Telpo FXS+FXO Voice Gateway User Manual

Revision Date	2017-09-07
Version number	V1.2

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Welcome to Use

Introduction

Thanks for purchasing our integrated access device (voice gateway). Make sure you have read this manual before use.
Applicable device’ s model:

Telpo TP Series TP-8S8O/TP-16S16O

Matters related to readers

This manual is suitable for

- Project planner
- Equipment opener
- Equipment maintenance personnel

Before consulting the manual, readers need to well know

- NGN/IMS technology
- TCP/IP Agreement
- Ethernet Technology

Form 1 Prompts

Icon	Reminding Type	Reminders
	Reminding	It means the important traits or operation guidance
	Attention	It means it may do harm to people, or cause damage to the system, or the business data to be disconnected or lost.
	Warning	It means it can lead people to be injured seriously.

Operation Safety Rules

- It is necessary to inspect the related power cables on a regular basis because overloaded power sockets or broken lines and connectors all are likely to trigger electric shock or fire. Please replace it immediately if there is any damage on surface.

- Make sure to use the power adapter equipped with the device. Otherwise, it will damage the device or make it operate abnormally.

- Install the product in the place where is well-ventilated, and has no high temperature and sunlight, to prevent it and other relevant components from being broken down due to overheat.

- Make communication devices avoid moisture and water. Or else, the device will operate abnormally, or even provoke other dangers for short current.

- Do not put the device on an unstable upholder.

Declaration

Without our permission, it is prohibited to reproduce or reprint any part of this manual. We will not notify you of any alteration of this manual.

Thanks for purchasing our product! Please feel free to give us any criticism and suggestion, we will deem them as the best encouragement and support for our work.

Contents

Chapter I Product Introduction

The chapter focuses on introducing the networking modes and technical specifications of voice gateway

Following are the main contents:

- Product overview
- Product features
- Networking modes
- Technical specifications
- Exterior view

1.1 Product Overview

Telpo TP-8S8O/TP-16S16O voice gateway is a small-sized integrated access device which is researched and developed by our company independently based on the next generation network (NGN). It belongs to the terminal device of NGN access layer. Voice gateway provides the traditional voice businesses and has the functions of data and voice processing. Namely, data packet transfer, simulate voice processing and media stream transporting, as well as support on existing and future new businesses of softswitch network. This series of products are equipped with FXS (telephone interface), FXO (simulate relay interface) and Ethernet interface. Based on the international standard protocol, we supply multiple business accesses to consumers, and can satisfy users for the demands of voice, fax, data and other comprehensive business accesses.

Telpo TP-8S8O/TP-16S16O voice gateway is used widely. It can be installed in many places, such as corridor, house, phone bar and so forth. And it is helpful for a family, phone bar or small-sized company in network, telephone and fax, etc.

1.2 Product Features

1.2.1 Function characteristics

- Support power PSTN failover. When power failure, the telephone (connecting with FXS port) will works when call in through the FXO port.
- Support two telephone numbers in the same telephone. When a telephone connect with FXS, can call in/out by related FXO number, or by IP PBX number.
- Support FXO features, like signal transmission, loop state control, ringing detection, high voltage isolation, caller ID detection.
- Support busy setting, POS, reversal polarity and detection.
- Support company attendant setting
- Support local call transfer
- Support cascading with another two 64FXS voice gateways

- Support rotation group, ring group, user group function
- Multiple communication protocols: it supports session initiation protocol (SIP), has advantages of strong expansibility, good compatibility and the like, and is capable of interacting with all sorts of IMS platforms.
- Perfect business supply ability: It supports distributed networking application, cooperates with IMS platform to build IP voice access network, and supports IMS value-added business, and inherits PSTN traditional business.
- Reliable security: It supports to encrypt signaling and media stream respectively and supports MD5 encryption technology. Meanwhile, it refuses illegal access and business interference.
- Firewall/NAT penetration: It adopts port mapping or special agent technology. Penetrating firewall/NAT device can be disposed in the inside of local area network.
- Flexible IP address configuration: It includes static configuration, DHCP dynamic obtainment and PPPoE number dialing obtainment.Simple management maintenance: It is based on WEB network management, and also supports many configuration modes of CLI, TELNET and OMC (SNMP).
- Telecommunication-level reliability: It can inspect failures and perform network management alarm; and supports network re-connection after outage and SBC dual homing. It is possible to register on the two SBCs of IMS and supports active standby switch. Power source and interface are in possession of functions of over-current protection and over-voltage protection.

1.2.2 Voice characteristics

- Communication protocol: SIP (RFC3261, 3GPP)
- Authentication ways: It supports authentication ways of SIP Digest, HTTP Digest and IMSAKA
- Voice coding: G.711a/u、G.723.1 (5.3kbps/6.3kbps)、G.729
- Voice quality: voice activity detection (VAD), comfort noise generation (CNG), Jitter Buffer dynamic adjustment, echo cancellation (complying with ITU-T G.165/G.168), package loss compensation technology, DTMF detection/generation, output/input gain control.

- Dialing rules: It supports E.164 coding rule, custom dialing rule and automatic search agent server.
- DTMF standard: Inband audio, outband over RTP (RFC2833/SIP INFO)
- Voice business: It supports hotline telephone, call transfer, call forward, call waiting.
- Three-party call
- Safe communication: It supports signal encryption and media encryption.
- Billing function: It supports internet access private billing and POTS-standard reversed polarity signal billing.
- QOS support: It supports port priority control, IP TOS and 802.1p/q VLAN
- Fax function: It supports T.30 fax, VBD passthrough fax and T.38 fax.
- Modem support: It supports Modem business

1.2.3 Network characteristics

- Network access: multiple network access modes (static IP, DHCP, PPPoE)
- Network protocols: TCP/IP, UDP/IP, ARP/RARP, ICMP, IGMP, Telnet, HTTP, DNS, DHCP, SNTP, FTP/TFTP and SNMP
- Supporting network tools: Ping, Trace Route and Telnet Client

1.2.4 Protocol standards

- IEEE 802.3 /802.3u 10 Base T/100Base TX
- Main G.711A/U, G.723-r63, G.729 voice codec, SIP RFC3261IAX2 (Inter-Asterisk-eXchange V2)
- TCP/IP: transmission control protocol/internet protocol.
- RTP: real-time transmission protocol
- RTCP: real-time transmission control protocol
- VAD/CNG: voice activity detection/comfort noise generation
- DHCP: dynamic host configuration protocol
- PPPoE: Point-to-point protocol over Ethernet
- DNS: domain name service
- HTTP: Hyper text transfer protocol
- FTP/TFTP: File transfer protocol/Trivial file transfer protocol
- UDP: User data protocol

1.2.5 Management maintenance

- Telephone configuration: It supports to inquire and set the relevant configuration information by a simulate telephone.
- Network configuration: It supports to upgrade the configuration by ways of HTTP, TELNET and CLI
- User right: It supports to carry out level-to-level administration for users and administrators.
- Network management: It supports OMC (SNMP) network management.
- Backup restoration: It supports to export and import the configured files.
- Expansion function: Plate loading, device-level stack function

1.2.6 Working environment

- Power input: 150～310V AC 47/63Hz
- Environment temperature: -40～70℃
- Relative humidity: 5～90% RH

1.3 Networking Mode

The next generation network (NGN) is developing and perfecting based on the soft switch. Telpo TP-64S voice gateway in the access layer is used in extensive fields, including network access, telephone, fax and other demands of families, phone bars or small-sized companies.

1、Connected in the local area network with dynamic mode or static IP mode.

- It is applicable to the companies or users built interior local area network;
- Telpo TP-8S8O/TP-16S16O voice gateway’ s WAN port is connected with the hub or switch;
- WAN port adopts dynamic IP (DHCP) mode or static IP mode according to environment of local area network.

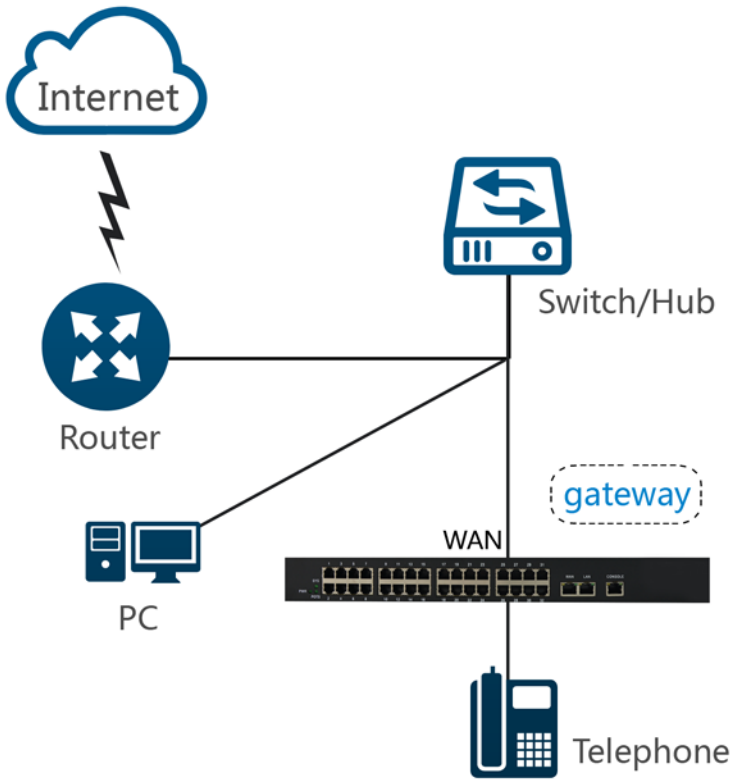


Figure 1-1 Connected in the Local Area Network with Dynamic Mode or Static IP Mode

2、As a proxy server, it is responsible for dial-up access.

- Telpo TP-8S8O/TP-16S16O voice gateway’ s WAN port is directly connected with xDSL (Cable) Modem.

As a proxy server, Telpo TP-64S voice gateway is responsible for proxy access.

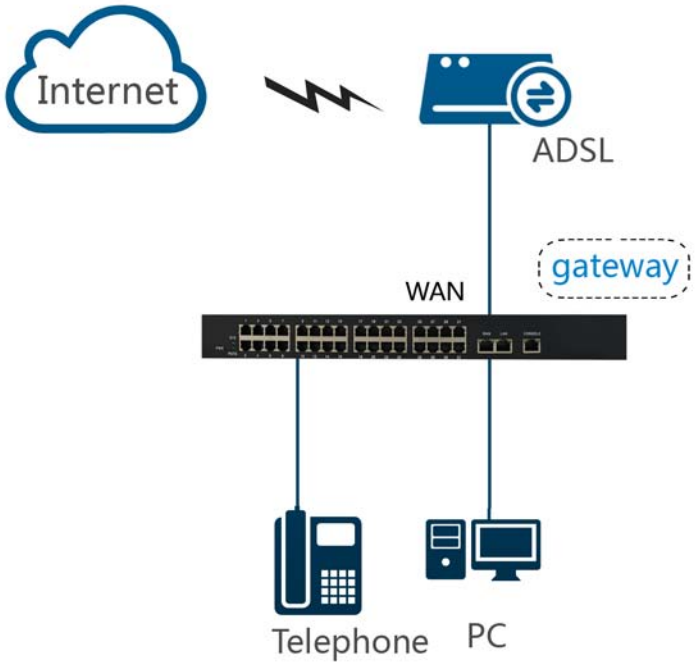


Figure 1-2 Responsible for Dial-up Access as A Proxy Server

1.4 Technical Specifications

model		**TP-8S8O**	**TP-16S16O**
Size (mm) **W×H×D**		441×290×44 mm	441×290×44 mm
weight		3.2kg	3.3kg
Max Power Consumption		20W	35W
Power		AC 85v～265V 47/63Hz	AC 85v～265V 47/63Hz
Device Interface	**Upward interface**	1 个 10/100 Base-T	1 个 10/100 Base-T
	Downward interface	One 10/100 Base-T	One 10/100 Base-T

	Network management interface	One RS232 (RJ45)	
Voice Port		Eight	Sixteen
Interface Type		8FXS8FXO	16FXS16FXO
Work Temperature		-10℃~55℃	
Storage Temperature		-10℃~55℃	
Humidity (Non-condensed)		0～95%	

1.5 Appearance

Figure 1-3 TP-8S8O front view

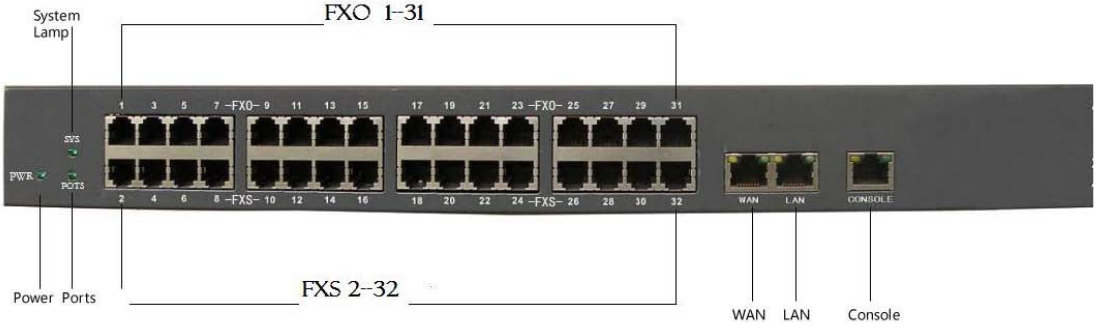


Figure 1-4 TP-16S16O front view

Figure 1-5 TP-8S8O /16S16O back view

1.6 Device View

Figure 1-6 TP-8S8O view

Figure 1-7 TP-16S16O view

1.7 Panel Diagram

The panel diagram of TP-16S16O voice gateway is shown as follows. TP-8S8O is similar with TP-16S16O.

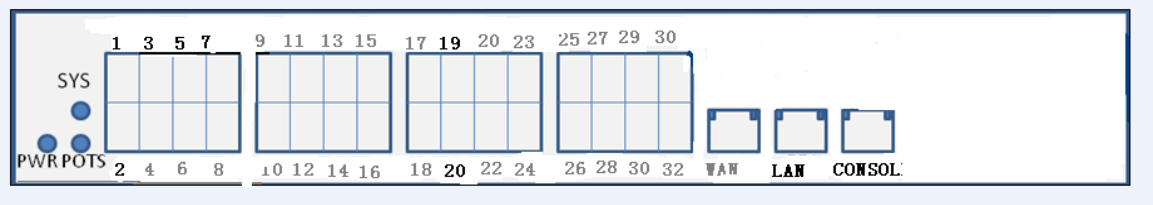


Figure 1-9 TP-16S16O panels

The meaning of each kind of state of indicator light on the front panel of TP-16S16O voice gateway is shown as follows:

Explanation on indicator light as follows. Indicator lights of FE port and CONSOLE interface are on RJ45 of the port.

Sheet 0-1 Explanation for Panel indicator light and serial configuration port of TP-16S16O

LED	Color	Status	Explanation
PWR	Green	constant light	The device has been charged
		off	The device runs out of power
SYS	Green	flickering	The device is in service
		off	The device runs out of power or operates abnormally
POTS	Green	Light	Any POTS port has off-hook
		off	POTS port has no off-hook
LINK	Green	Light	WAN/LAN port is on LINK status
		off	WAN/LAN port is not on LINK status
ACT	Green	flickering	WAN/LAN port has data receiving and sending
		off	WAN/LAN port has no data receiving and sending
TXD	Green	flickering	CONSOLE interface sends data
		off	There has no data sending
RXD	Green	flickering	CONSOLE interface receives data
		off	There has no data receiving

Chapter II Product Installation

This chapter focuses on deliberately explaining the matters with respect to installation preparation, fixing and cable connection of voice gateway. It mainly includes:

- Installation preparation
- Device fixing
- Cable connection
- Configuration environment establishment

2.1 Installation Preparation

Before voice gateway installation, make sure all components and conditions are complete.

2.1.1 Open-box Inspection

Open the box and inspect whether stuffs in the box are consistent with the list. If not, please directly contact us.

2.1.2 Installation Precautions

Voice gateway can be installed on the desk or wall. Before installation, you are required to pay attention to:

- The place where voice gateway will be installed should meet the conditions to connect the device with the external sites (such as: power line, network line, PC machine, etc.). AC power socket should be single-phase three-core power socket, and ensure the earth line is reliably grounded.

- Where installation is executed should be well-ventilated, to help the device to dissipate heat (the suitable environment is -10℃～55℃).
- Installation place should be free from water, moisture and thunder, etc. (the suitable humidity is 10%～95%).

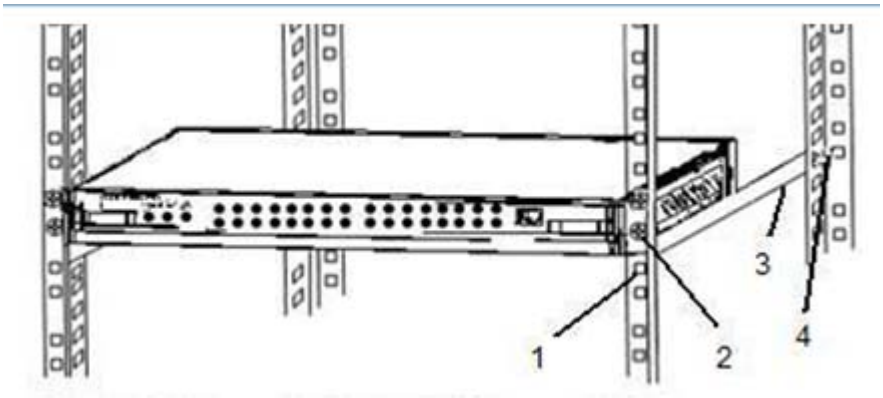
2.2 Device Fixing

This section introduces various installation modes of voice gateway to help users choose what they need in accordance with their demands.

2.2.1Cabinet-type Fixing

Users are able to install the voice gateway with big port in the standard cabinet based on needs. If on-site installation is necessary, users are required to comply with:

1. First, clean up where the subframe will be put in the cabinet, tidy the former cables and place them in the cable area at two sides of rack, adjust the supporting plates of right and left subframes to be in place, and insert the combined nuts in the attachment into square holes at front two sides of the cabinet (4 for each side);
2. Operated by two persons, slightly put the subframe on the supporting plate of the cabinet , and push it in place slowly;
3. After positioning, use the combined screws (M6×16) with packing ring from the accessories to tightly fix subframe and cabinet together.



1: Subframe mounting hole; 2&4: Nut component; 3: Bearer

Figure 2-1 Installation Completion Diagram

2.2.2 Plan Fixing

Take out four rubber mats equipped with voice gateway and clip them into four small holes on the device' s base plate, and then put the device on a stable and flat desk, and make sure right and left sides have good ventilation.

✍ **Reminding: Ensure voice gateway to ventilate well at two sides; and prohibit placing any object on it.**

2.3 Cable Connection

1. General connection

By cable, voice gateway' s LAN port is connected with user' s computer, switch or hub, and the WAN port is connected with Ethernet (for instance, ONU) or ADSL modem. FXS port is connected with 1-32 of single-core copper connector. AC power port is connected with AC power.

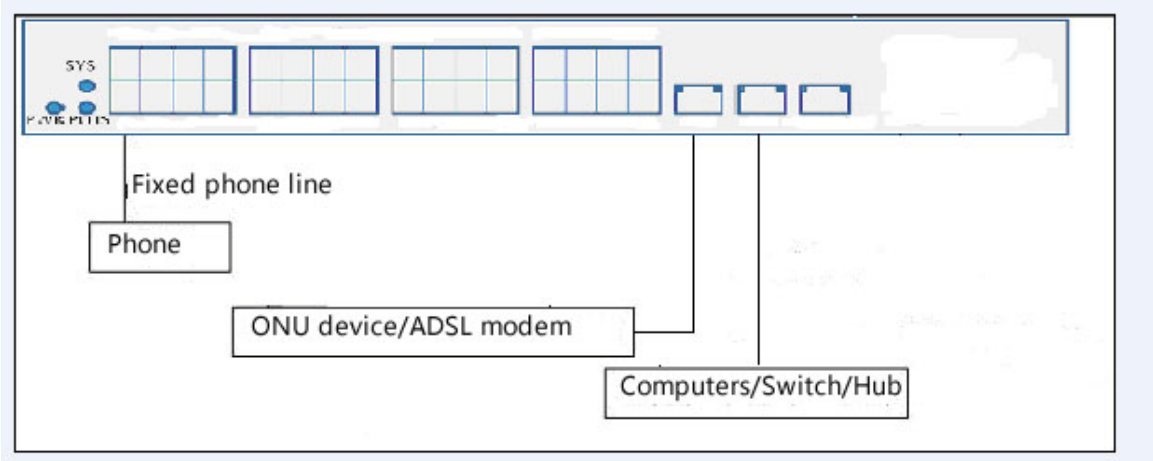


Figure 2-2 TP-8S8O/TP-16S16O Cable Connection Diagram

Warning: for operating safely, do not power on the device until all cables of it are connected and installation inspection is finished.

