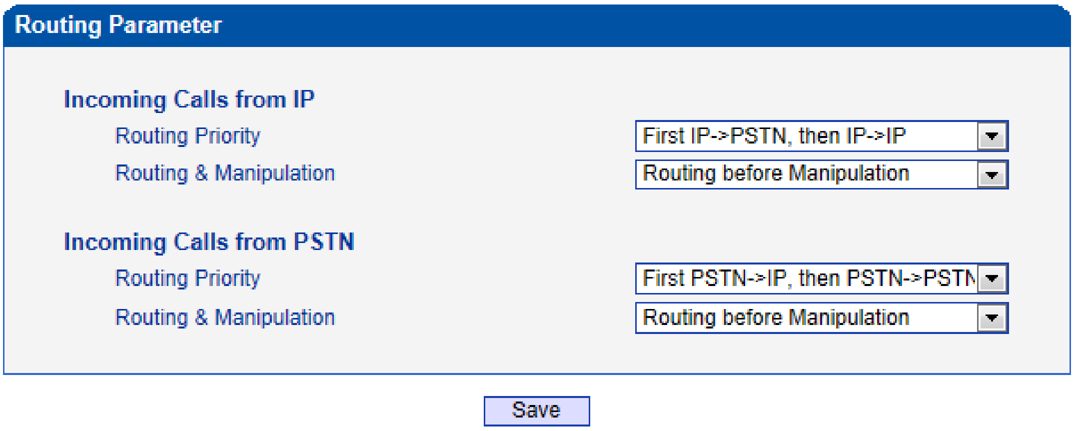


Figure 2-11-1 Routing Parameter

Inbound and outbound call routing configuration

The key steps how to Configure routing：

The more accurate routing configuration, index values should be smaller.

“Any” and "." are useful; suggesting configuration, to avoid cannot match the routing.

2.11.2 PSTN->IP Routing

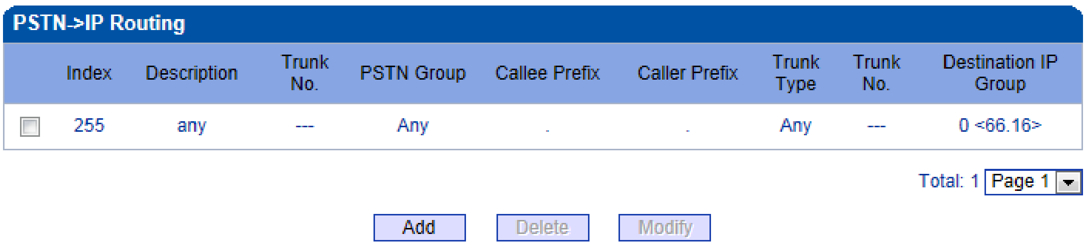


Figure 2-11-2 PSTN->IP Routing

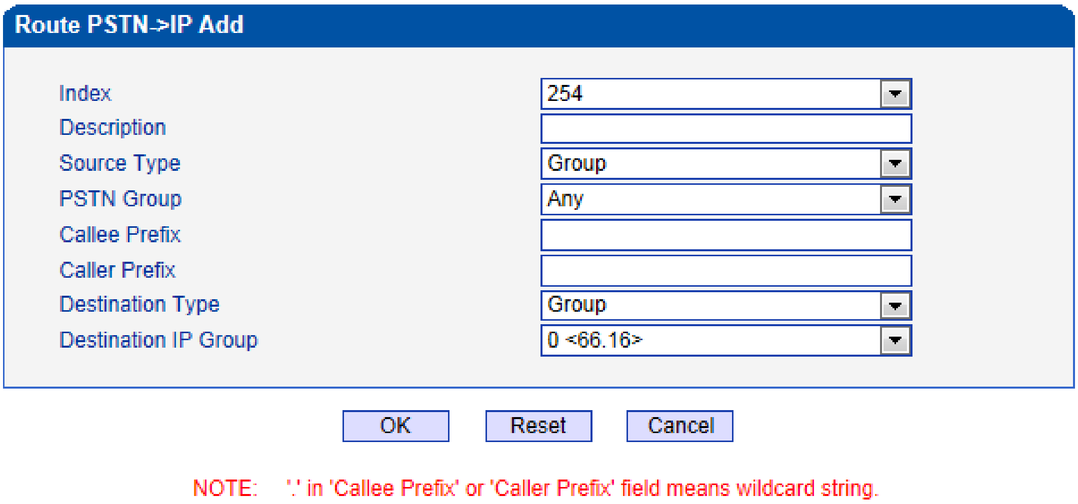


Figure 2-11-3 PSTN->IP Add

"PSTN -> IP Routing"： Routing Call from PSTN to IP

PSTN->IP routing description

Index	Routing index number (0 ~ 255) , "PSTN->IP Routing" priority rule is according to the index to set. Reference dial plan.
Description	Describe the routing
Source Type	Source type is PSTN group or PRI/SS7 trunk.
PSTN Group	Refer to "PSTN Group Config", any means any trunk group.
Callee Prefix	Callee number matches prefix number, "." Is a wildcard, representing any callee number
Caller Prefix	Caller number matches prefix number, "." Is a wildcard, representing any caller number
Destination Type	Destination type is IP group or SIP/H.323 trunk.
Destination IP Group	Refer to "IP Group"
Trunk Type	Trunk type means IP side trunk type-SIP/H.323.
Trunk No.	Trunk number

2.11.3 PSTN->PSTN Routing

Figure 2-11-4 PSTN->PSTN Routing

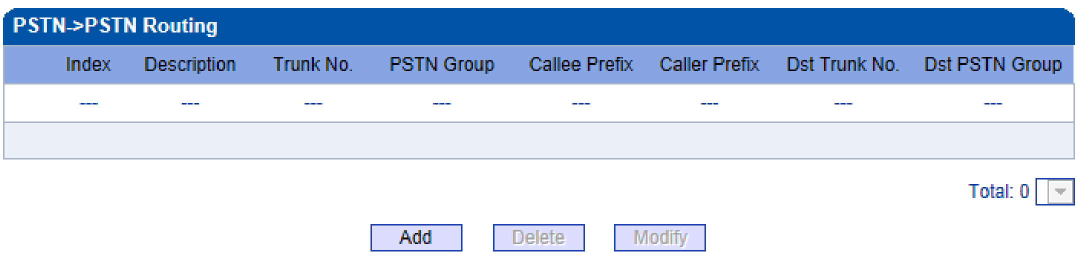
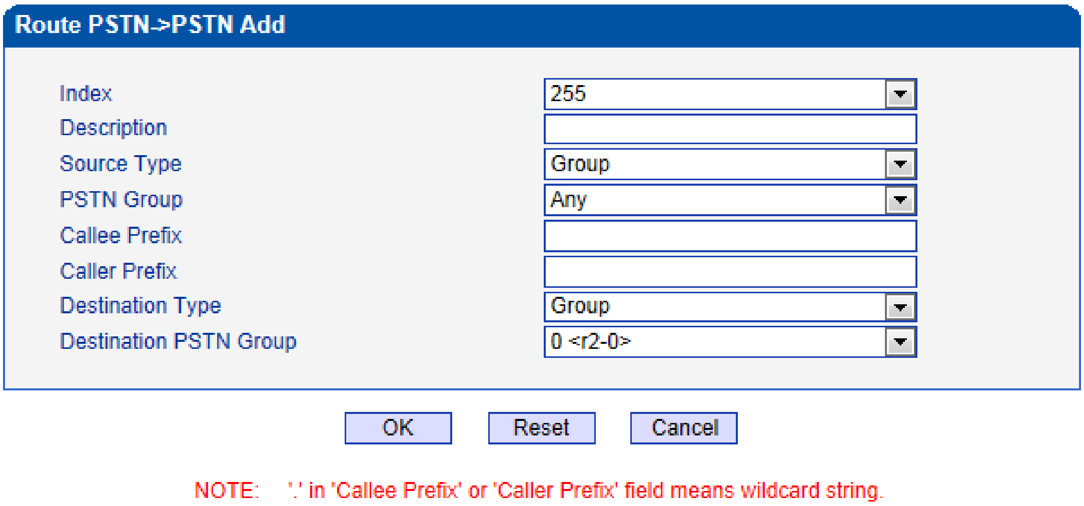


Figure 2-11-5 PSTN->PSTN Add



"PSTN->PSTN Routing"：Routing Call from PSTN to PSTN

PSTN->PSTN Routing

Index	Routing index number (0 ~ 255) , "PSTN->IP Routing" priority rule is according to the index to set. Reference dial plan.
Description	Describe the routing
Source Type	Source type is PSTN group or PRI/SS7 trunk.
PSTN Group	Refer to "PSTN Group Config", any means any trunk group.
PSTN Trunk	Reference "PRI Trunk" or "SS7 Trunk"
Callee Prefix	Callee number matches prefix number, "." Is a wildcard, representing any callee number
Caller Prefix	Caller number matches prefix number, "." Is a wildcard, representing any caller number
Destination Type	Destination type is PSTN group or SIP/H.323 trunk.
Destination PSTN Group	Refer to "PSTN Group Config"

2.11.4 IP->PSTN Routing

Figure 2-11-6 IP->PSTN Routing

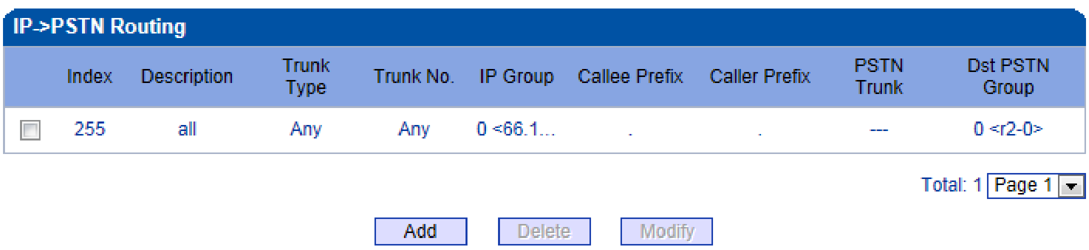
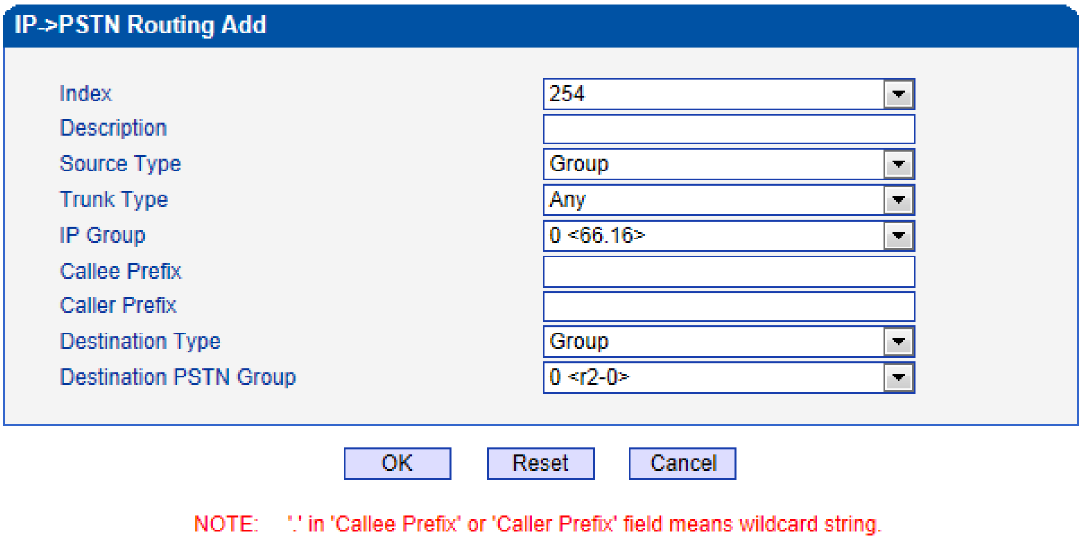


Figure 2-11-7 IP->PSTN Routing



"IP -> PSTN Routing"： Routing Call from IP to PSTN

IP->PSTN routing configuration and PSTN->PSTN routing configuration are similar, the only difference is PSTN destination group.