Reminding: It is suggested to utilize single-phase three cord power socket of neutral connector or multi-function microcomputer power socket. The socket should be reliably grounded. Do not use power extension cords.

2. Cascade connection

Reminding:

- **In cascade connection, need to differentiate between primary device and slave device**
- **Turn on the Cascade Mode in primary device Web GUI**
- **To keep the slave device software version is same with primary device software version. Turn on the function to receive the primary device testing packet in WAN port, and DO NOT turn on the LAN port cascading mode in slave device. Then connect slave device with primary device.**

Warning:

- **Do not turn on LAN cascade in slave device.**

- **After turn on the cascade mode in primary device, do not connect the LAN port of primary device with local area network.**

Take TP-16S16O cascading mode for example.
TP-16S16O primary voice gateway WAN port connects with upward ethernet network (like ONU)/ASDL modem by cable.
TP-64S primary voice gateway LAN port connects with slave voice gateway WAN port by cable.
And so on, it can cascade three device including primary and slave devices

FXS ports (1-192 telephone ports) connect with user telephone by telephone analog line. AC power port is connected with AC power.

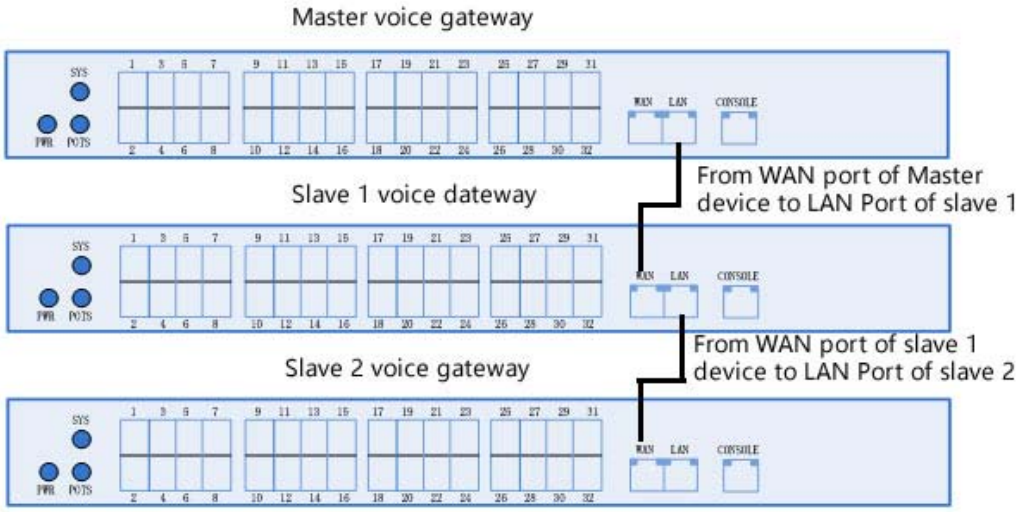


Figure 2-3 Three TP-16S16O devices connecting by cascade mode

Chapter III Rapid Configuration

This chapter mainly introduces how to simply configure SIP business function for voice gateway by WEB website, and also simply introduces voice gateway' s other two login methods, Telnet and Console. The aim is to let customers rapidly configure voice gateway in special circumstances. Main contents include:

- Cable connecting, PC address modification
- Network access settings
- SIP Rapid configuration

Voice gateway offers users an imaging and simple-operation WEB conversation interface, so users are able to configure all functions of voice gateway just on the common web browser without installing a special software, which is helpful for consumers to lessen business opening cycle, quickly position failure and shorten failure restoration time, so as to satisfy users and save operation and maintenance cost.

3.1 Preparation before Configuration

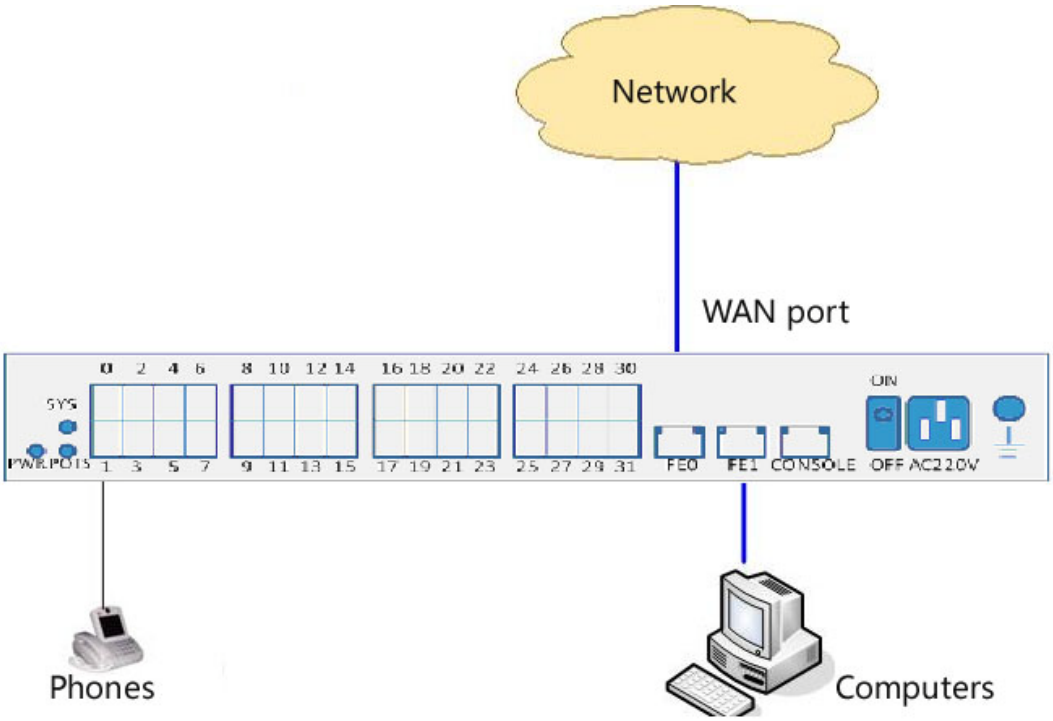
Before configuring voice gateway, you are required to first confirm:

1. Network access method:
2. Voice gateway' s WAN port supports PPPoE dialing, dynamic IP address and static IP address.
3. SIP server address, port, account and password.

For example: voice gateway data configuration information (enter the italic information pursuant to the practical requirements).

Voice gateway IP:	*192.169.0.1*	// static IP address /
Voice gateway subnet mask:	*255.255.255.0*	
Routing gateway address:	*192.168.0.1*	
SIP server address:	*192.168.0.10*	
SIP server port:	*5060*	
SIP account:	*6400~6407*	
SIP account password:	*123456*	

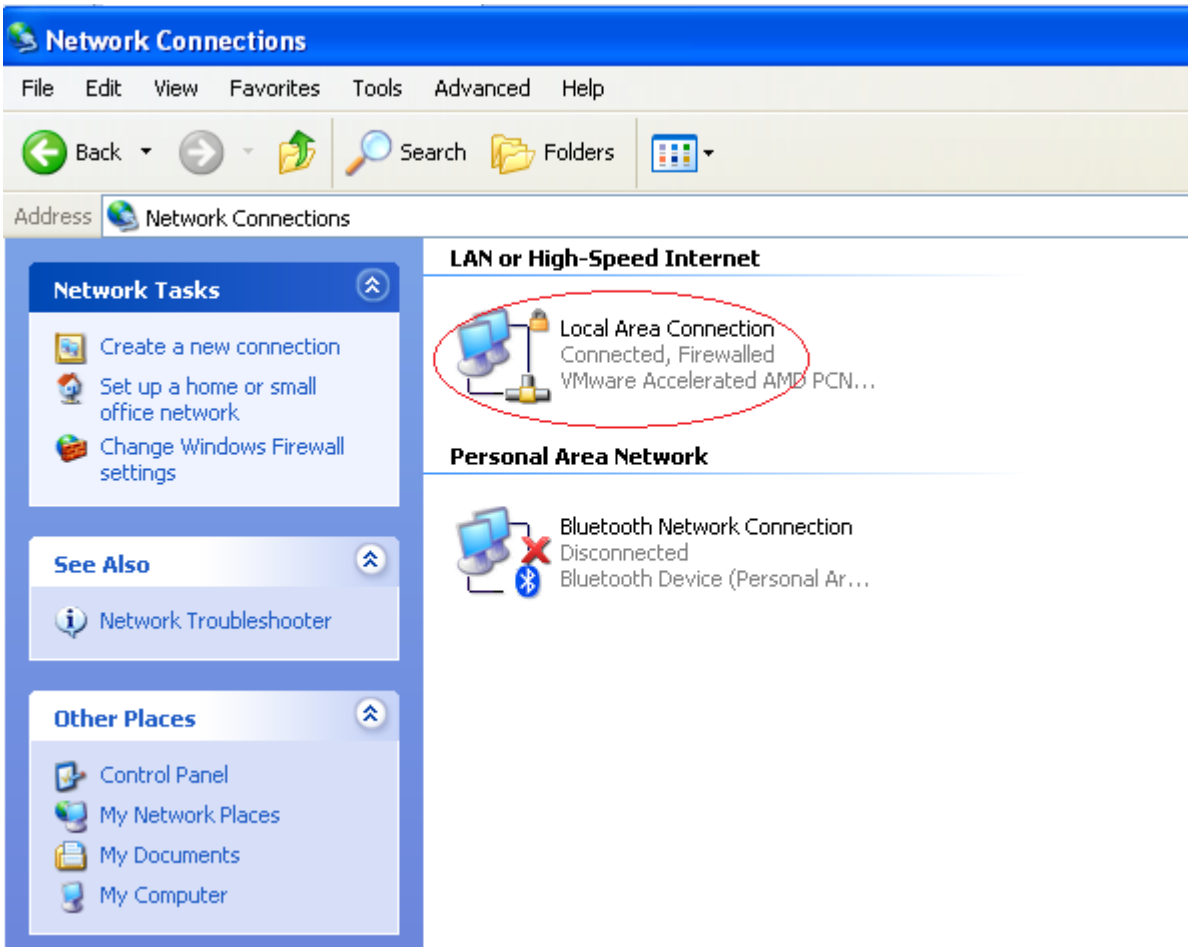
3.2 Cable Connecting



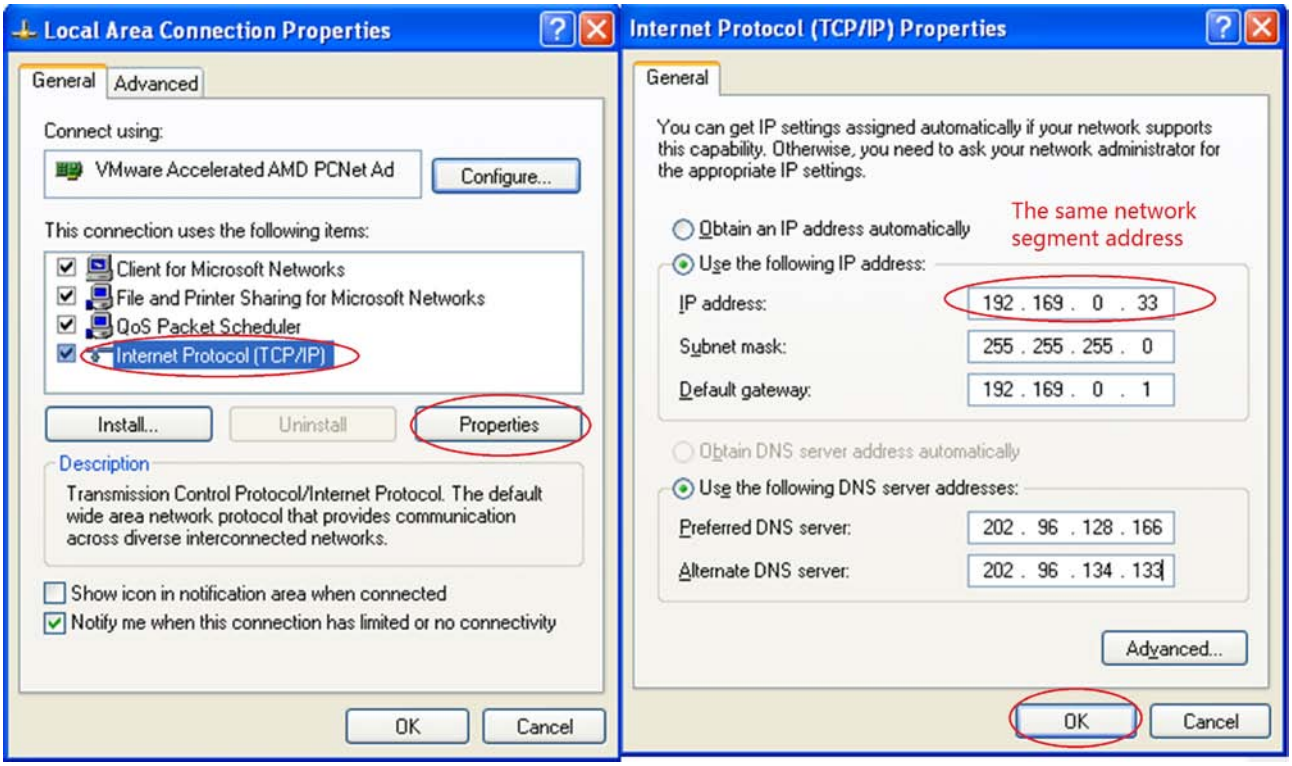
1. Connect the device power cord;
2. Link the upward network cable with voice gateway’ s WAN port;
3. Connect voice gateway’ s LAN port with PC, which is used to carry out management;
4. FXS ports connect with telephone, FAX device.

3.3 PC’ s IP Address Modification

Connect computer with voice gateway’ s LAN port, and set its IP address as 192.169.0.2~192.169.0.254, subnet mask as 255.255.255.0, and gateway as 192.169.0.1. It is fine not to fill in DNS or keep the initial value.

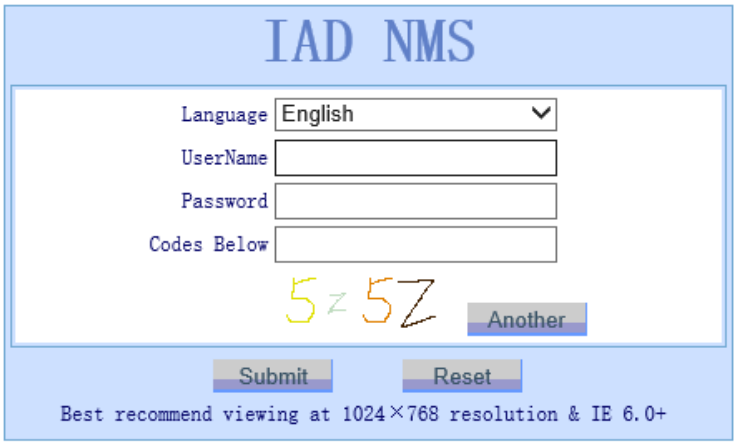


1. Open network connection, right click "local connection", click property;
2. Open local connection property, choose "Internet protocol (TCP/IP)", click property (R);
3. Choose the option of "Use of the following IP address", modify PC's IP address according to the practical needs.

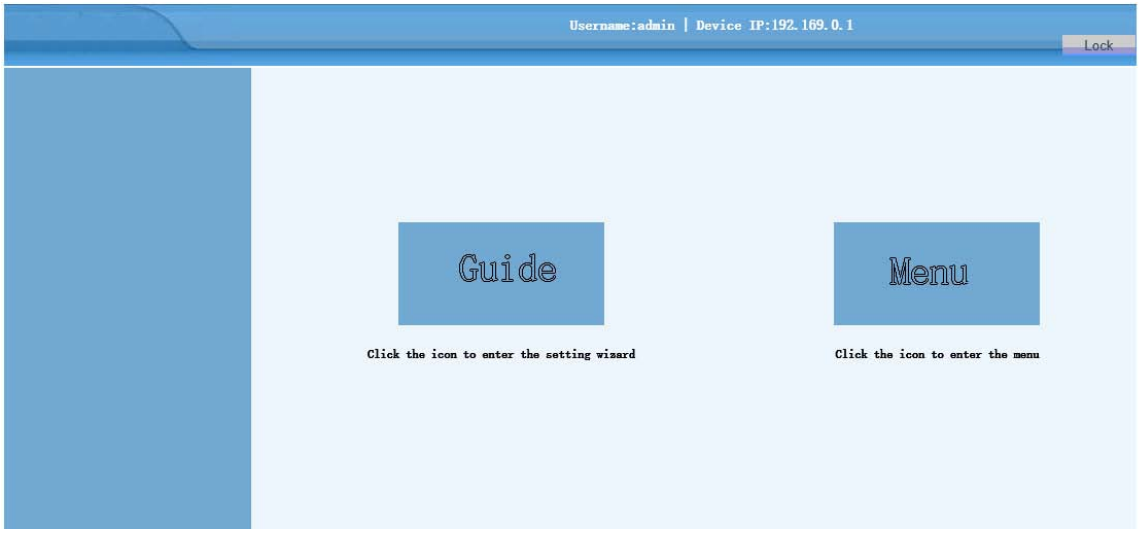


3.4 Voice Gateway Login

Open IE browser and input LAN port' s default IP address (IP 192.169.0.1:8008 or 192.168.0.235:8008) in address column.

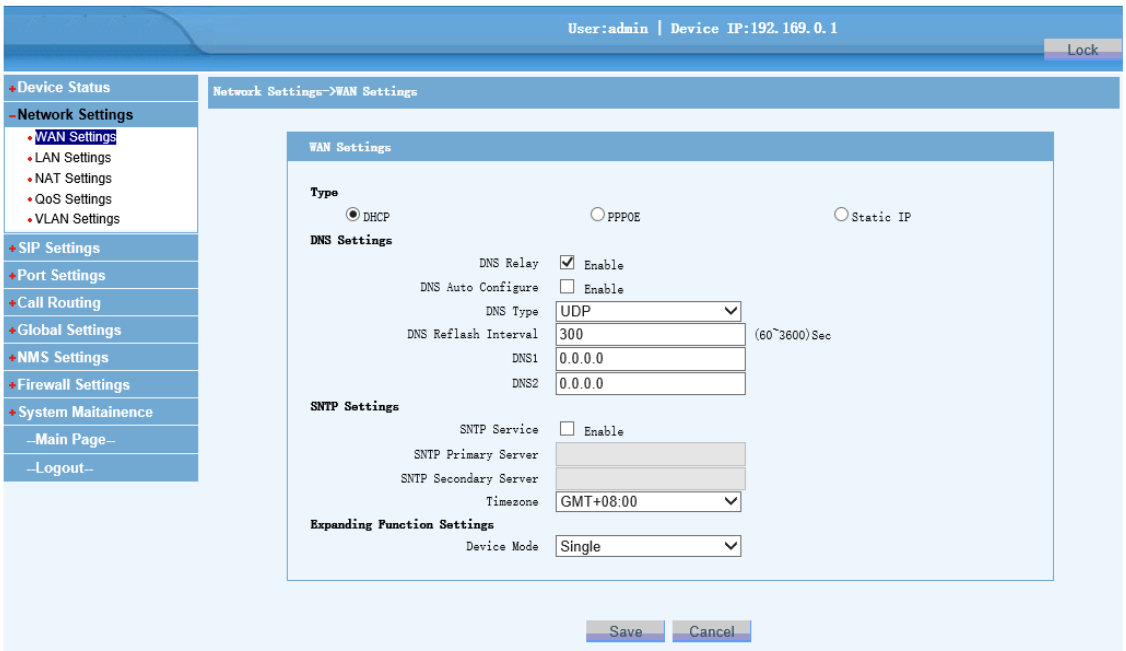


Enter username as admin and password as psw.voice gateway (note the capital and small letters), then import security code. It will immediately skip to gateway main interface once input right. User can configure the voice gate with the quick guide (the left button "Guide").