2.11.5 IP->IP Routing

Figure 2-11-8 IP->IP Routing

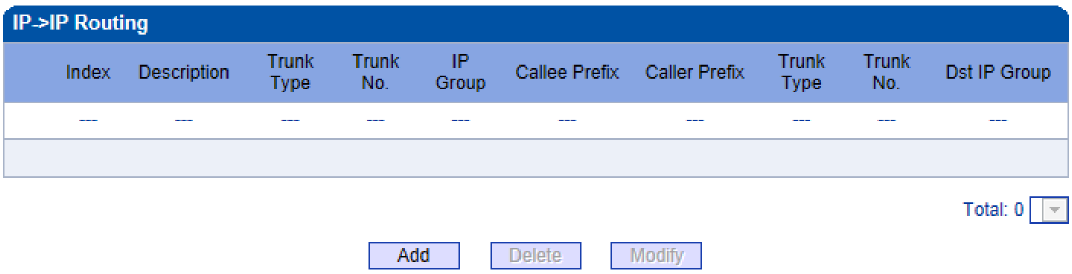
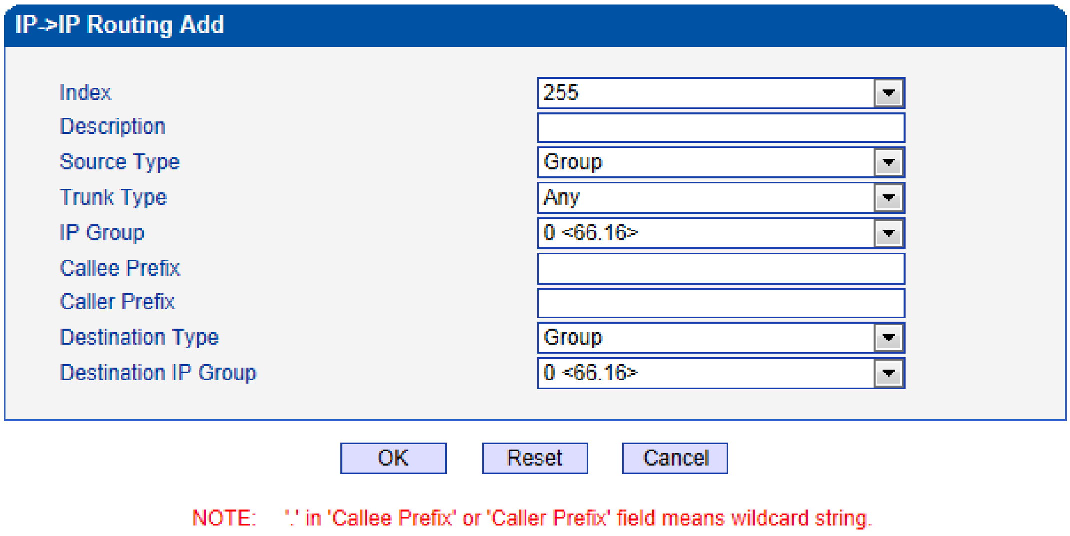


Figure 2-11-9 IP->IP Add

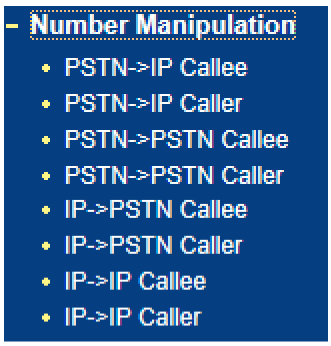


IP->IP routing configuration and PSTN->IP configuration are similar. The only difference is that the destination is the IP group.

2.12 Number Manipulation

Select “Number Manipulation” in navigation tree, the display interface is shown as below:

Figure 2-12-1 Number Manipulation



"Number Manipulation” is used to replace numbers. User can replace and remove the inbound and outbound calling / called number.

Notes:

1. The more precise configuration, index values should be smaller.
2. Suggesting configure “Any” and “.”, avoid missing the call for the replace number。
3. When configuring data, it is suggested that index starts from large index value, to avoid adding an exact match data, not directly use the data.
4. When configuring data, it is suggested that keep using index value.

2.12.1 PSTN->IP Callee

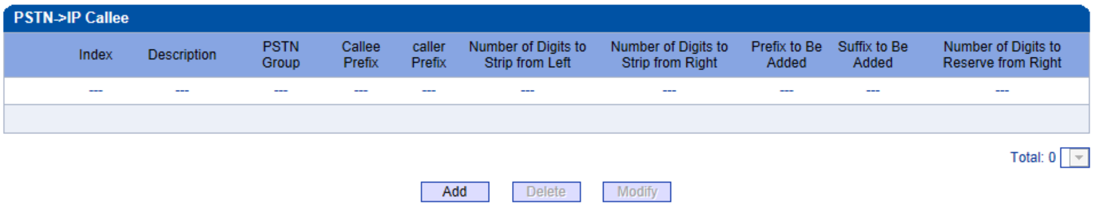


Figure 2-12-2 PSTN->IP Callee

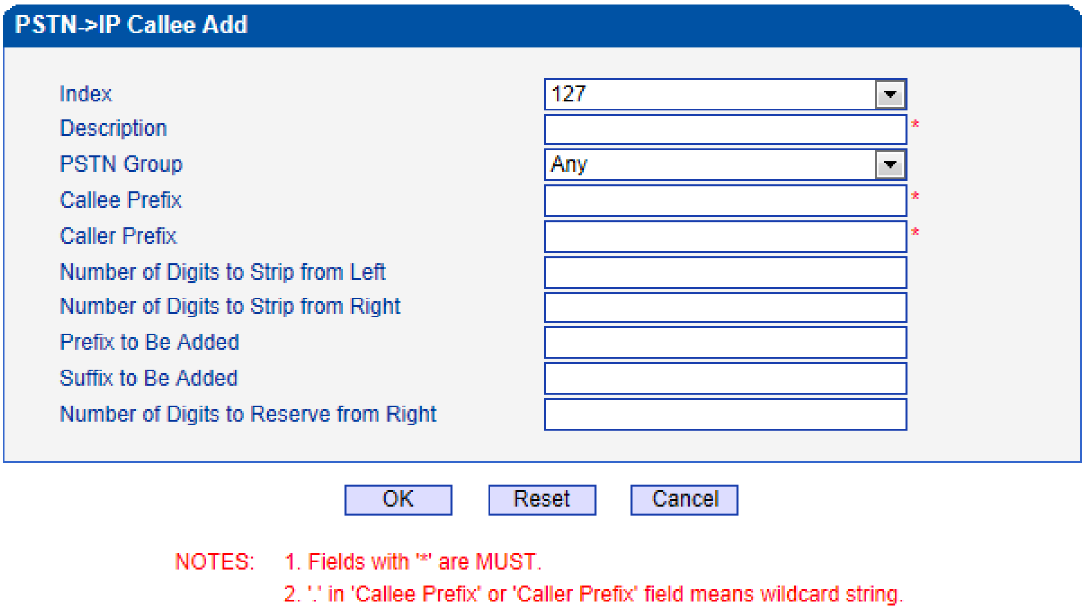


Figure 2-12-3 PSTN->IP Callee Add

"PSTN->IP Callee"：Replace the called number from PSTN

PSTN->IP destination number

Index	Index number (0 ~ 127)
Description	Describe the transformation of the number
PSTN Group	Refer to "PSTN Group", "any" means any trunk group
Callee Prefix	Called number prefix, "." mean any called number
Caller Prefix	Caller number prefix, "." Mean any caller number
Number of Digits to Strip from left	Remove the called number digits from the left
Number of Digits to Strip from right	Remove the called number digits from the right
Prefix to be Add	Add a called number prefix
Suffix to be Add	Add a called number suffix
Number of Digits to Reserve from Right	Starting from the right to retain the called number digits

2.12.2 PSTN->IP Caller

PSTN->IP Caller

Index	Description	PSTN Group	Callee Prefix	Caller Prefix	Number of Digits to Strip from Left	Number of Digits to Strip from Right	Prefix to Be Added	Suffix to Be Added	Number of Digits to Reserve from Right
---	---	---	---	---	---	---	---	---	---

Total: 0

Add Delete Modify

Figure 2-12-4 PSTN->IP Caller

PSTN->IP Caller Add

Index	127
Description	*
PSTN Group	Any
Callee Prefix	*
Caller Prefix	*
Number of Digits to Strip from Left	
Number of Digits to Strip from Right	
Prefix to Be Added	
Suffix to Be Added	
Number of Digits to Reserve from Right	

OK Reset Cancel

NOTES: 1. Fields with '*' are MUST.
2. '.' in 'Callee Prefix' or 'Caller Prefix' field means wildcard string.

Figure 2-12-5 PSTN->IP Caller Add

PSTN->IP Callee configuration parameters and IP->PSTN Caller configuration parameters are the same.

PSTN->PSTN Callee

Index	Description	PSTN Group	Callee Prefix	Caller Prefix	Number of Digits to Strip from Left	Number of Digits to Strip from Right	Prefix to Be Added	Suffix to Be Added	Number of Digits to Reserve from Right	Number Type
---	---	---	---	---	---	---	---	---	---	---

Total: 0

Add Delete Modify

Figure 2-12-6 PSTN->PSTN Callee

PSTN->PSTN Callee configuration parameters with the above is basically same, only more of a “number type” parameter. Common number types are: Not Configured, Unknown, International, National, Network Specific, Subscriber, Abbreviated.

PSTN->PSTN Caller

Index	Description	PSTN Group	Callee Prefix	Caller Prefix	Number of Digits to Strip from Left	Number of Digits to Strip from Right	Prefix to Be Added	Suffix to Be Added	Number of Digits to Reserve from Right	Number Type	Presentation Indicator
---	---	---	---	---	---	---	---	---	---	---	---

Total: 0

Add Delete Modify

Figure 2-12-7 PSTN->PSTN Caller

"Presentation indicator" parameter used to indicate the status of the operation.

The operation of the option the right are: Not configured, Allowed, Restricted.

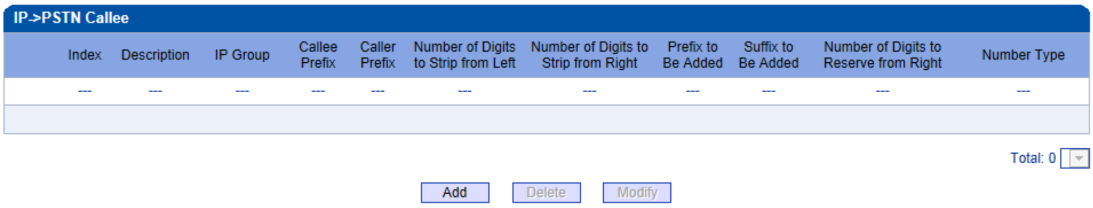


Figure 2-12-8 IP->PSTN Callee

IP->PSTN callee description

Index	Index number (0 ~ 127)
Description	Describe the transformation of the number
IP Group	Refer to "IP Group", "any" means any trunk group
Callee Prefix	Called number prefix, "." means any called number
Caller Prefix	Caller number prefix, "." Means any caller number
Number of Digits to Strip from left	Remove the called number digits from the left
Number of Digits to Strip from right	Remove the called number digits from the right
Prefix to be Add	Add a called number prefix
Suffix to be Add	Add a called number suffix
Number of Digits to Reserve from Right	Starting from the right to retain the called number digits
Number Type	Common number types are: Not Configured, Unknown, International, National, Network Specific, Subscriber and Abbreviated.

"IP->PSTN Caller", "IP->IP Callee", "IP->IP Caller" configuration parameters in the previous number manipulation rules have been mentioned, please refer that section.