3.5 Voice Gateway Setup Wizard

Step 1, WAN settings



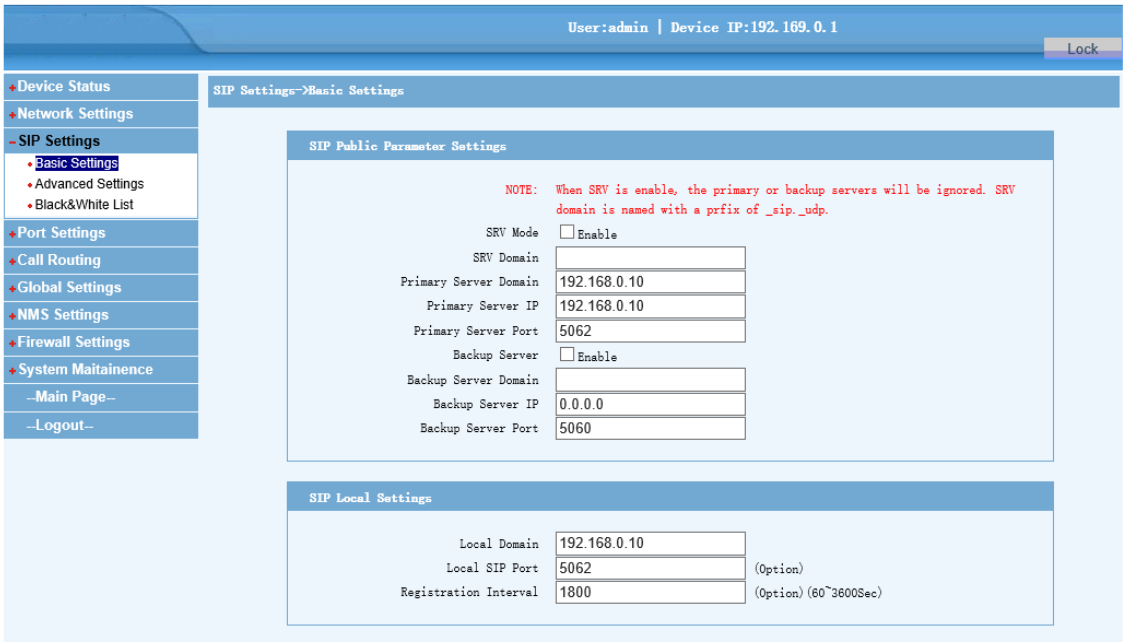
Note:

➢ If choosing "DHCP" to obtain IP , needs to have a DHCP server in the

network;

- If choosing "PPPoE", needs to fill in the username and password that broadband supplier provides.
- If choosing "Static IP", please fill in IP address, subnet mask, breakout gateway, DNS address, SNTP address.

Step 2, SIP Setting

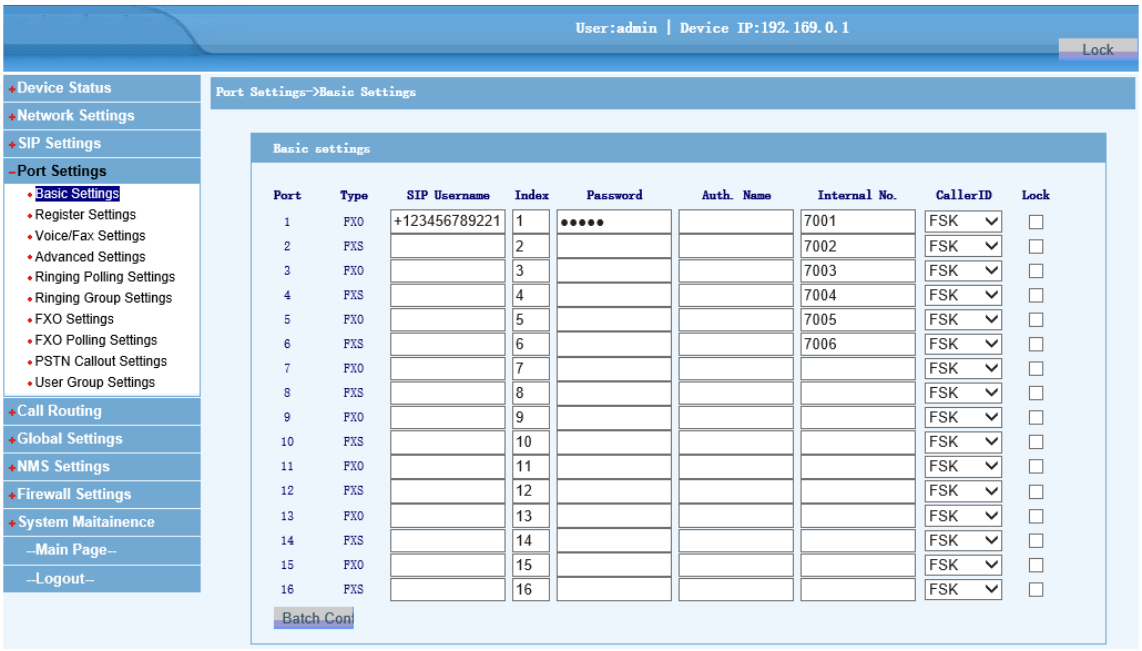


Note:

- Click "SIP Setting→ basic settings" that is in the left column, complete the main server's information and port in the basic settings, complete the local domain name in the local SIP parameter settings, and then click to save.
- SIP parameters are conditional upon the soft switch. SIP's default port is 5060, and local domain name is SIP domain name or server IP.

Step 3, SIP account and password settings

Voice gateway is registered based on the port. Every port needs setting account and security password.



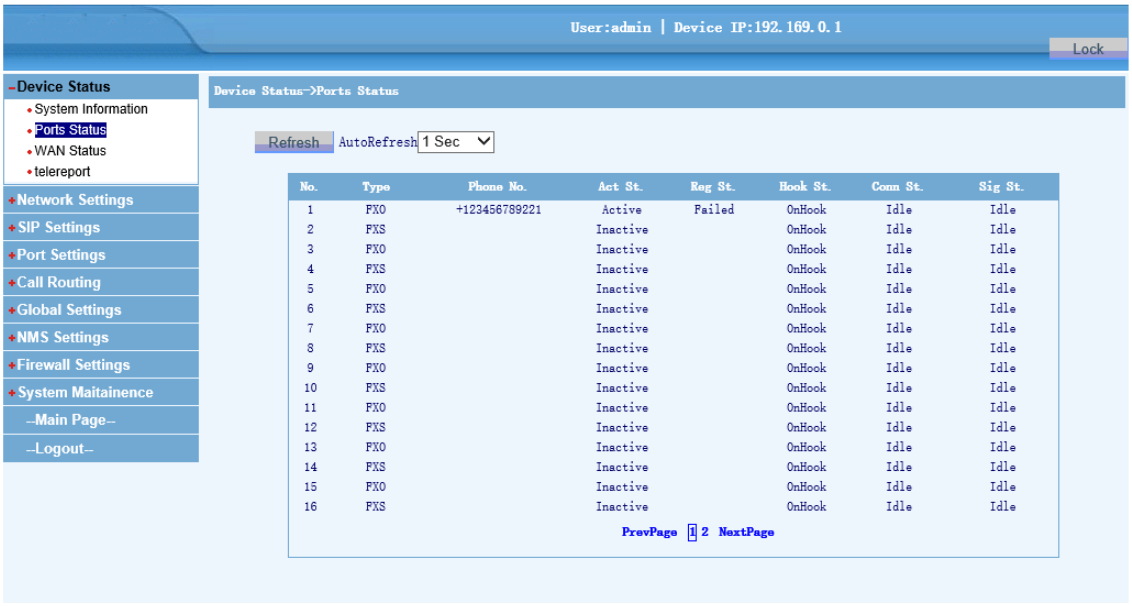
Note:

Click "Port settings → basic settings" that is in the left column, complete username, and password and identified name in the basic settings, and then click to save.

SIP parameters are conditional upon the soft switch. Usually, username is the identified name.

3.6 Voice Gateway Status Review

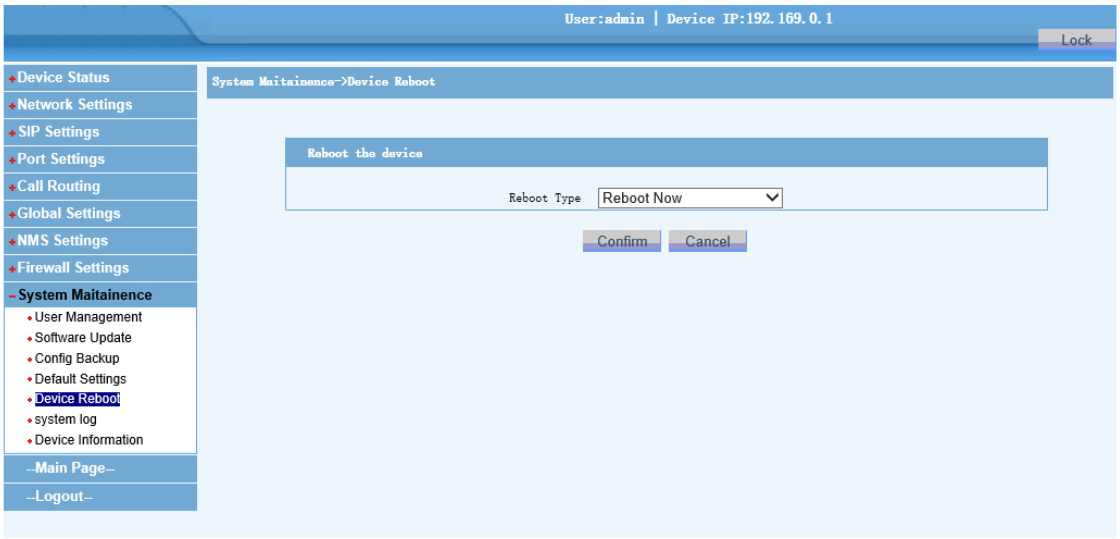
You can check corresponding port' s registration status after finishing the voice gateway configuration.



Note: If the registration status of one port is "Failed", please check settings of corresponding port's parameters, and consult SIP soft switch platform.

3.7 Voice gateway Reboot

Click "system Maitainece → Device Reboot" that is in the left column.



After voice gateway reboot, use IE browser to log in voice gateway once more via LAN IP, check voice gateway status, and confirm the operating WAN port information in the status inquiry and confirm registration status in the user port status.

3.8 Telnet Login

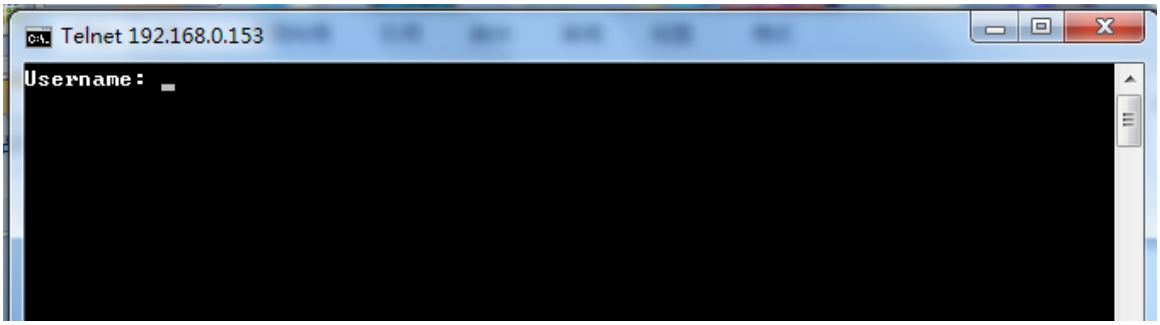
Through Telnet to log voice gateway in the configuration interface. (after the device is energized, LAN port' s default IP is 192.169.0.1 and subnet mask is 255.255.255.0). Carry out inband management to the device via command line configuration.

Voice gateway can Telnet to the configuration interface by LAN port and WAN port Telnet. But WAN port' s IP address perhaps is dynamically acquired via DHCP and PPPoE. So it may not be convenient for TELNET to visit. Therefore, it is suggested that users go to the configuration interface from LAN port TELNET. Entering TELNET needs to:

1. Find a crossover cable or through line;
2. Use a cable to link PC machine' s network card and LAN port together. If LAN port' s LINK light flashes, it means PC machine has been connected with the Device;
3. Modify/Add IP address of PC machine' s network card to be 192.169.0.x (X is an integer more than 2 and less than 254), and mask to be 255.255.255.0;
4. Open a command window on PC machine, and then
   [click WINDOWS' s <start> menu - >click <operation> to open the operation window, then enter cmd or command in <opening> drop-down box, finally, click to determine.]
5. Execute the following command in command line' s window, refer to telnet 192.169.0.1 1250 in the following image:

（Note：telent port is 1250， can change by WEB）

6. Click enter key to go to the device' s telnet login interface, see beow:

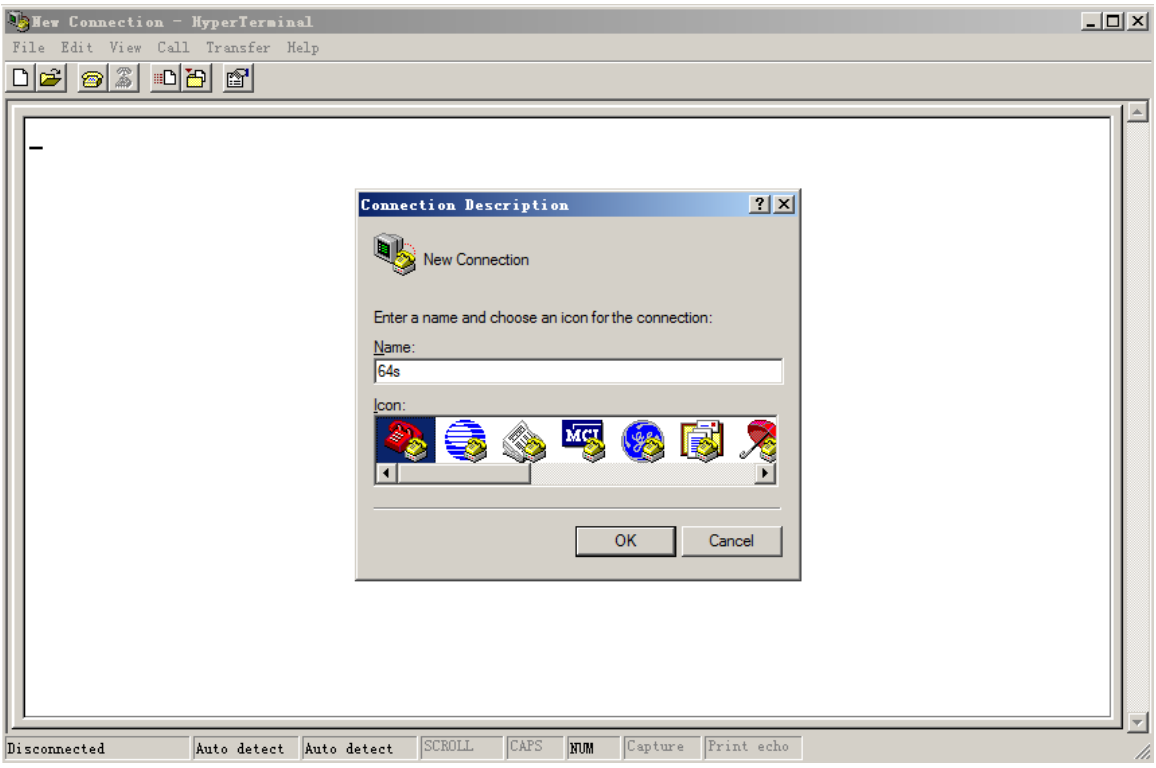


7. Input correct username and password, the default username is admin, and default password is psw.voice gateway.

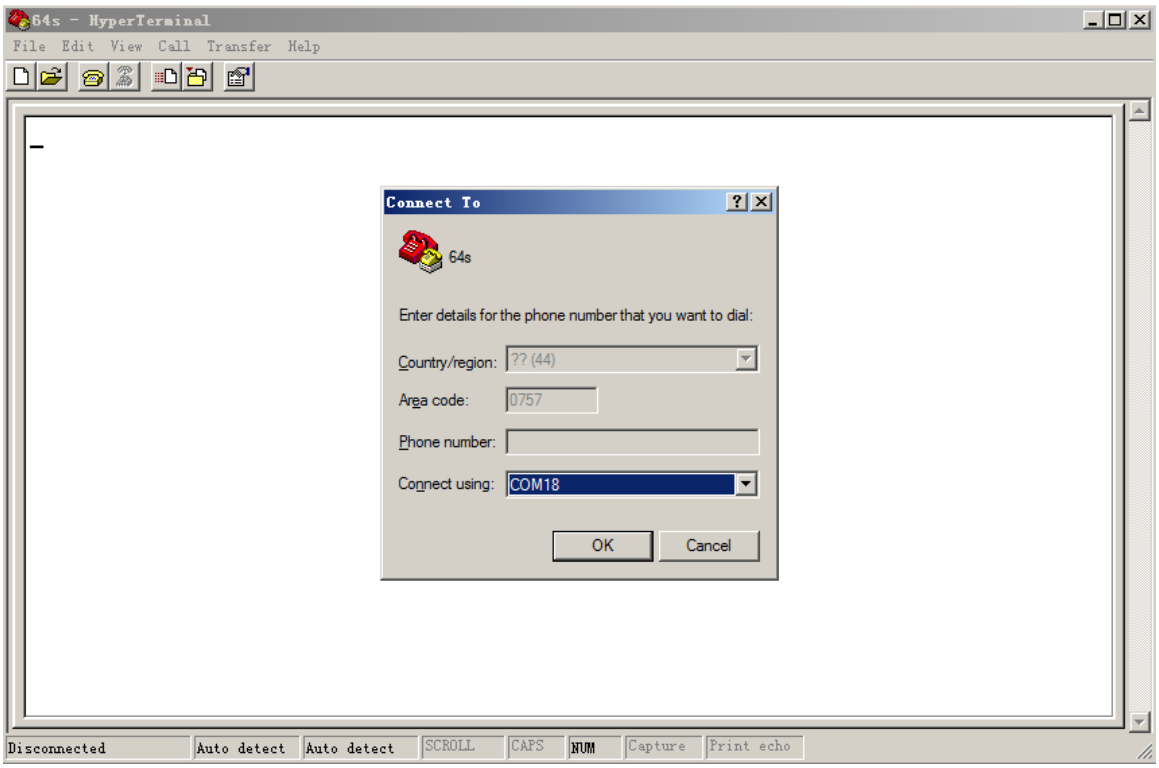
3.9 Super Terminal Login

Voice gateway can configure the device by CONSOLE port. Connect one end of serial port line to voice gateway' s CONSOLE control port, and another end to any serial port of the computer. Then follow the sequences of start menu - >procedures - >appendix - >communication - >super terminal to start up super terminal. If no any super terminal is installed, please install it from control panel. For specific matters, please refer to Windows.

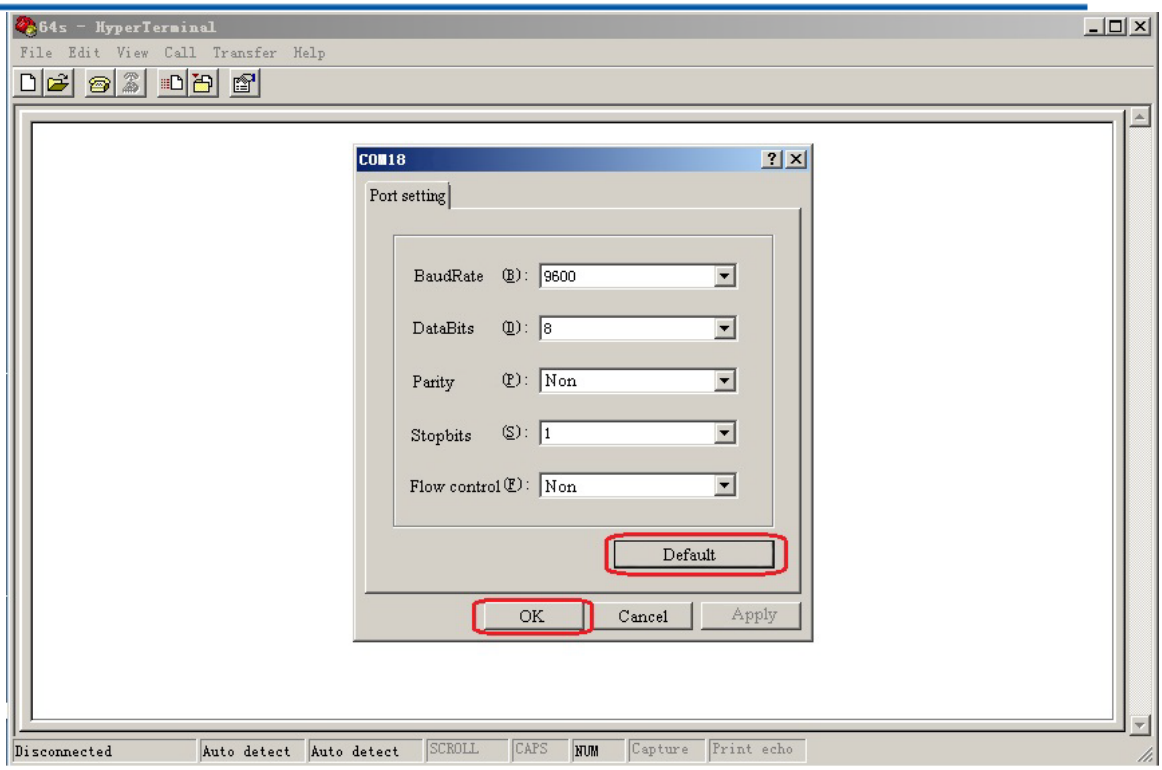
1. After the super terminal is turned on, a "link description" will appear, requiring to enter a name and choose icon for this link, shown as follows.