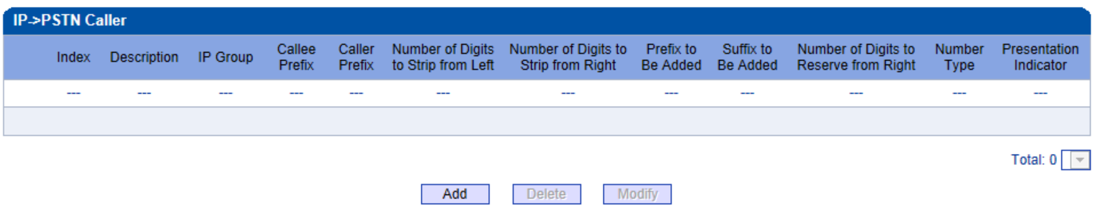


Figure 2-12-9 IP->PSTN Caller

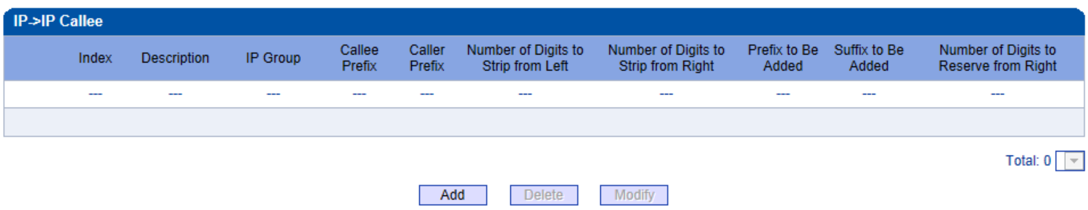


Figure 2-12-10 IP->IP Callee

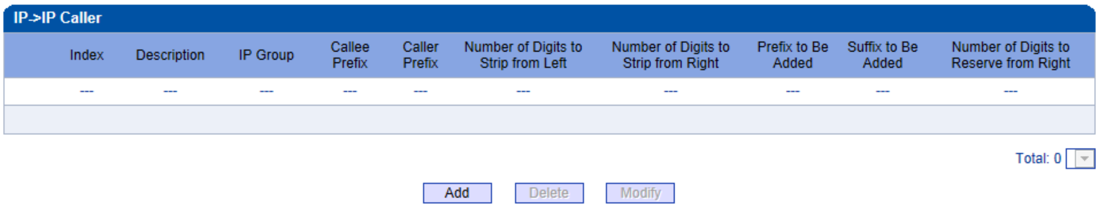


Figure 2-12-11 IP->IP Caller

2.13 Voice & Fax

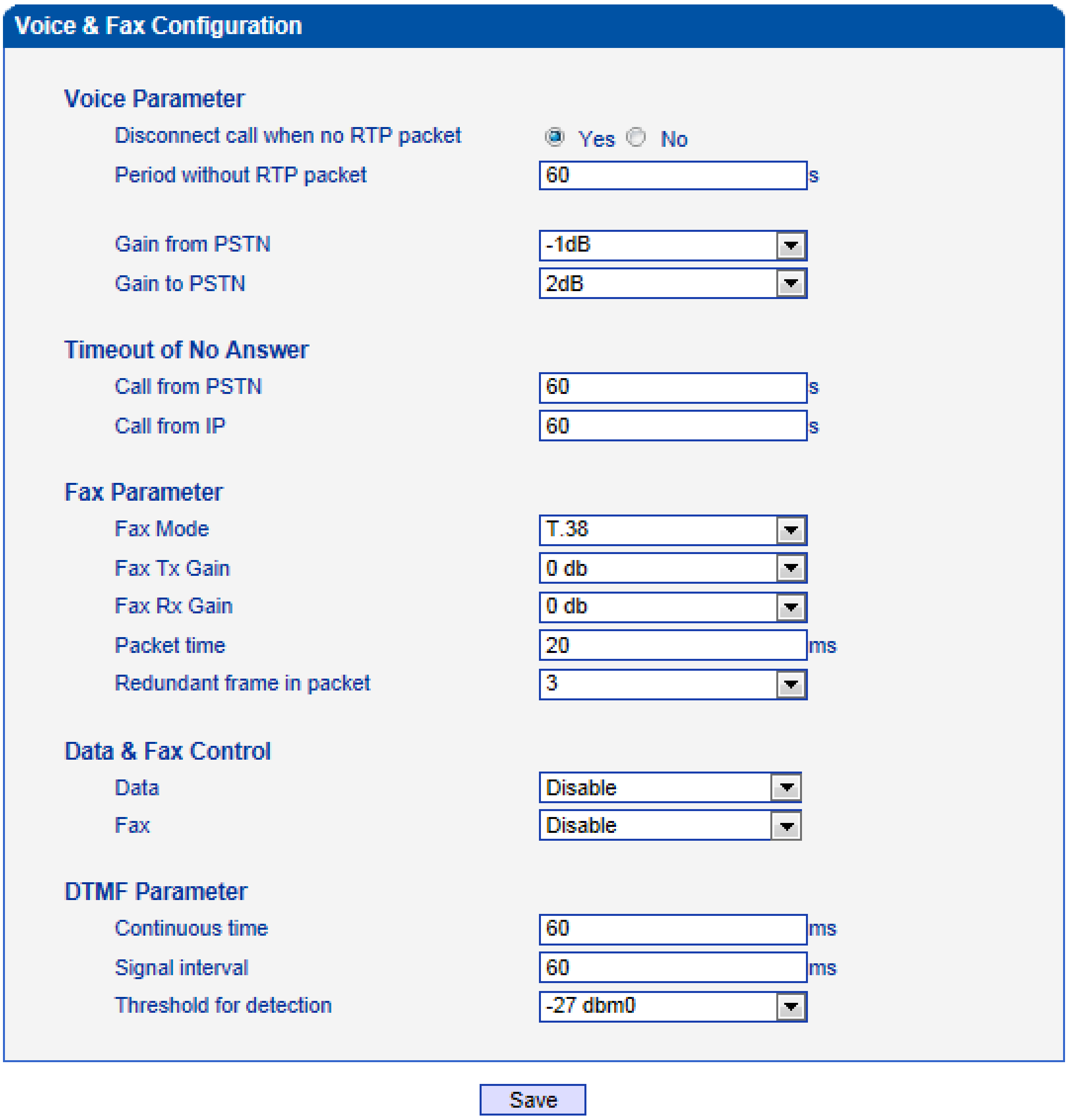


Figure 2-13-1 Voice & Fax

Voice & Fax description

Voice Parameter	Disconnect Call when no RTP packet	When selected “Yes”, detected call’s silence time longer than silence timeout that for a long time not received RTP packets, then hangup the call.
	Period without RTP packet	The maximum time length of silence
	PSTN in Gain	Incoming PSNT gain
	IP in Gain	Incoming IP gain
Timeout of no answer	Call from PSTN	Call timeout of no answer from PSTN
	Call from IP	Call timeout of no answer from IP
Fax Parameter	Fax Mode	Two modes are provided: T.38/Pass-through; default option is T.38.
	Fax Tx Gain	Gain of sending a fax
	Fax Rx Gain	Gain of receiving a fax
	Packet time	Data packing duration
	Redundant frame in packet	The length of frame in RTP packet
Data & Fax Control	Data	Whether to allow the control of voice data
	Fax	Whether to allow the control of fax
DTMF Parameter	Continuous time	The level of a frequency duration
	Signal interval	The time interval between two different frequency signals
	Threshold for detection	Frequency detection threshold

2.14 Management Parameter

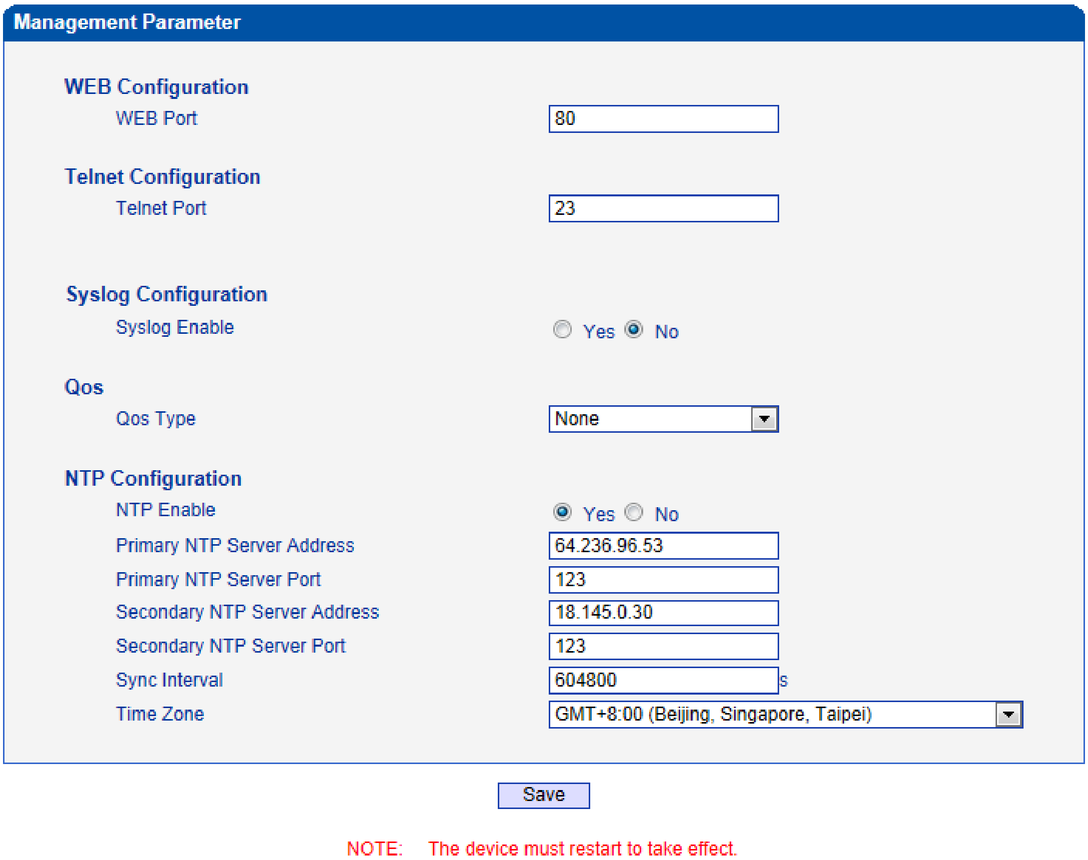


Figure 2-14-1 Management Parameter

Management parameter description

WEB Port	Listening port of local WEB service, the default is 80.
Telnet Port	Listening port of local Telnet service, the default is 23.
Syslog Enable	The default is "No".
Server Address	Address for saving system log
Syslog Level	None, Debug, Notice, Warning, Error
Send CDR	Whether send Call Detail Record
Qos Type	There are three options: none, TOS and DS. TOS only supports IPv4.
NTP Enable	Simple Network Management Protocol is enabled or not; the default is Yes.
Primary NTP server Address	The Primary IP address of SNMP management host computer. The host computer of the IP address will carry out monitoring and management to equipment.
Primary NTP server Port	The port that managed device provides trap message (it is generally alarm message) to SNMP management host computer, the default is 123.
Secondary NTP server Address	The Secondary IP address of SNMP
Sync Interval	Time interval of check
Time Zone	The time zone of local

2.14.2 SNMP Parameter

Simple Network Management Protocol (SNMP) is application layer protocol, and used to manage communication line. This equipment supported three versions: V1, V2C and V3. In addition to V3 version, the other two versions do not support encryption. However, the service is usually located on the edge of the network devices, security risk, it is best to disable, to be used again.

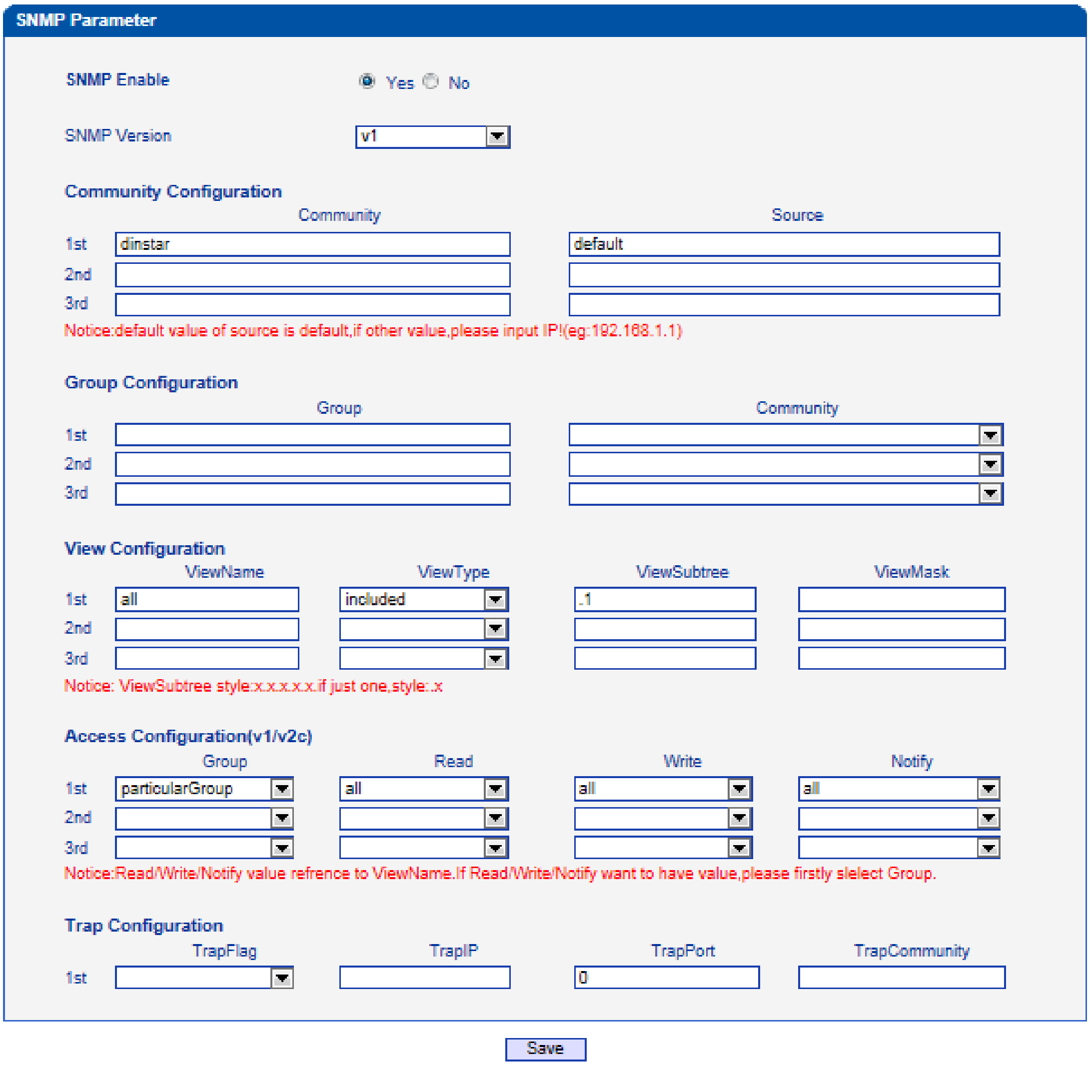


Figure 2-14-3 SNMP Parameter

SNMP Parameter description

Community Configuration	Community	The name of network management server managed equipment
	Source	Network management server address
Group Configuration	Group	Name of community group, different versions can use a same group name
	Community	Community join the group
View Configuration	View name	The name of description mib tree

	View type	There are Included and excluded options
	View subtree	Displayed OID of access parameters
	View mask	The same with equipment subnet mask. Generally don't configure
Access Configuration(V1, V2c)	Group	Joined community groups
	Read	Read parameters of mib view
	Write	Write parameters of mib view
	Notify	Equipment send notify parameters to NM server
Trap Configuration	Trap Flag	Version of SNMP
	Trap IP	Device to inform the NM server's IP address. The IP can be configured the same with source IP in community, also be different.
	Trap Port	Default service port is 162
	Trap Community	The same with "community" in community configuration

Note: After configuration, please restart equipment to take effect.

Users can manage and configure gateway on remote NM server through SNMP configuration. But in order to security, recommend this option to open when needed.

2.14.3 Data Backup

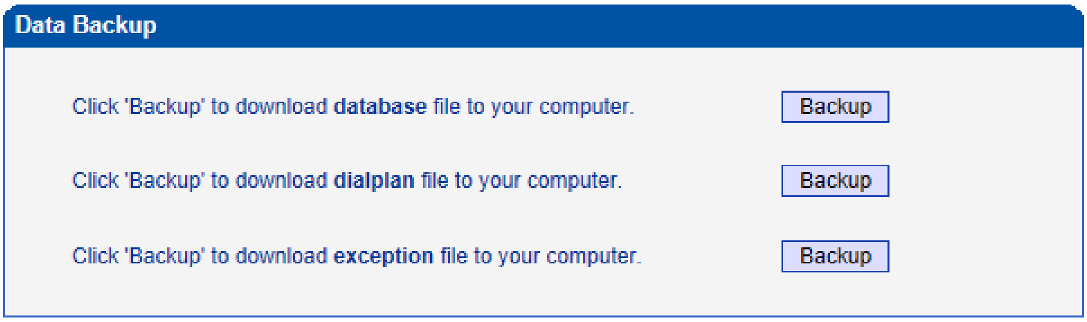


Figure 2-14-4 Data Backup

Database and dial rules will be saved to the local computer system logs through data backup.