2. Import a link name, press enter key or use mouse to click "confirmation" to go to the next step. Then a "connection to" dialog box will appear. In "use at the time of connection" drop-down menu, make sure the chosen port must be consistent with serial port of PC machine linked with voice gateway, as shown in the following image.



3. Press enter key or click “confirmation” button to go to the next, and then set the port property.

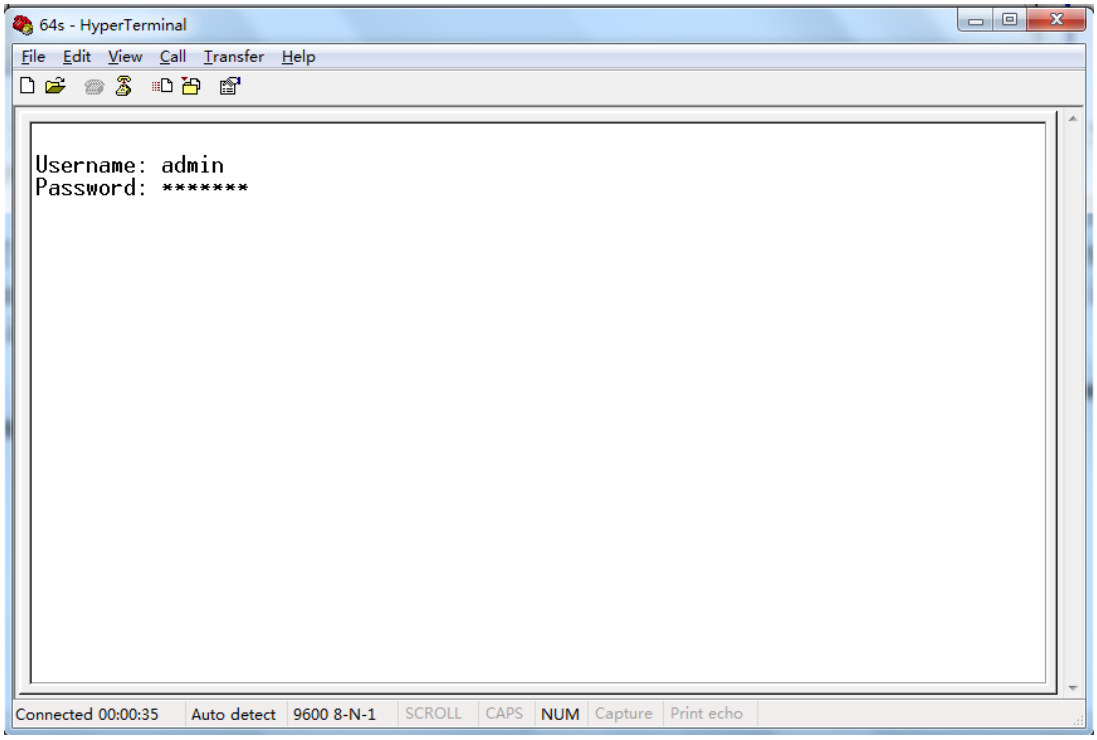


Perform settings as follows for port parameters:

- Bits for second: 9600
- Data bits: 8
- Odd-even check: No
- Stop bit: 1
- Data flow control: No

Press enter key or use mouse to click “confirmation”.

4. Once the device is started up (it will automatically start up once power on), user login interface will appear promptly.



5. Follow the system reminders and input correct username and password to log in.

If it is your first time to log in, please use the default account. Default username is admin, and default password is psw.voice gateway. The detailed settings of the command are set forth in the later instructions.

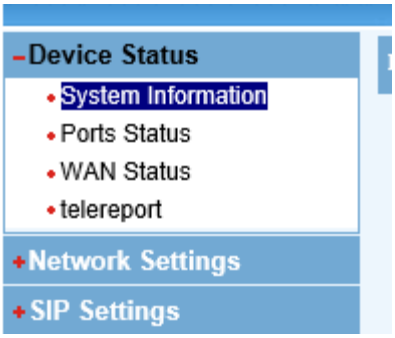
✍ **Note: draw attention to capital and small letters of username and password when performing login.**

Chapter IV Detailed Configuration

This chapter has a detailed introduction to all configurations on voice gateway' s WEB web. It mainly includes:

- Device Status
- Network Settings
- SIP Settings
- Port Settings
- Fax Settings
- Call Routing
- Global Settings

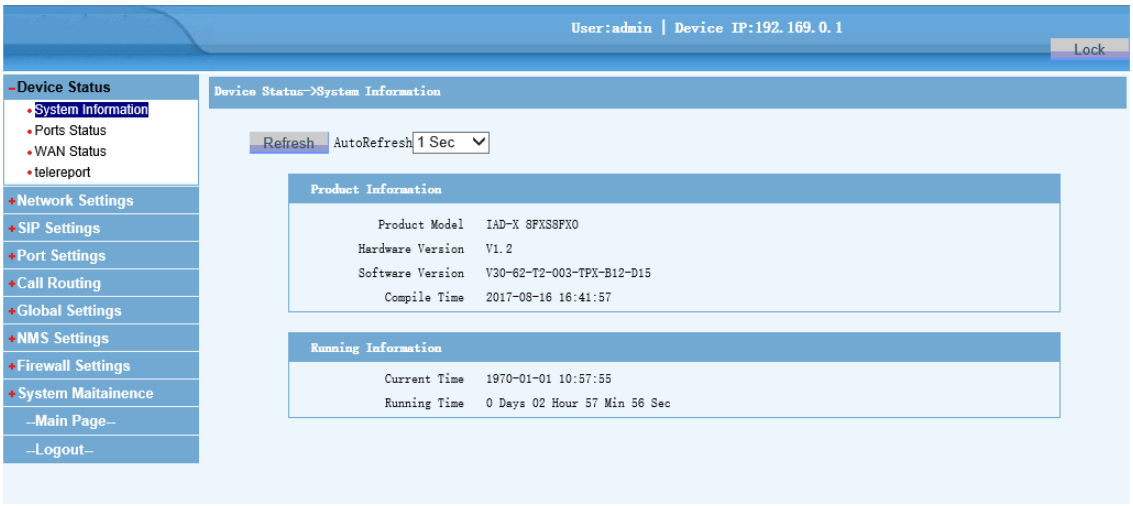
4.1 Status Inquiry



Here you are able to inquire voice gateway' s status, including device status, operation time, and software and hardware versions, WAN' s status information, LAN port information status, user port status and traffic statistic information, etc.

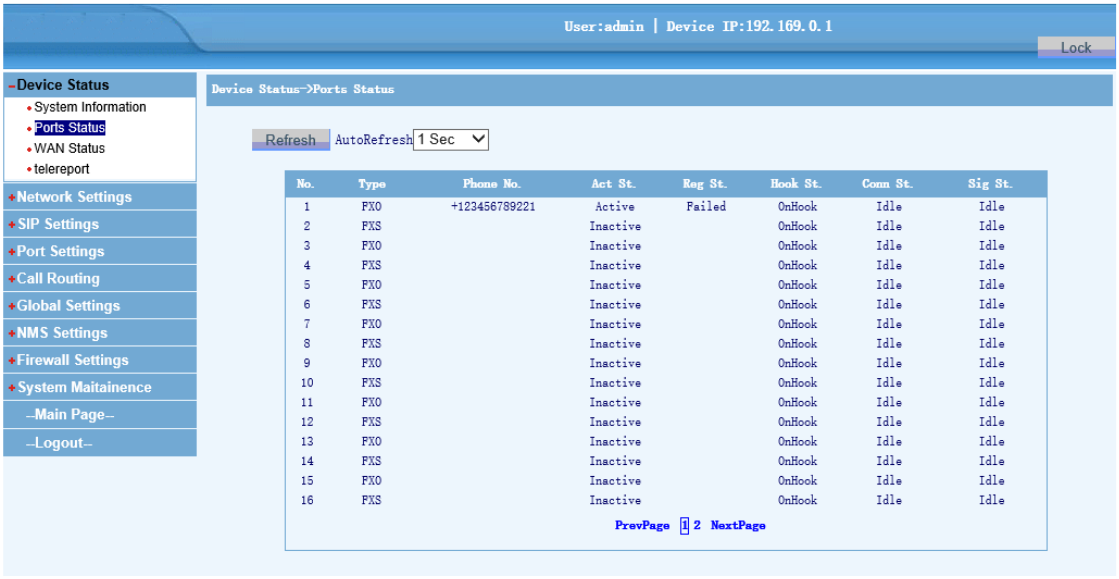
4.1.1 Operating State

Click "Device Status", and then click "System information", the following information will appear in the system.



4.1.2 User Port Status

Click "Device Status", then click "Port Status", the following information will appear in the system.



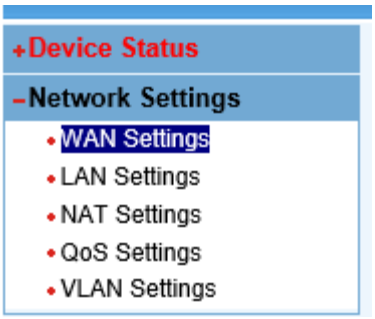
Explanations:

It is essential to review the port’ s corresponding number and registered status of SIP business.

The current statuses include Idle, waiting for dialing, ringback, conversation, busy tone and ringing.

4.1.3 WAN Status

4.2 Network Settings



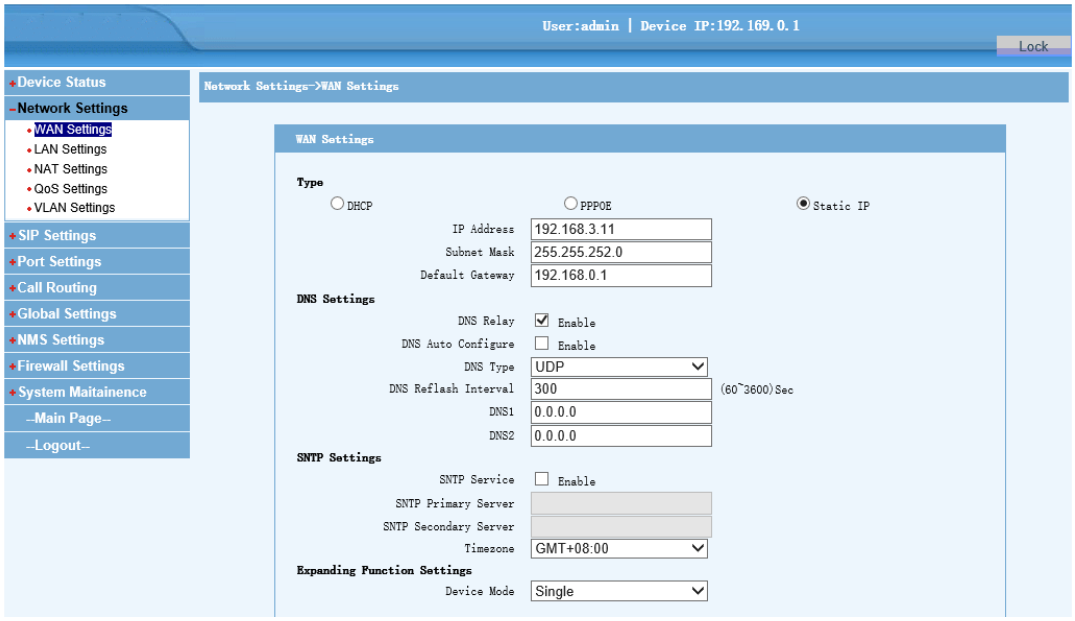
Network settings include:

WAN setting: It refers to the upward access network port;
LAN setting: It refers to the lower access network port including DHCP configuration and cascade configuration
NAT setting, turn on NAT function and port mapped function (before turn on NAT, please make sure PVLAN of VLAN configuration is turned on)
QoS setting: It refers to quality of network service
VLAN setting: set the VLAN ID between WAN and LAN port.

Note:VLAN (in VLAN setting) just works between WAN and LAN port, it can not be used in external transport network, if you need to use VLAN in external transport network, please set VLAN in QOS.

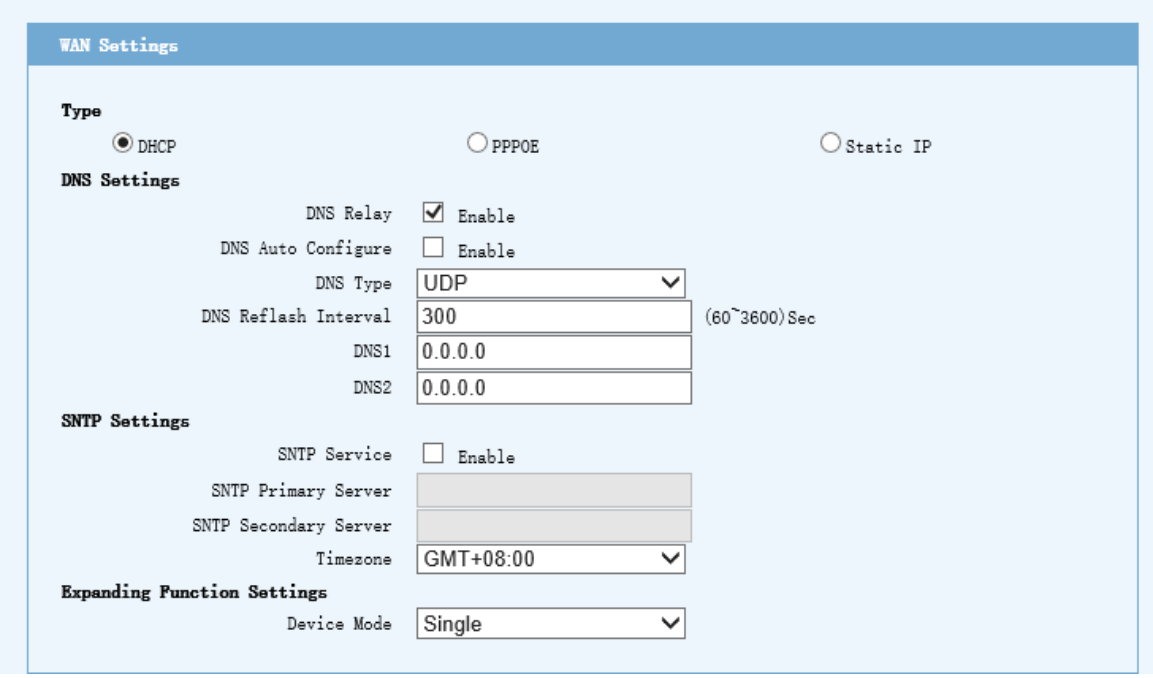
4.2.1 WAN Port Configuration

After entering WEB interface, choose "network settings >" WAN settings". User can access to voice gateway via three network methods.

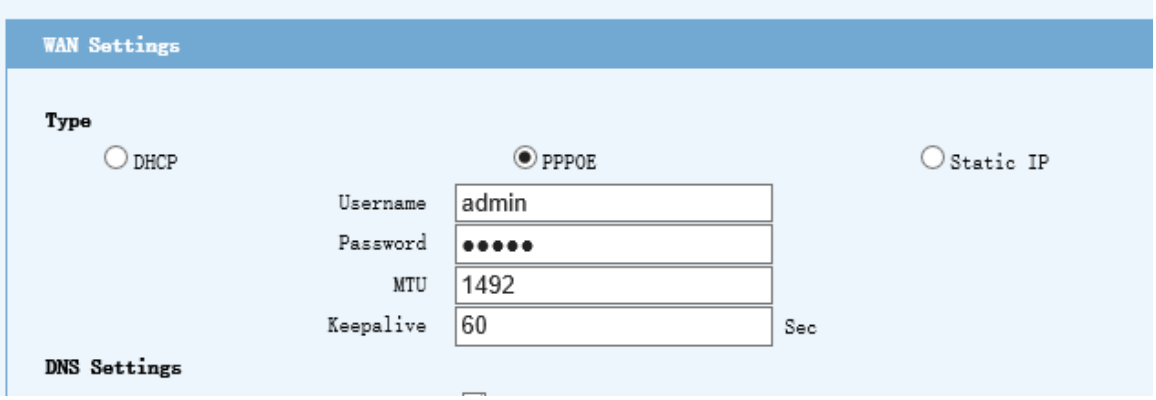


Explanations:

1. Use DHCP to acquire IP

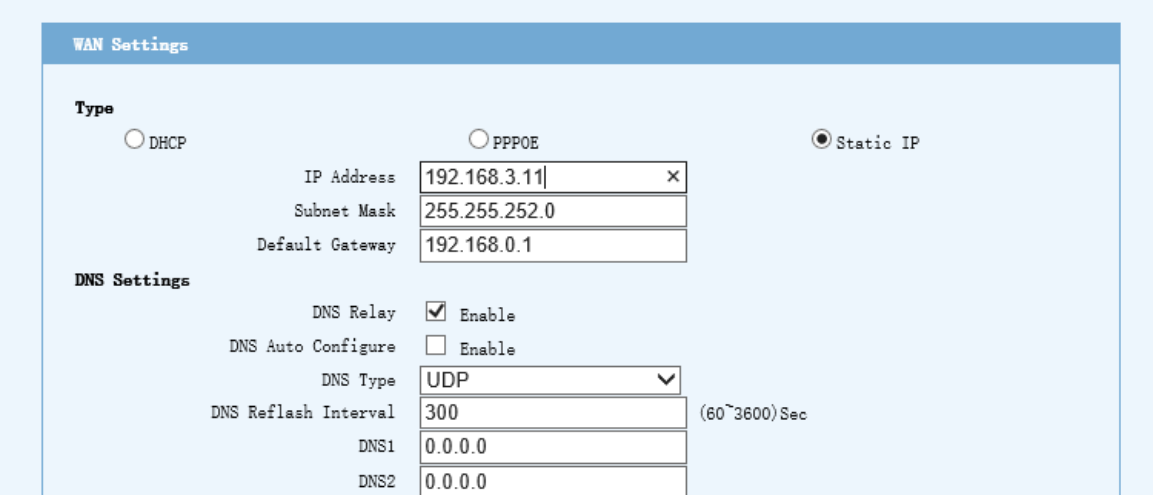


2. PPPoE mode, input Username and password and then click to save.



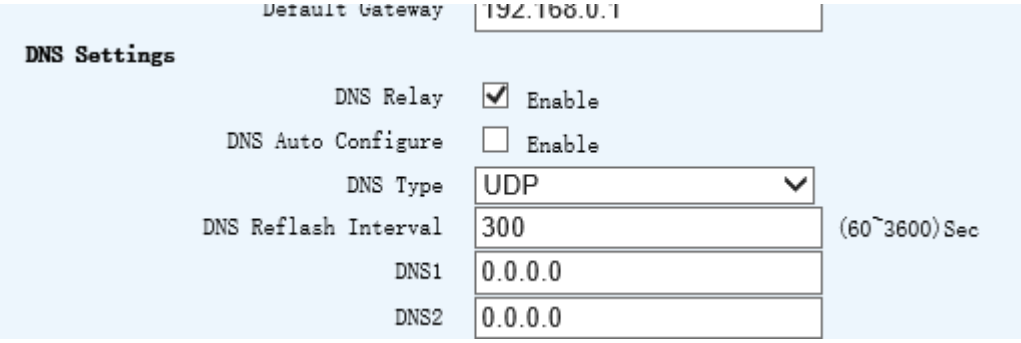
3. Static IP

Enter IP address, subnet mask and default routing IP address, and then click to save.

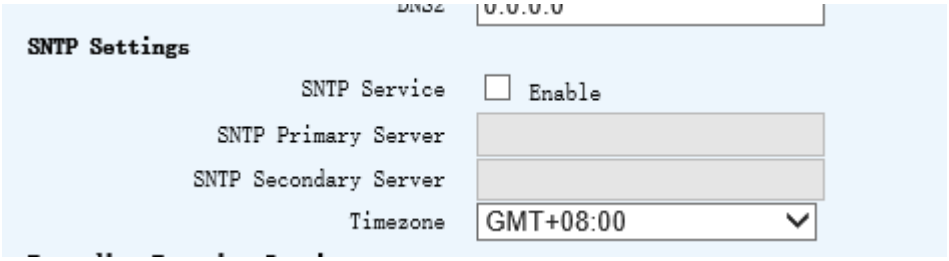


4. DNS settings

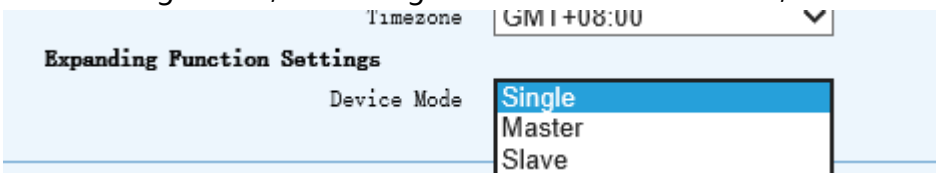
DNS refreshing interval (usually it defaults 5 minutes), and prior and standby DNS address setting;



4. SNTP settings coincide with network time protocol, and automatically synchronize with the device time.



5. Cascade configuration, it has Single mode and Master mode, Slave mode.



- if cascaded, need to differentiate the master device and slave device;
- need to turn on the Master mode if used as Master device, need to turn on the slave mode if used as slave device,
- The max cascaded device number is three
- After cascaded, can manage the device in Master device Web GUI. The data is saved in Master device, and can use the devices as a whole. Master device WAN port connects the upward network, and the last device LAN port connects downward devices.

✍: **1. It needs to be the same software version between Master and Slave devices.**

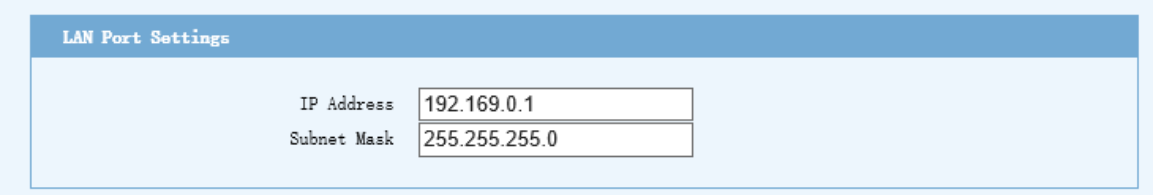
2. after turn the cascaded mode, the Master LAN port could only connect Slave device, and cannot connect the local area network.

==========

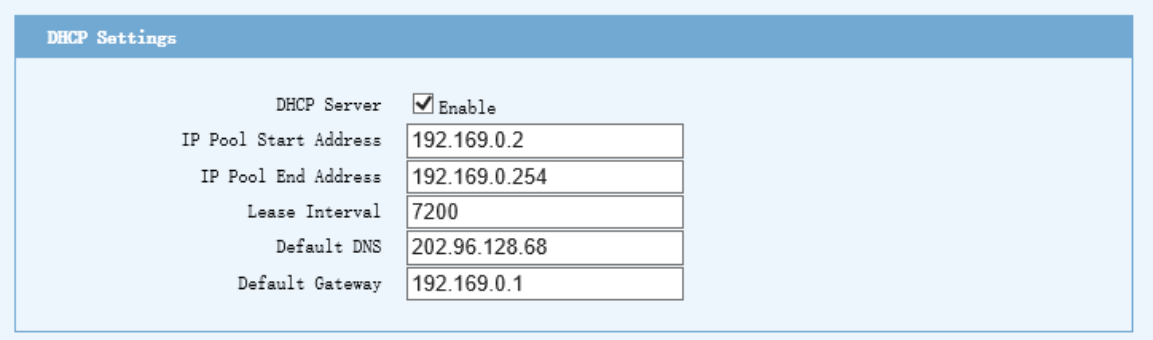
4.2.2 LAN Port Configuration

4.2.2.1 LAN port IP address configuration

Open "network settings > LAN port settings" to configure LAN port' s IP address.



: LAN port’s default IP is 192.169.0.1 / 255.255.255.0. It is suggested not to make any modification except special case! Especially ensure not to repeat LAN port IP network segment with WAN port IP segment!



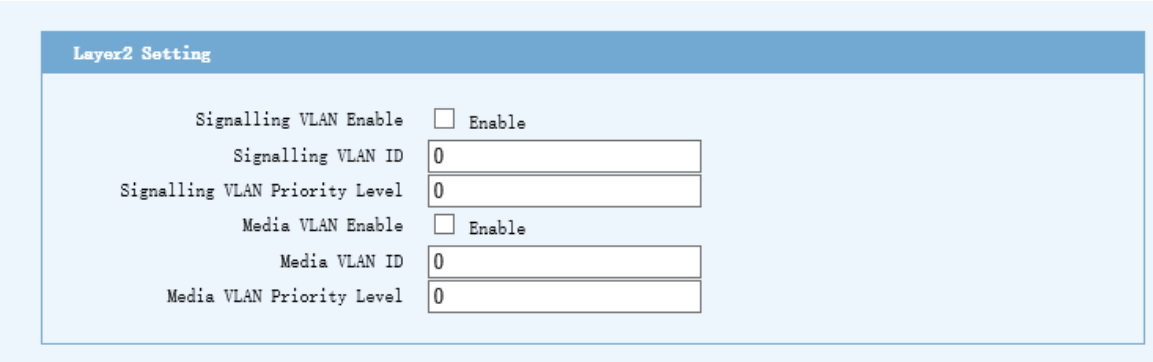
Explanations:

- There is a built – in DHCP server in voice gateway, which is not enable by default.
- IP pool Start/End Address: It refers to that DHCP server automatically allocates IP’s start/ end addresses. The range of last digit can be from 2 to 254.
- Lease term: It refers to the service time that terminal acquires an IP address, defaulting to be 7200 seconds.
- Default DNS (optional), input it in the DNS server offered by ISP. If there is any question, please consult ISP carrier.
- Default gateway (optional), it is suggested to fill in LAN port’s IP address or a designated gateway IP.

: **If LAN port IP parameters (including IP address, subnet mask) are altered, make sure IP pool address set in DHCP parameters is in the network segment where new LAN port IP is also in, and restart voice gateway. In order to make DHCP server works, each computer using TCP/IP protocol in local area network must be set as “automatically acquired IP address”.**

4.2.3 QOS Configuration

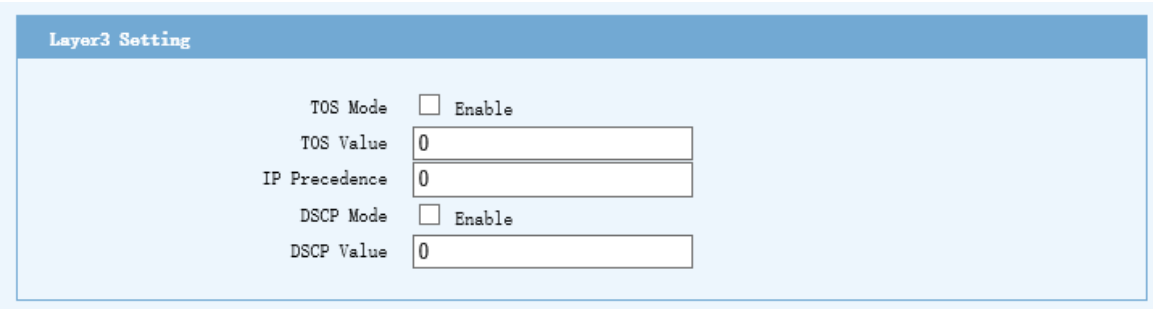
Network service quality (QOS), Voice gateway supports prior marks of two-layer and three-layer data frames, to ensure conversation quality of IP voice.



Explanations:

- Two-layer Qos settings: VLAN ID is the tag based on 802.1Q.
- ID value ranges from 1~4096.
- VLAN prior level is 802.1P. It ranges from 0~7.

Note: Before start, please firstly confirm whether the entire transit network supports VLAN or not. Otherwise, it will contribute to some faults, such as IP disconnection, DNS analysis failure, registration failure and so on.

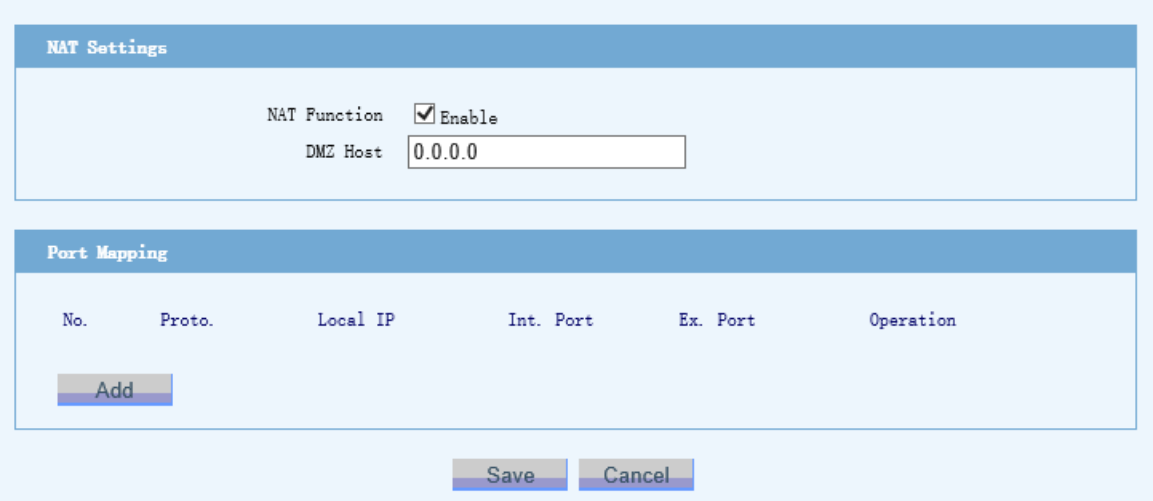


Explanations:

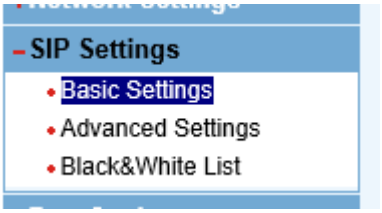
- Either TOS or DSCP, only one mode can be adopted;
- TOS mode is not turned on by default;
- TOS value is 5 by default;
- IP Precedence is 5 by default;
- DSCP mode is not opened by default;
- DSCP value is 0 by default.

4.2.4 NAT function

This voice gateway supports NAT function, can visit network through LAN



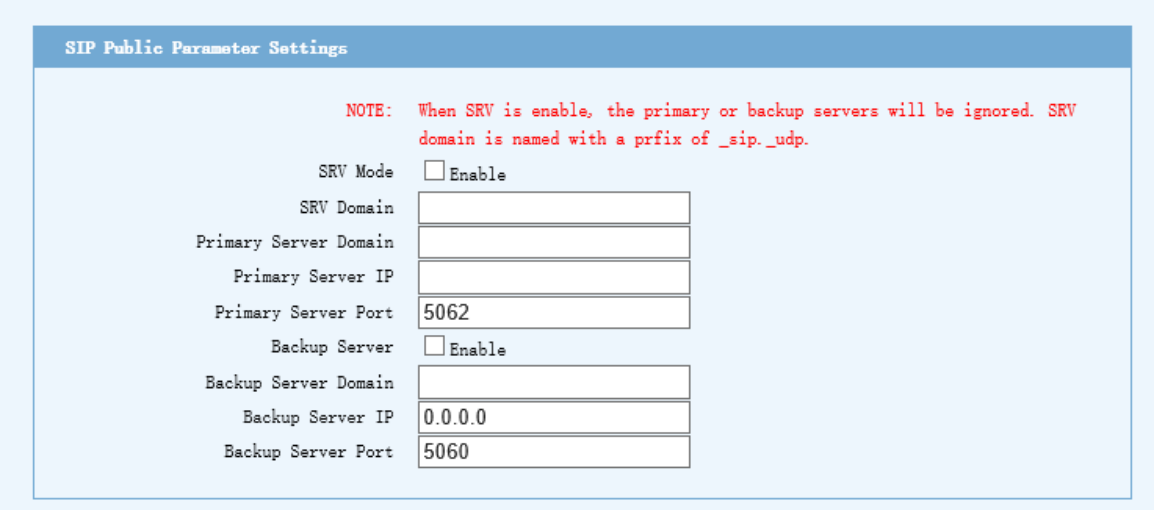
4.3 SIP Configuration



SIP parameters are set pursuant to soft switch.

The service provider usually has set the server’ s parameters beforehand. In case you need to set them by yourself, please inquire the address, account number and password from the facilitator to register the server.

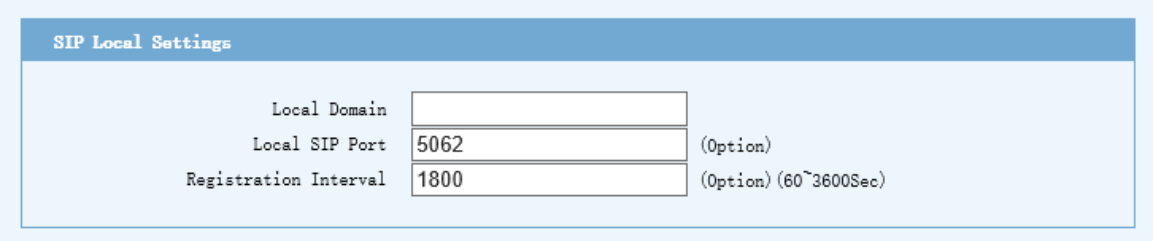
4.3.1 Basic Settings



- SRV mode: It needs to be enable when DNS server adopts SRV-type DNS analysis;
- SRV domain name: When the SRV-type DNS analyzes, SRV domain name needs to be configured. Domain name starts with _sip._udp. For example, if the allocated domain name is sbc.telemobile.com, the configured one will be _sip._udp.sbc.telemobile.com.

Explanations:

- Primary server domin: It supports domain name or IP address form;
- Primary server port: It defaults to be 5060, but to fill in practically;
- Backup server: To fill in it as per the primary server’ s parameters;
- Voice gateway support: if there is something wrong with the primary server, it will automatically register into the backup server. (Please turn on heartbeat switch before hand).
- If the primary/backup servers adopt domain name mode, please open DNS configured under WAN port, and correctly fill in DNS address.

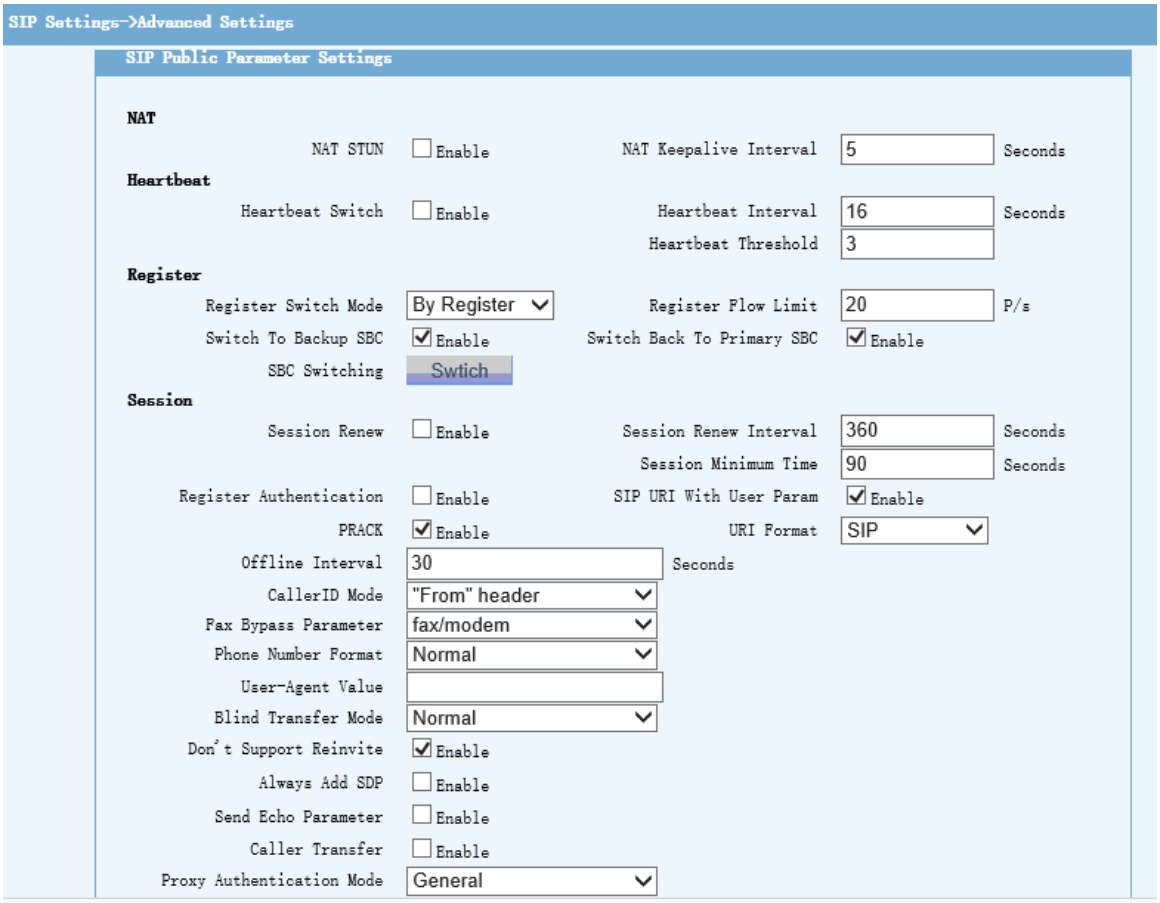


Explanations:

- Local domain: It is usually the same as the registered server;
- Local SIP port: It is defaulted to be 5060, and voice gateway need to reboot if it is modified;
- Registration Interval: It refers to the interval that voice gateway sends online information to SIP server, 60 to 3600 seconds are available, and factory default value is 600 seconds.

4.3.2 Advanced Settings

Voice gateway supports multiple soft switch systems. The specific parameters are according to soft switches.



Explanations:

1. NAT: Usually, voice gate in intranet is in need of turning on NAT penetration. It can normally communicate with voice gateway once used in SIP platform;

- NAT STUN: It defaults to being enable;
- NAT keepalive interval: It is 5 seconds by default;

2. Heartbeat

- Heartbeat switch: It is set to send heartbeat parameters to platform, not turned on by default;
- Heartbeat interval: It refers to the interval that voice gateway sends heartbeat packet in a set time. Unit is second.
- Heartbeat treshold: It refers to the quantity of these heartbeat packets without response which are sent out by voice gateway. Unit is piece.
- PRACK: It is not enable by default. It' s the SIP protocol header fields.

3. Register

- Register switch mode, option mode means use option message as SBC switch judgment. Register mode means do not use option message, judge it by

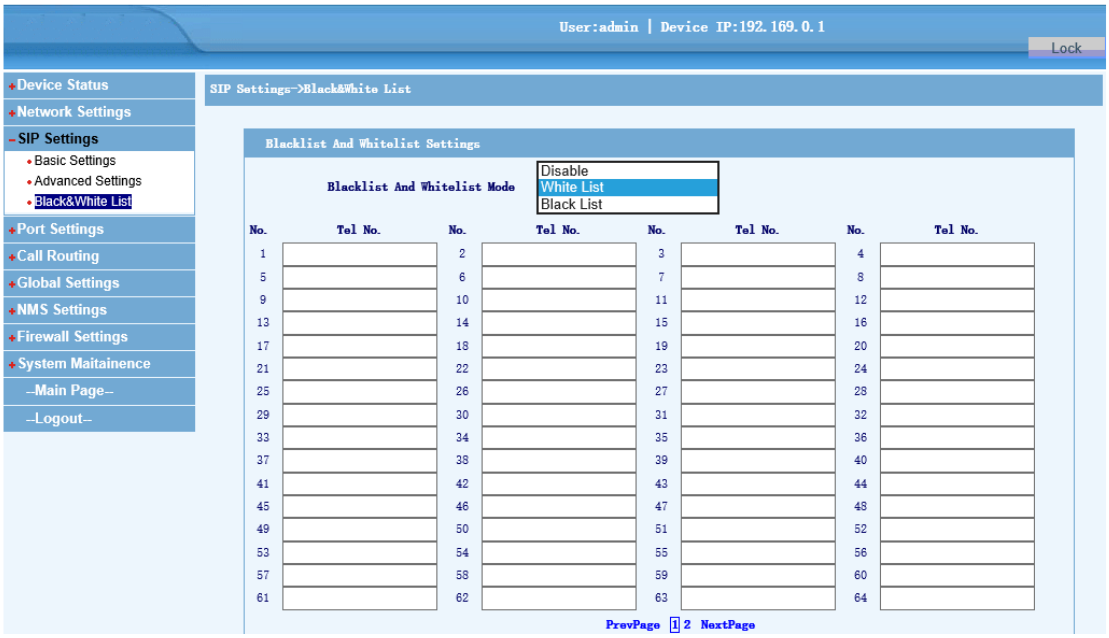
register success or register fail.

- Register flow limit, user can set the data packet sending number in every second.
- Switch to backup SBC: allows to back to slave SBC
- Switch back to primary SBC: allow to switch back to primary SBC
- SBC switching: Manual switch between SBCs.

4. Session

- Session renew: It is not enable by default;
- Session renew interval: It means the interval for session update;
- Session minimun time: session minimum time setting
- Register authentication: It needs to be enabled when platform supports SIP DIGIST authentication. When platform supports HTTP digist authentication, ths attribute is disable.
- URL form: to show URL form, sip or tel
- SIP URL with user param: the caller ID displaying methods(to display by sip or tel)
- Off-line interval: when the SBC server is out of work and the register message do not feedback, the voice gateway will send the register requirement in a cycle time of off-line interval.
- Caller ID method: get the caller ID from the header fields of From or PPI(P-Prefered-Identity)
- FAX bypass parameters, for adapting to different platform, set the relative parameters in this voice gateway, fax/modem or x-fax/x-modem.
- Phone number format: the format of dialing number and sending number, they are general character and escape sequence character.