2.14.4 Data Restore

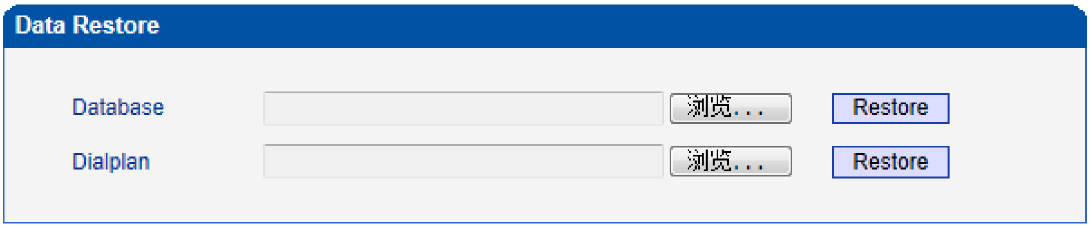
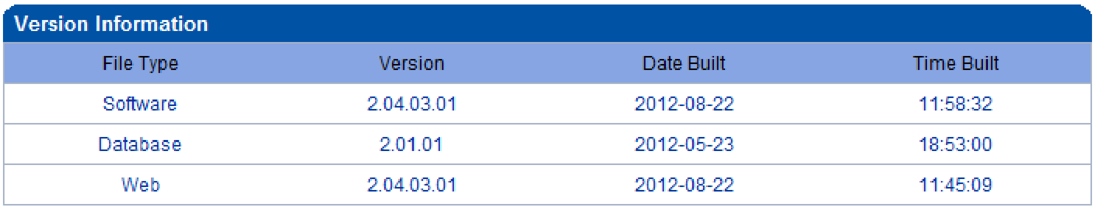


Figure 2-14-5 Data Restore

Data restore description

Database	Click "Browse" to select the Database file, and then click "Restore".
Dial plan	Click "Browse" to select the Dial plan file, and then click "Restore".

2.14.5 Version Information



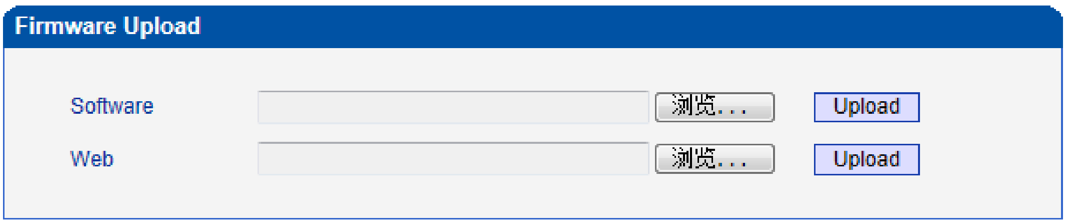
Version Information

File Type	Version	Date Built	Time Built
Software	2.04.03.01	2012-08-22	11:58:32
Database	2.01.01	2012-05-23	18:53:00
Web	2.04.03.01	2012-08-22	11:45:09

Figure 2-14-6 Version Information

Version information description version and built time of program, database and web file.

2.14.6 Firmware Upload



NOTE: The device must restart to take effect after uploading.

Figure 2-14-7 Firmware Upload

Firmware upload description

Software	Click "Browse" to select the firmware, and then click "Upload".
Web	Click "Browse" to select the Web software, and then click "Upload".

2.14.7 Modify Password

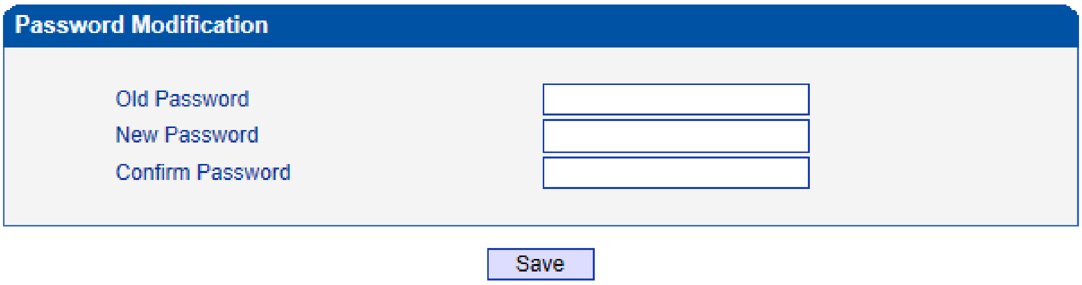


Figure 2-14-8 Modify Password

After entering configuration page, please modify password to ensure the system security.

2.14.8 Restart Device

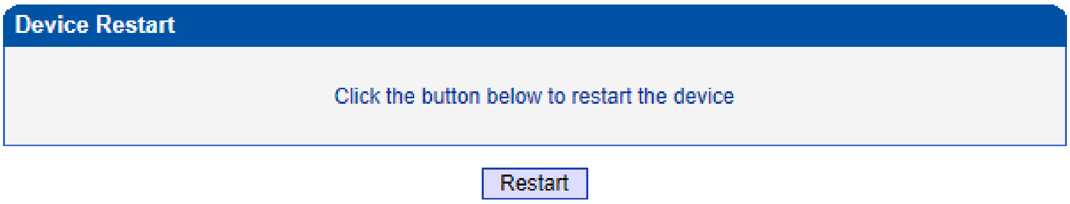


Figure 2-14-9 Restart Device

If user click Restart, a message ("Are you sure?") will be popped up, and then click OK.

3. FAQ

3.1 How to get the IP address if user modified or forgot the default IP?

There are one way to get the IP address:

1) Connect the CONSOLE with your PC Serial Port. The baud rate is 115200 bps. The user name and password is "admin". When users logged in system, and then run command "show int" for getting the IP.

   Please refer to http://www.dinstar.com/service/faq_145.aspx

3.2 If meet other questions, please from Dinstar website and download trouble shootingV4.0.URL is: http://www.dinstar.com/service/Training.aspx

4. Glossary

PRI: Primary rate interface

ISUP: ISDN User Part. It is part of the Signaling System #7 which is used to set up telephone calls in Public Switched Telephone Networks;

TUP: Telephone User Part (TUP) provides the signaling backbone between switching elements for basic call establishment, supervision, and release of circuit switched network connections for telecommunications services;

FMC: Fixed Mobile Convergence

SIP: Session Initiation Protocol

DTMF: Dual Tone Multi Frequency

SNMP: simple network management protocol

PSTN：Public Switched Telephone Network

STUN: Simple Traversal of UDP over NAT

IVR: Interactive Voice Response

RTP: Real-Time Transport Protocol

ISDN: Integrated Services Digital Network

NTP: Network Time Protocol