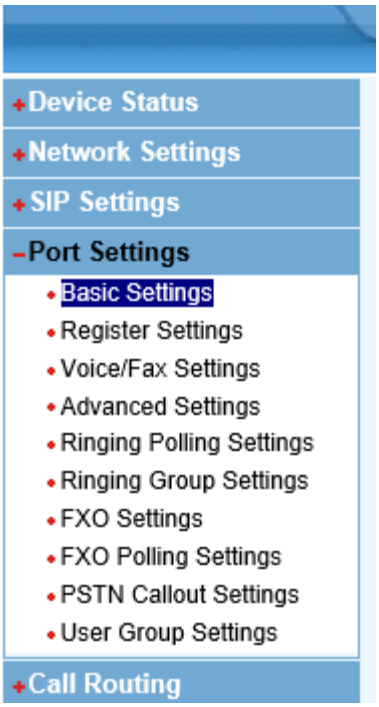
4.3.3 Black/white List Configuration



Explanations:

- Choosing Disable, then turn off the black/white list function;
- Choosing white list, then allows the number in white list to call in, and do not allow other numbers to call in. The max white list number is 128
- Choosing black list, do not allow the number in black list to call in, and allow other numbers to call in. The max black list number is 128.

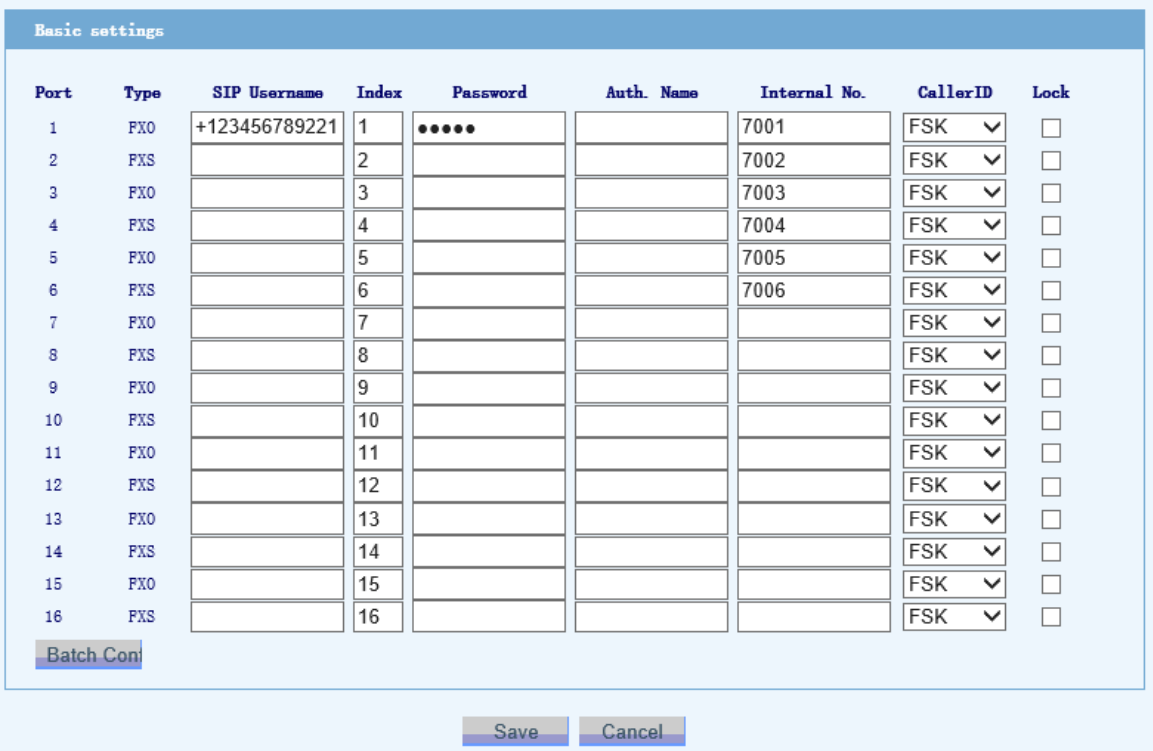
4.4 Port Settings



Opening "Port settings" user can execute the basic settings like voice gateway's SIP account, password and other parameters;

Besides these, users also can set voice fax, advanced service, attendant, ringing group

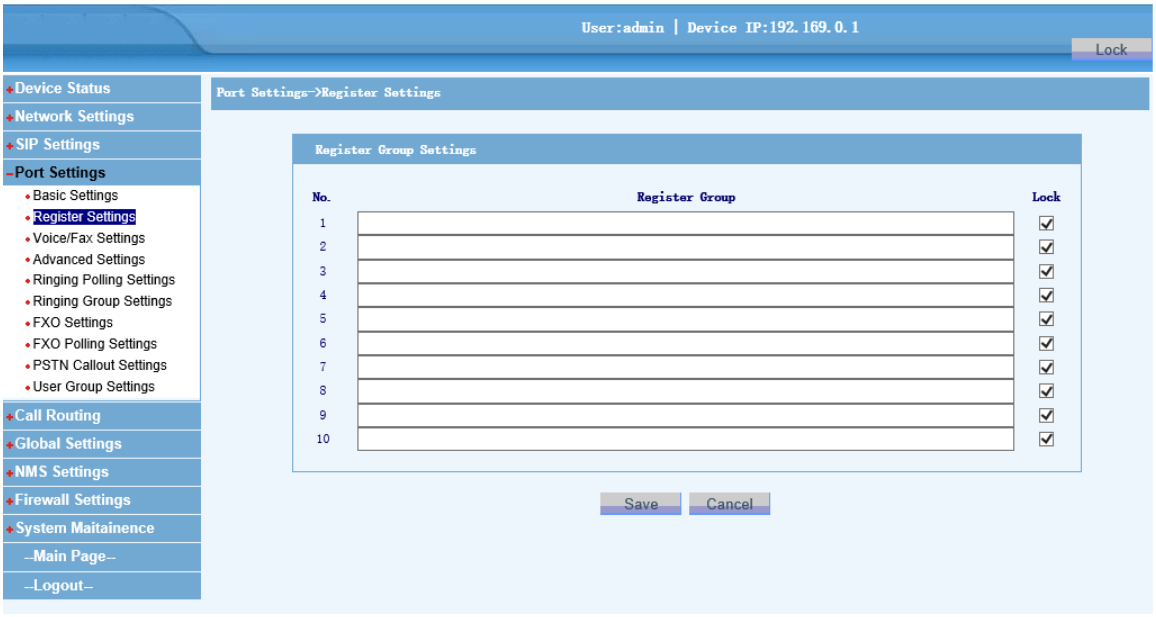
4.4.1 Basic Settings



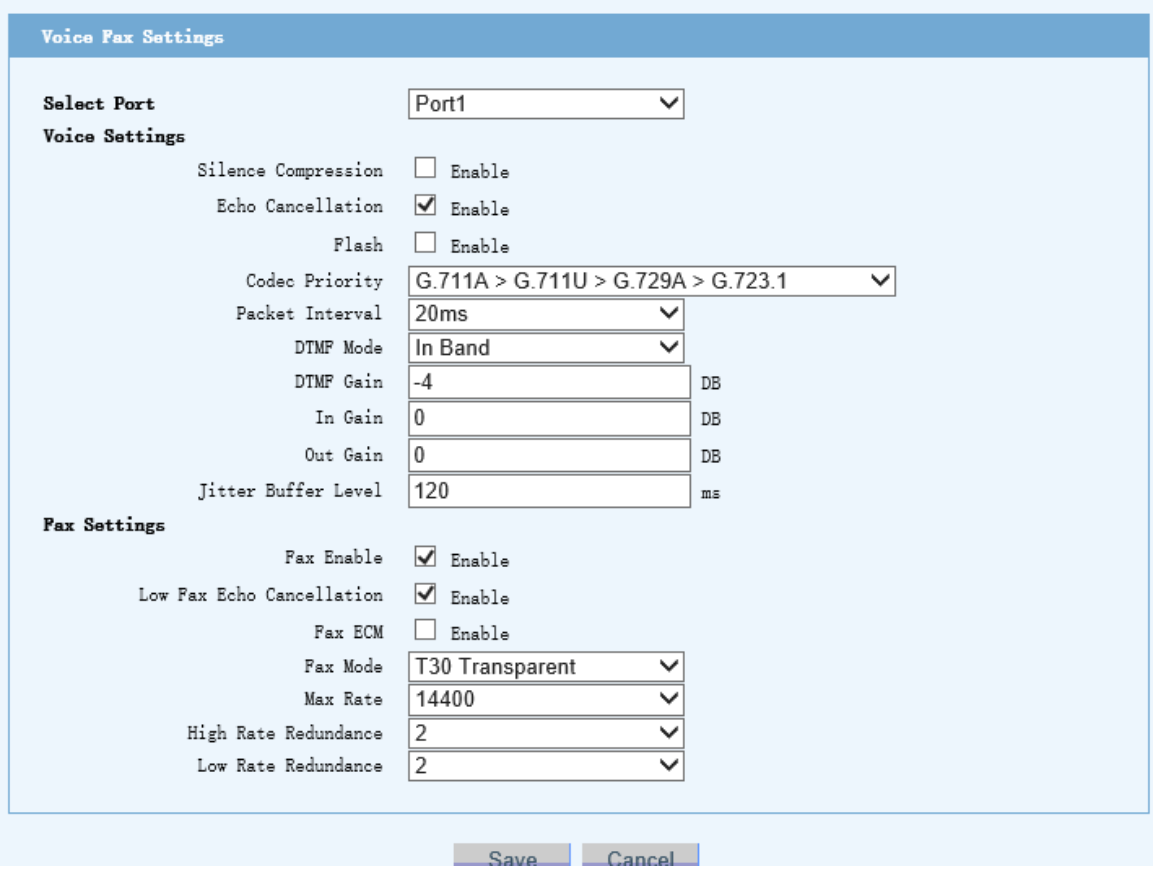
Explanations:

- Port: The sequence for telephone cable in accordance with the marks on phones' external case;
- Port type: FXS(Caller ID shows after ringing)
- SIP username: SIP account;
- Password: SIP account' s password;
- Auth. name: It is usually identical to the username and needful for part of soft switch systems;
- Internal No: internal lines that no need to register in sip switches;
- Lock: It means SIP cancellation state. The port is not allowed to be opened under this state.

4.4.2 Register Group Setting



4.4.3 Voice/Fax Settings



Explanations:

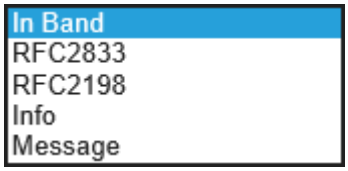
- Select Port: It refers to choosing the port which needs configuration.

Voice Settings:

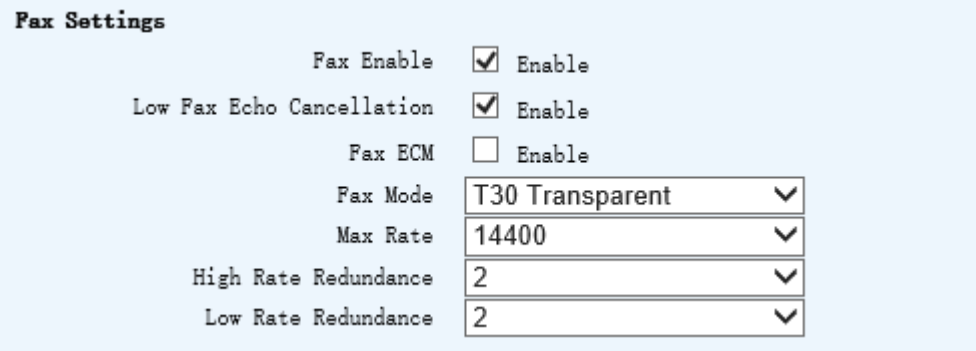
- Silence Compression: It is closed by default, means the period to recognize and eliminate the long-time silence from sound signal flow, so as to save network resources;
- Echo Cancellation: It is turned on by default;
- Flash: It is turned off by default;
- Codec priority: to set the voice codec priority, the voice gateway supports

G711A/U, G723.1, G729;

- Packet interval: It means the size of voice data packet on the conversation. The bigger the value is, the bigger the voice data package transmitted on the conversation will be, which suggests it makes full use of the network broadband. Normally, it is applicable to the network with low broadband. However, the voice delay therefrom is bigger as well. Accordingly, set the value small depending on the network rate. The default value is 1, equal to 15ms;
- DTMF mode: It supports inband, SIPINFO, RFC2833, etc;

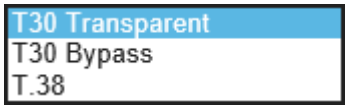


- DTMF gain: It is defaulted to be -4dB;
- DSP in gain;
- DSP out gain;
- Jitter buffer level: It is defaulted to be 120



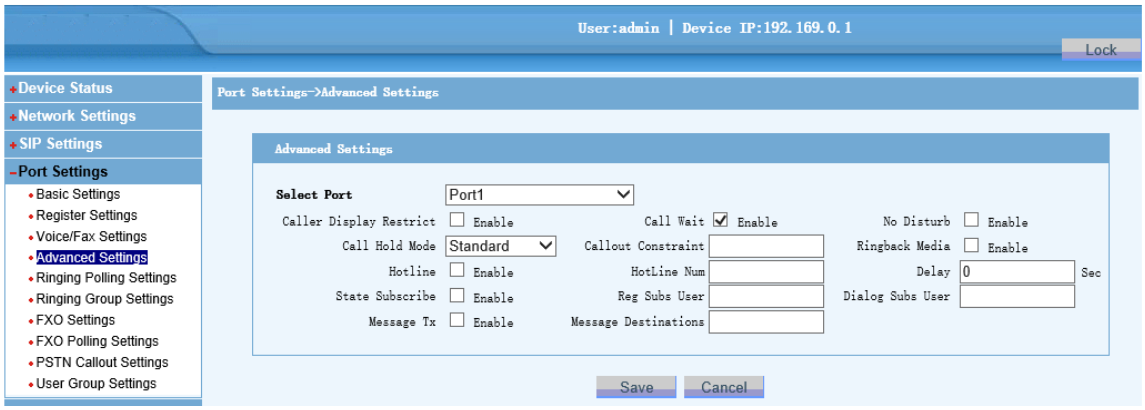
Explanations: Fax settings

- Low Fax Echo Cancellation: it’ s enable by default;
- Fax mode: It includes three modes of T.30 Transparent, T.38 and T.30 bypass;



- Max rate: it’ s set to be 14400 by default;
- High rate redundance : it’ s set to be 2 by default;
- Low rate redundance: it’ s set to be 2 by default.

4.4.4 Advanced Service Settings



Explanations:

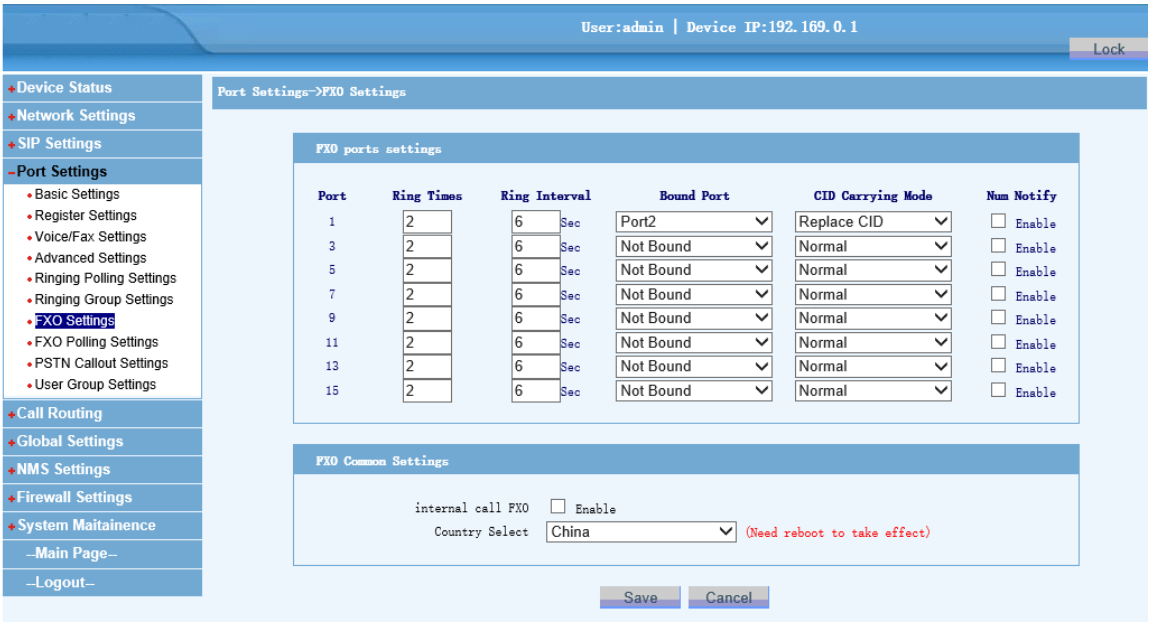
- Select Port: choose a port /all ports to configure.
- No disturb: The port will not be called in in enabled mode, so it is depended on the need;
- Call wait: turn on basing on need
- Call pickup, there is no setting tab, discretional call pickup code is *11#, designated call pickup code is *11*A#
- State Subscribe: It is not enable by default;
- Reg Subs User, means subscribed user. It is not enable by default;
- Dialog Subs User, means subscribed user. It is not enable by default;
- Message Tx, means message sending user. It is not enable by default;
- Caller dispay restrict. It is not enable by default;
- Call hold mode: there are standard, Diable, SSCC, SIP INFO. It is Standard by default. 

- Hotline: enable it means hotline mode active;
- Hotline Num: Enter the designated hotline number here after setting the

usage pattern as the hotline;

4.4.5 FXO Port Configuration

FXO ports settings



Set the FXO ports to conncet with multi FXS ports and attendant port.

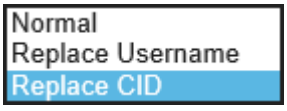
Bound Port, show FXO ports number

Ring time, user can set the ring time when call in FXO.

Ring interval, custom set the ring interval.

Bound port: to bind the FXS port with FXO.

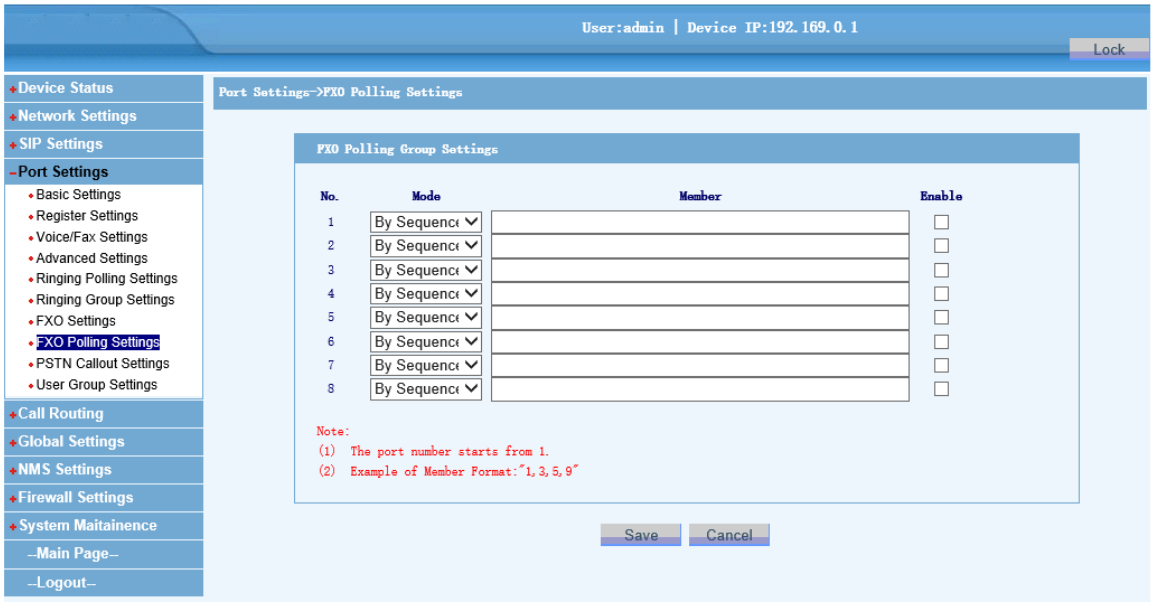
Caller ID Carrying Mode, include Normal mode, Replace Username mode and Replace CID. When centrex IP PBX, voice gateway can exchange the calling number in exchangeable mode.



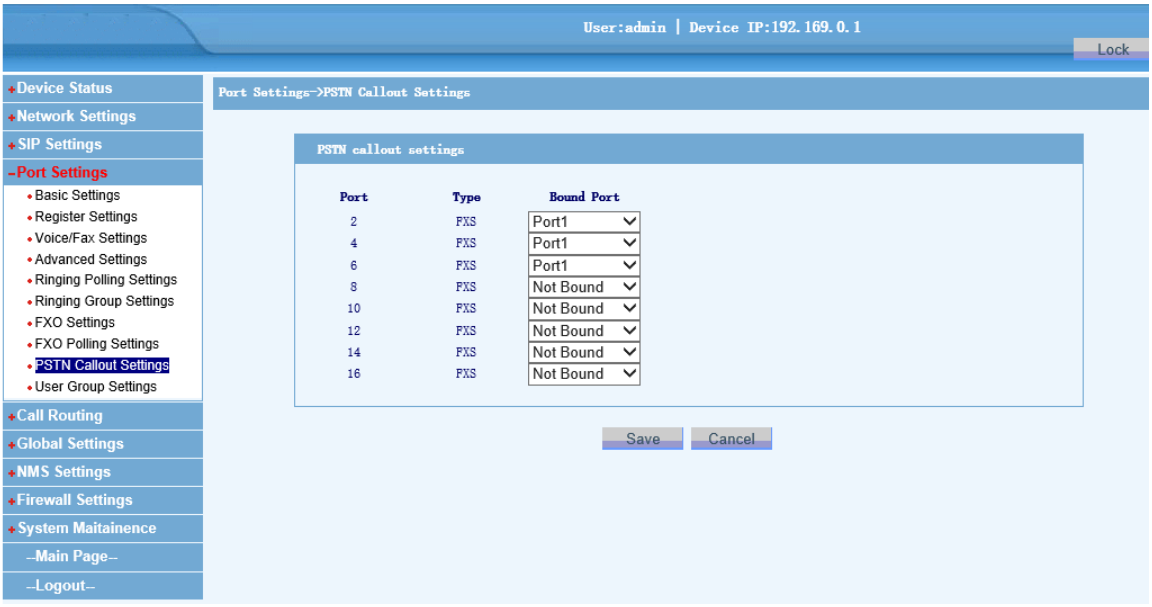
4.4.6 FXO Polling Settings

For outgoing call by FXO, user can set different rotating ways to call out by FXO.

As follows:

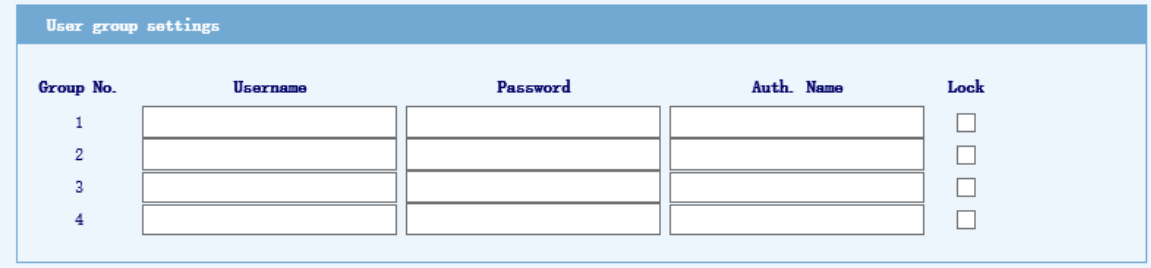


4.4.7 PSTN Callout settings



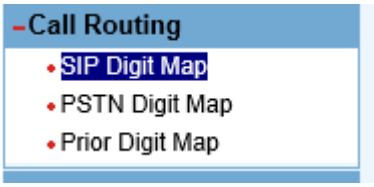
To set outgoing call by FXO, and bind FXS with FXO.

4.4.8 User Group Settings



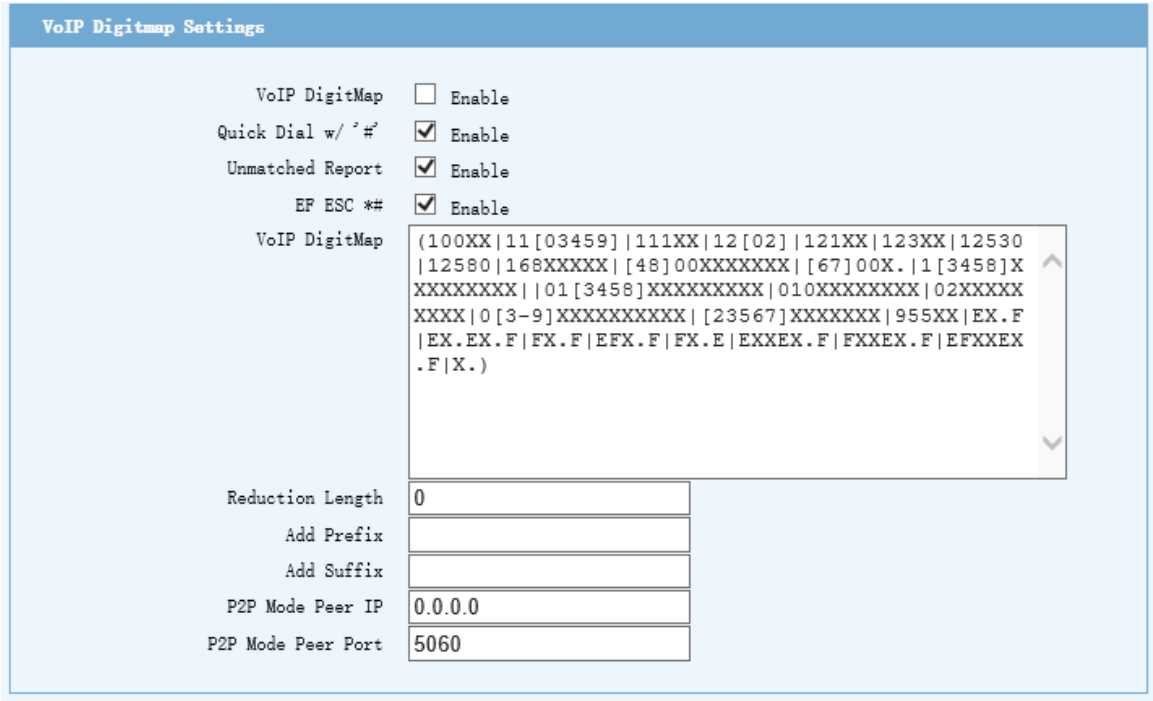
Set it as a gateway user to register to the platform

4.5 Call Routing



The call routing settings include SIP Digit Map, PSTN Digit Map, and Priority Digit Map.

4.5.1 SIP Digit Map



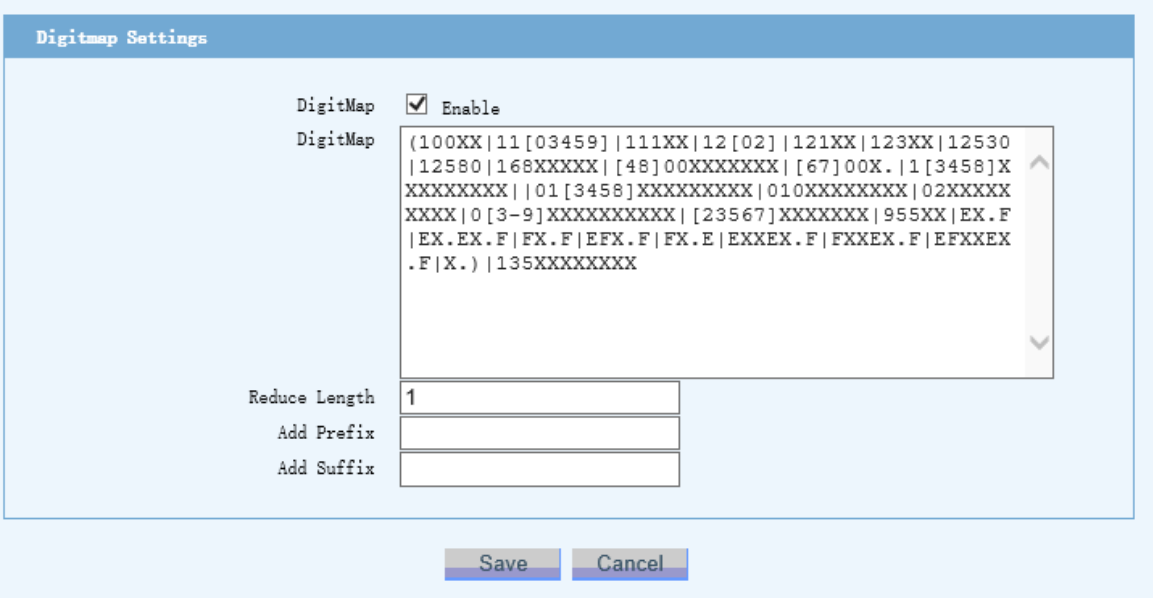
Explanations:

- Voip Digit Map: It is defaulted to be enabled;
- Quick Dial w/' #' : Call out when voicegateway get # number, and this attribute is set according to users' requirements;
- Voip Digit Map: It is configured as "X", which means it can call out by dialing any number; also can be configured as "XXX", completely matching with the length of three numbers. If * and # combined together with a number, for instance, dialing #700*, the digit map can be set as FX.E; use " | " to separate more than one dial rules, for example, X.| FXXXE.
- Reduction length: It refers to the removed length of the number;
- Add prefix: It refers to add prefix in front of the called number;
- Add suffix: It refers to add suffix behind of the called number;
- P2P mode peer IP: It is 0.0.0.0 by default, and used to register SIP server

configuration. If it is mutually called in a same device, it will be set as 127.0.0.1; if it is point-to-point callin, it should be configured as the IP address of counter party;

- P2P mode peer port: It should be filled in as requested by SIP server, and the default is 5060.

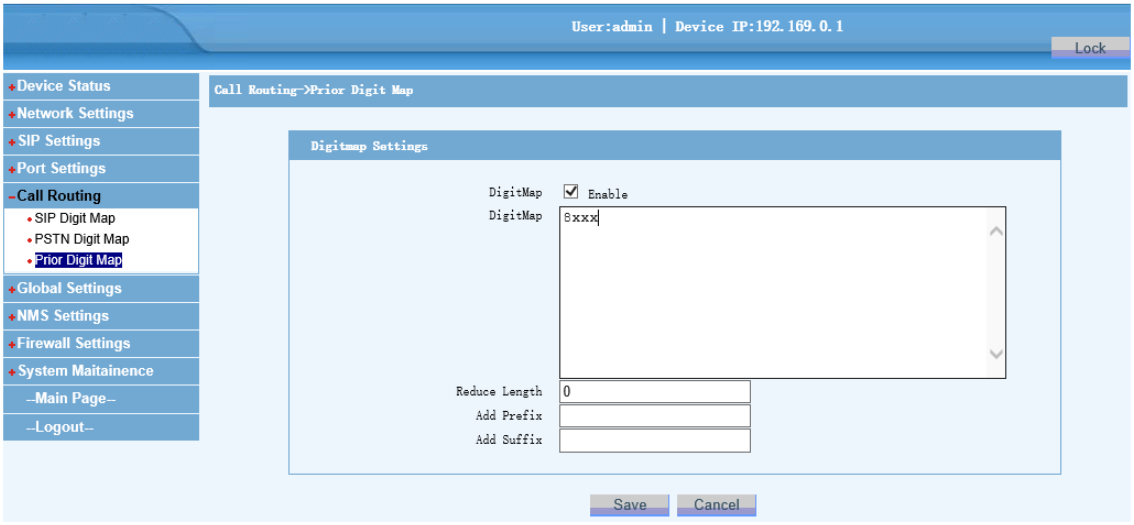
4.5.2 PSTN diagram settings



Explanations: to set the diagram rules by FXO outgoing calls.

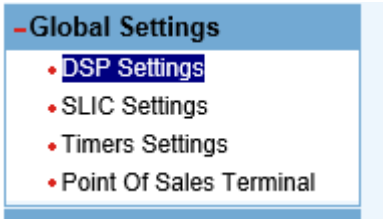
- Digit Map, is disable by default
- Digit Map set as 'X', it means can call out by dialing any number;
  Can set as 'XXX', it needs to call out by dialing three numbers;
  When need to call out by *,# with numbers(0-9), the diagram set as FX.E
  When there are several dialing rules, user can separate by '|', like X.|FXXXE
- Reduce length: to set the exchange rule of called number, usually need to reduce one digit of called number when outgoing call.
- Add prefix: It refers to add prefix in front of the called number;
- Add suffix: It refers to add suffix behind of the called number;

4.5.3 Prior Digit Map

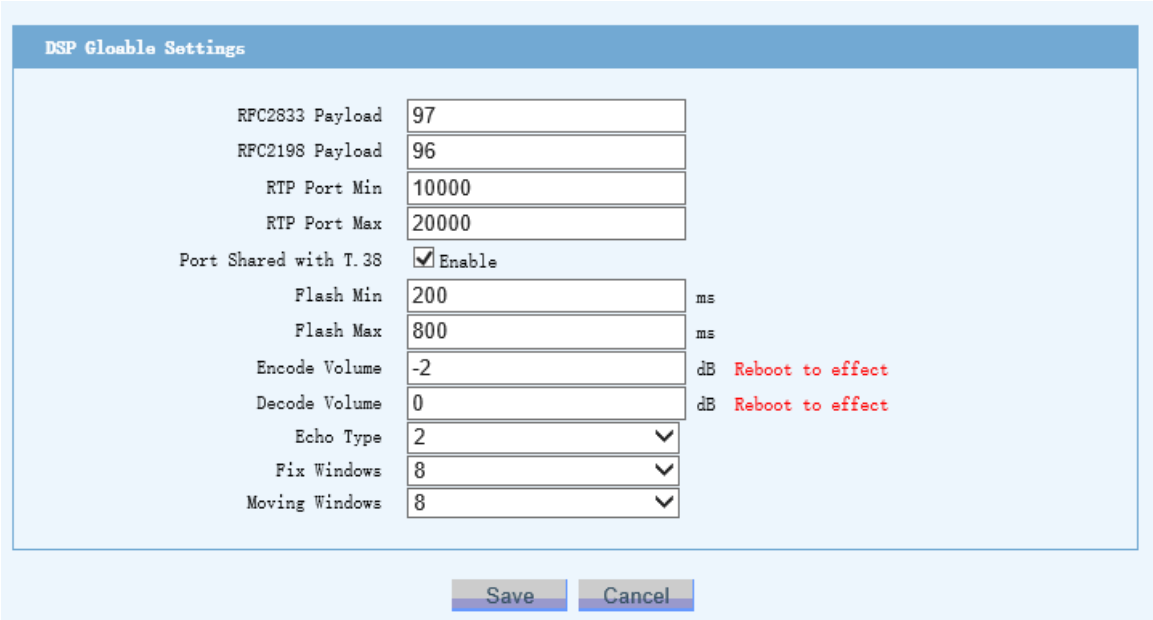


➢ prior digit map is higher than SIP diagram, when it can not meet the demand of interal calls by SIP digit map, please use prior digit map.

4.6 Global Settings



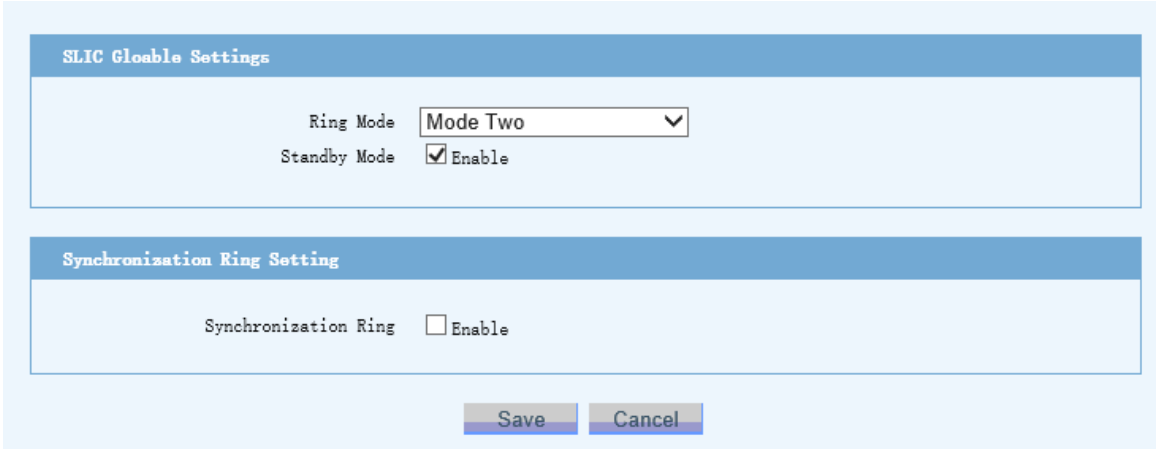
4.6.1 DSP Settings



Explanations:

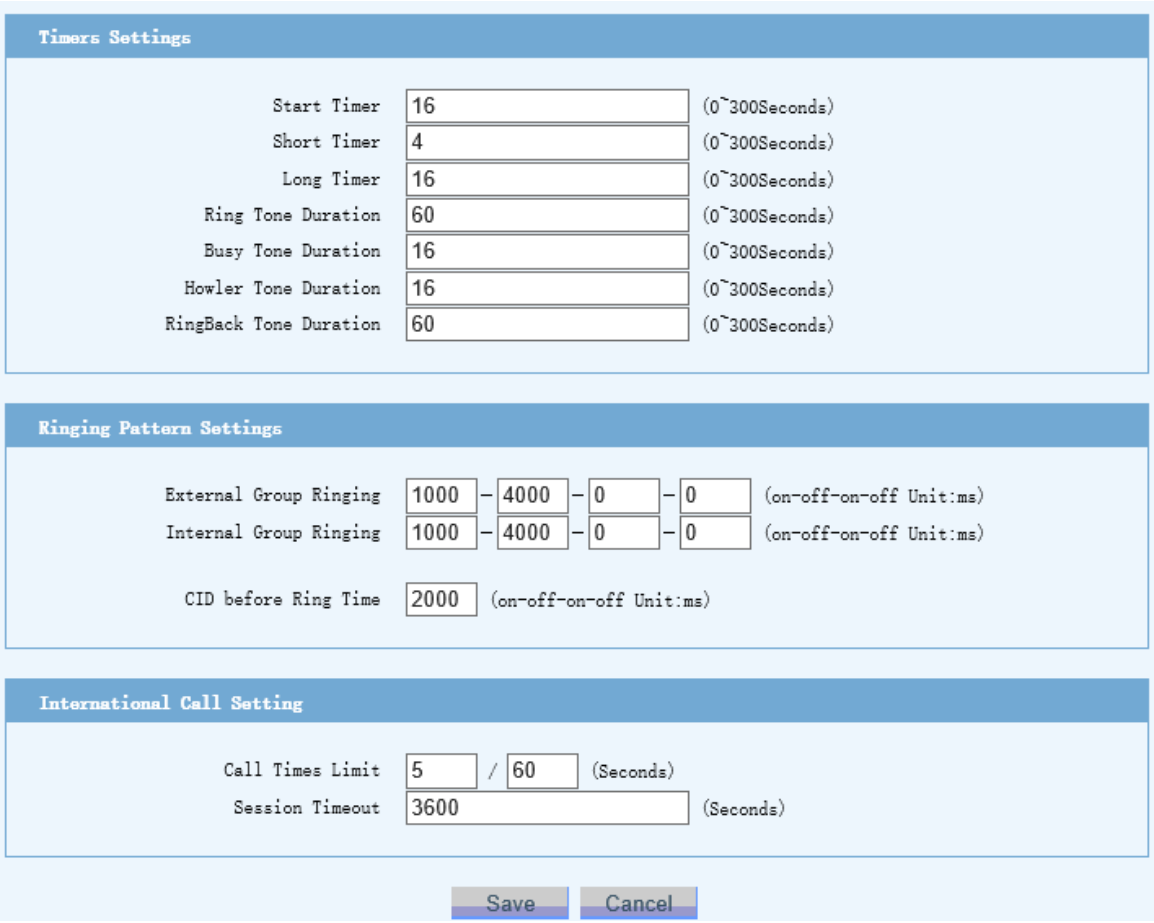
- RFC2833 Payload: The corresponding value is set as 97 ~ 101 based on demands, and the default is 97;
- RTP port scope: It refers to the port that RTP protocol is using on conversations.
- Flash Min/Max: can set the time of Flash limit

4.6.2 SLIC Setting



- Ringing mode: can set different ringing mode, including Mode 1, Mode 2, and Mode 3. It is different ringing voltage in different mode. Mode 2 by default
- Standby mode, it is enable by default.

4.6.3 Timer

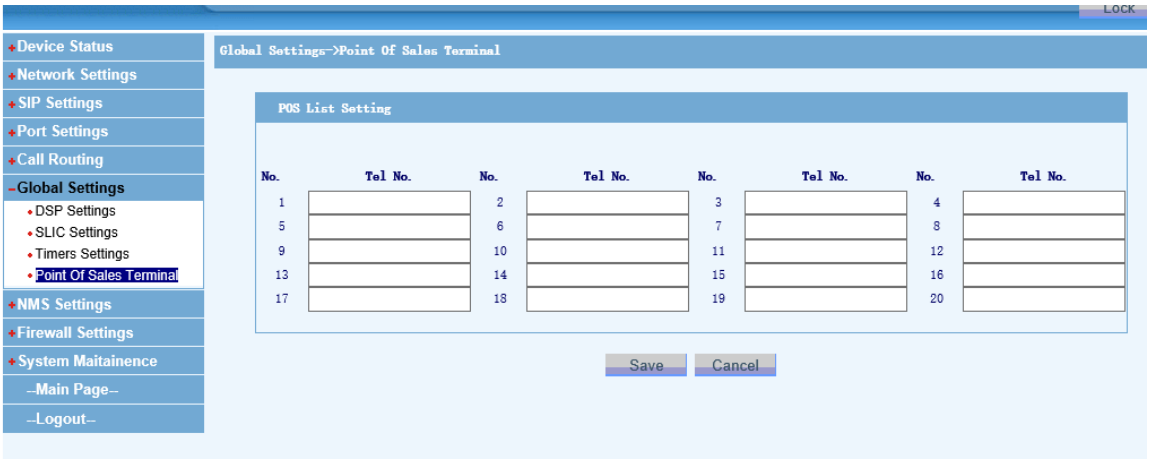


Explanations:

- Start time: No dial-up timeout (T timer),It is 16 seconds by default;
- Short time: Dail-up timeout (S timer), It is 4 seconds by default;
- Long time: Timeout of number matching failure (L timer). It is 16 seconds by default;
- Ring tone duration: It is 60 seconds by default;
- Busy tone duration: It is 16 seconds by default;
- Howler tone duration: It is 16 seconds by default;
- Ringback tone duration: It is 60 seconds by default.
- The ringing patern setting, set the different ringing when call in(external group ringing/ internal group ringing)

➢ The international call setting, limit the international outgoing calls

4.6.4 POS Settings



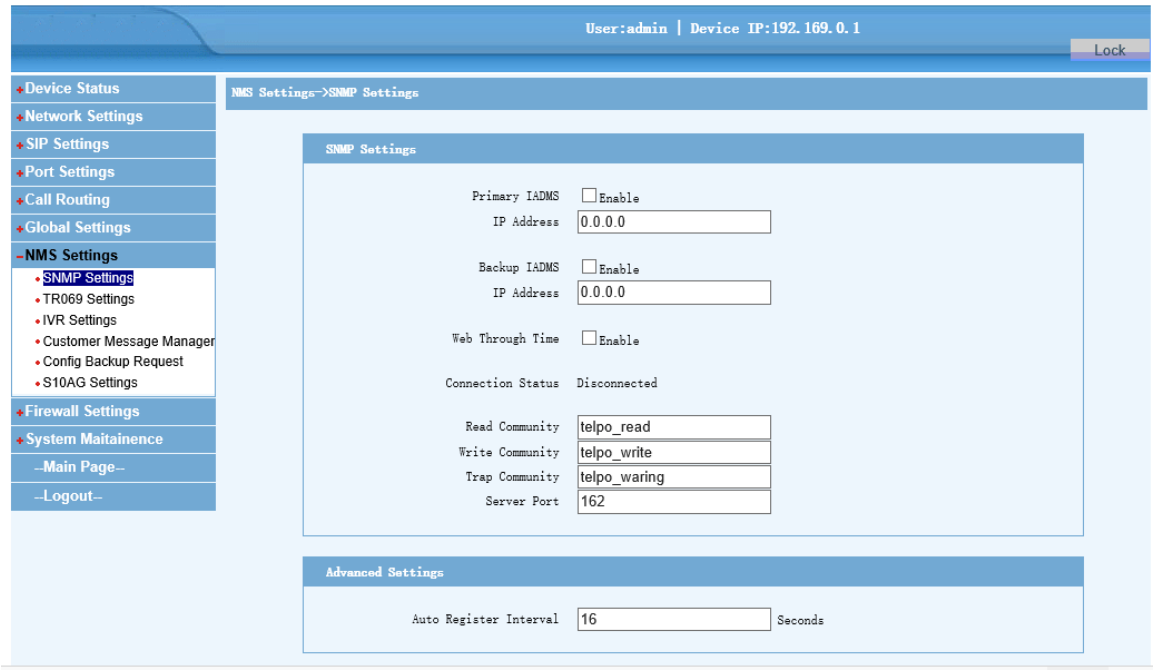
When connecting with POS machine, it needs to set up the POS called number, can set up 20 called numbers at most.

Chapter V Advanced Settings

This chapter introduces how to make use of voice gateway to perform some advanced settings by WEB web to let users utilize expanded functions. The contents contain in this section as follows:

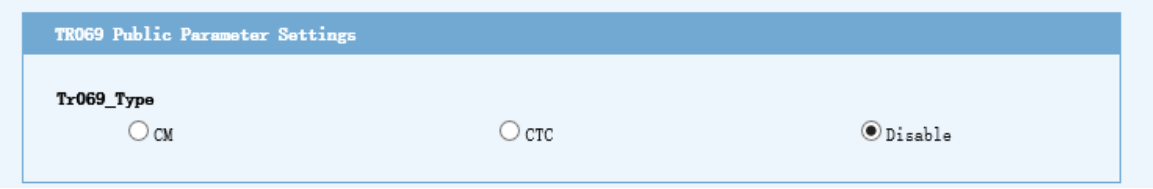
- 🕮 Network management settings
- 🕮 Firewall settings
- 🕮 System functions

5.1 NMS Settings



Explanations:

- To enable network management function, IP configuration of network management system and relevant parameter setting. Additionally, settings also include to set gateway' s device name and automatically register cycle of network management station;
- IADMS IP: It configures the IP of network management server;
- Read Community: It is utilized to inspect GET command between the voice gateway and network management server;
- Write Community: It is utilized to inspect SET command between the voice gateway and network management server;
- Trap Community: It is utilized to verify TRAP between the voice gateway and network management server;



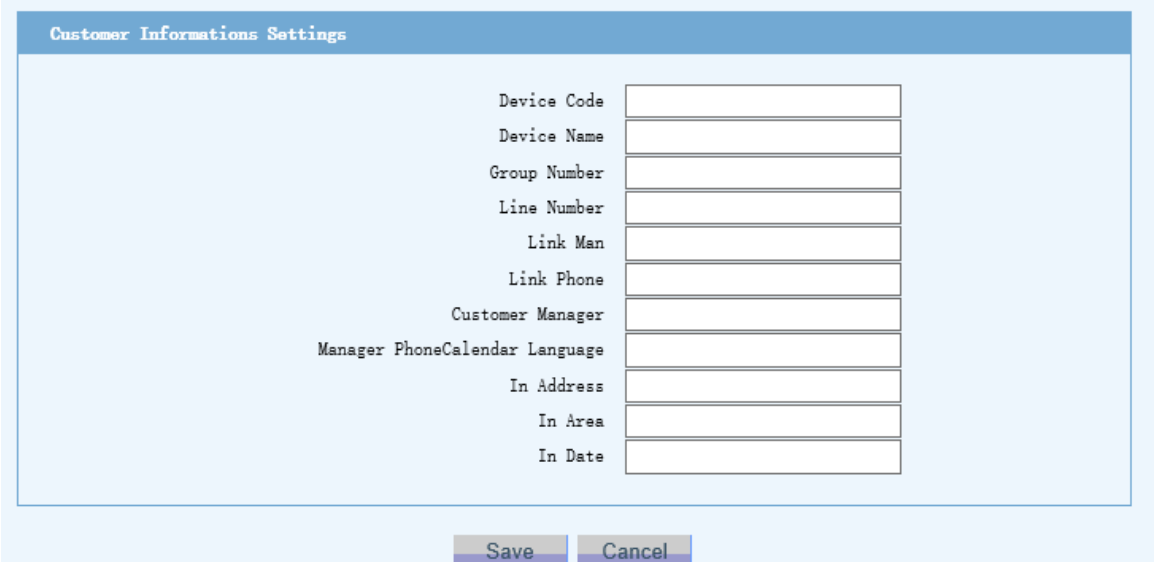
Explanations:

- Trun on/off TR069 function, support TR069(CM) and TR069(CTC)

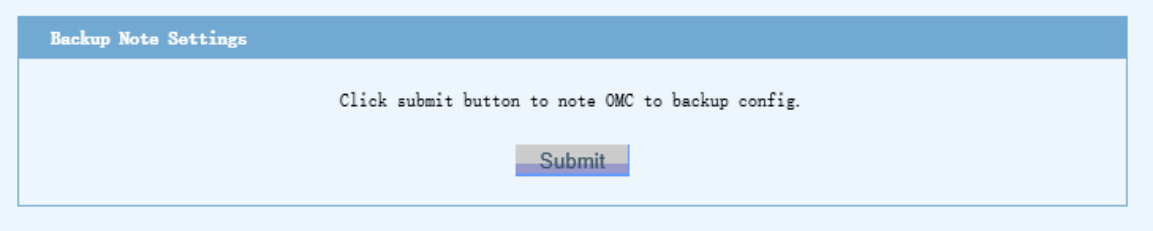
Explanations:

- IVR config parameter: turn on/off the IVR function. Turn on voice gateway, and connect with a telephone, then enter function code (*33*) to enter the voice interaction mode. Follow the voice prompt to set the IP access, restore default configuration (include IP address), set the OMC Web management IP, turn on/off OMC Web management. Global password is 0324, restore default configuration password is 1234 (keep secret)
- IVR Lookup telephone number: set the local register function code.

Attention: When need to use the PBX platform value-added service (like call forward unconditional, call transfer on busy, call transfer on no answer), please turn off IVR call business. If need to use the local call forward, please turn on the IVR call business.



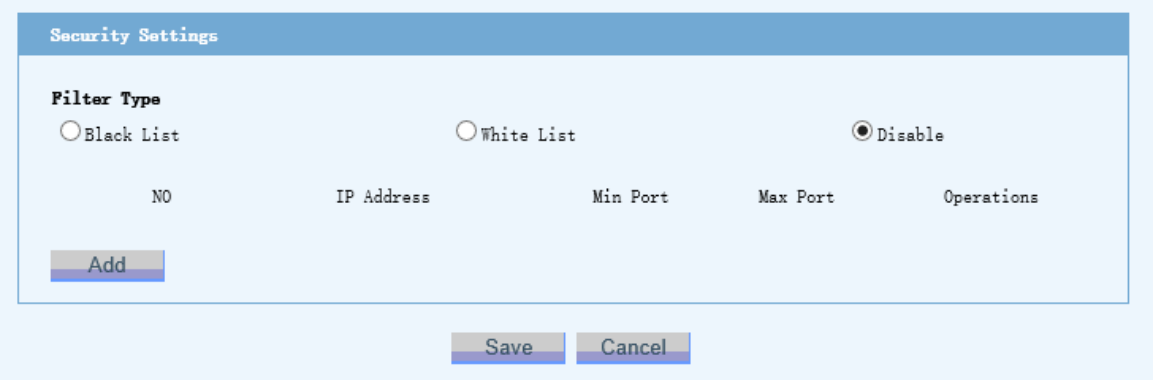
Fill in client information



Notify network management for parameter backup

5.2 Firewall Settings

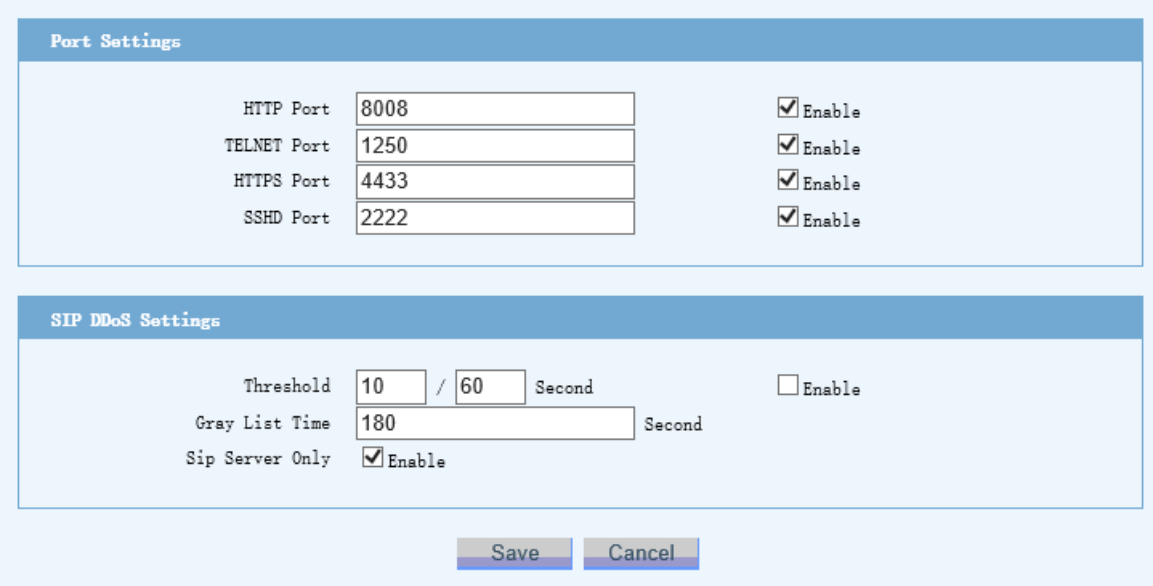
5.2.1 White List Function



Explanation: The white list function is closed by default.

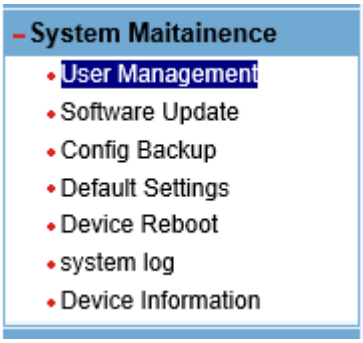
Note: when turn on the white list function, if do not add white list address, then it will forbid all IP to login WEB GUI. So if do not use white list function, please turn it off.

5.2.2 Port Settings



Only accept SIP server message, it is turn on by default. Reject to accept the non-SIP server message. If want to use FXO jumper, please turn off this function.

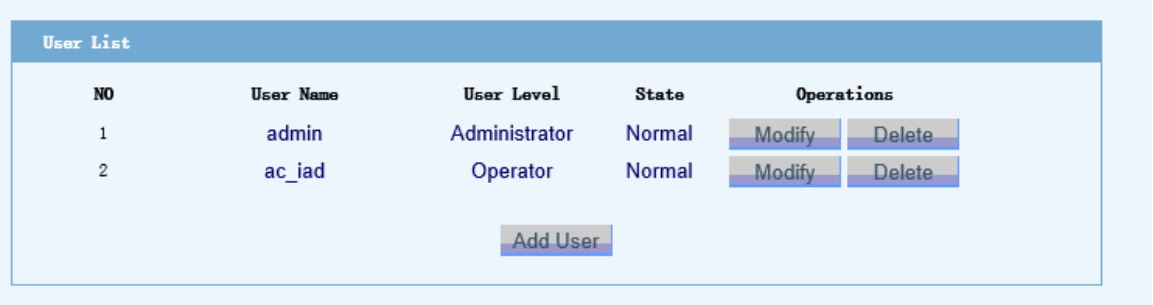
5.3 System Function



System functions cover User management, software upgrading, data backup upgrading, factory setting restoration, etc.

With the help of system functions, it is very easy to manage and back up voice gateway rights, and to upgrade voice gateway settings and replace software for voice gateway.

5.3.1 User Management



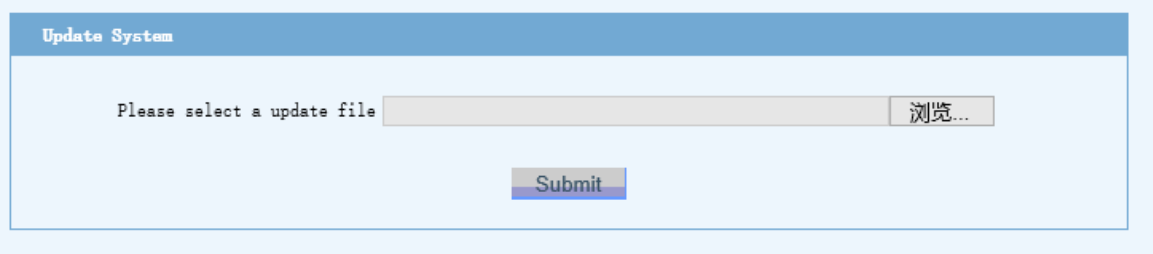
✍ **Pay attention to capital and small letters when entering password.**

Account: admin, password: psw.iad

- **User account will be locked after 5 password error, and can not login. Need to login by console port, fill in the right password and enter system, use the user command to unlock.**
- **If forget password, please do factory reset.**

5.3.2 Software Upgrading

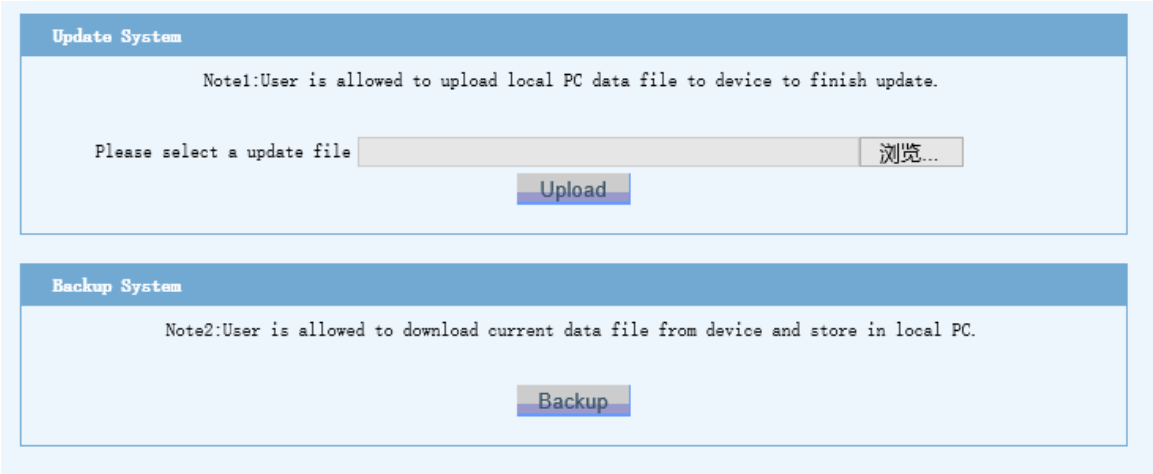
It is more likely to provoke irreparable damage in case of improper operation! Be cautious to use!



Telpo voice gateway supports to update the software via http loaded file.

During upgrade, be sure to supply power for device, and forbid to cut off voice gateway's power supply!

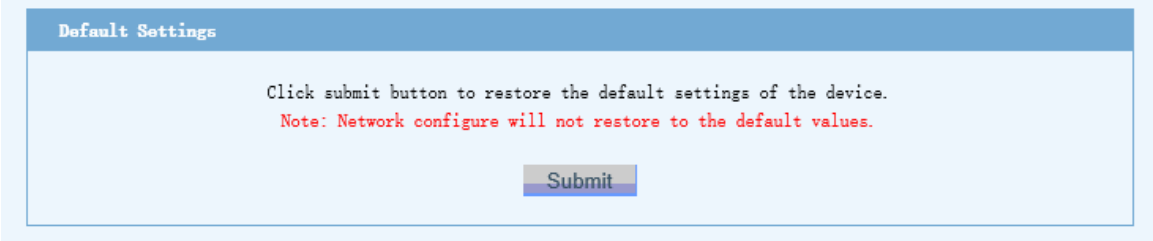
5.3.3 Data Backup Upgrading



DO NOT use the Non configuration file.It is more likely to provoke irreparable damage in case of improper operation! Be cautious to use!

To back up and restore the gateway configured information.

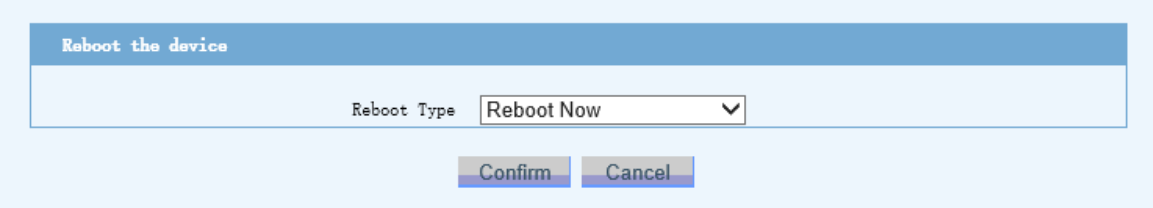
5.3.4 Factory Settings Restoration



Explanation:

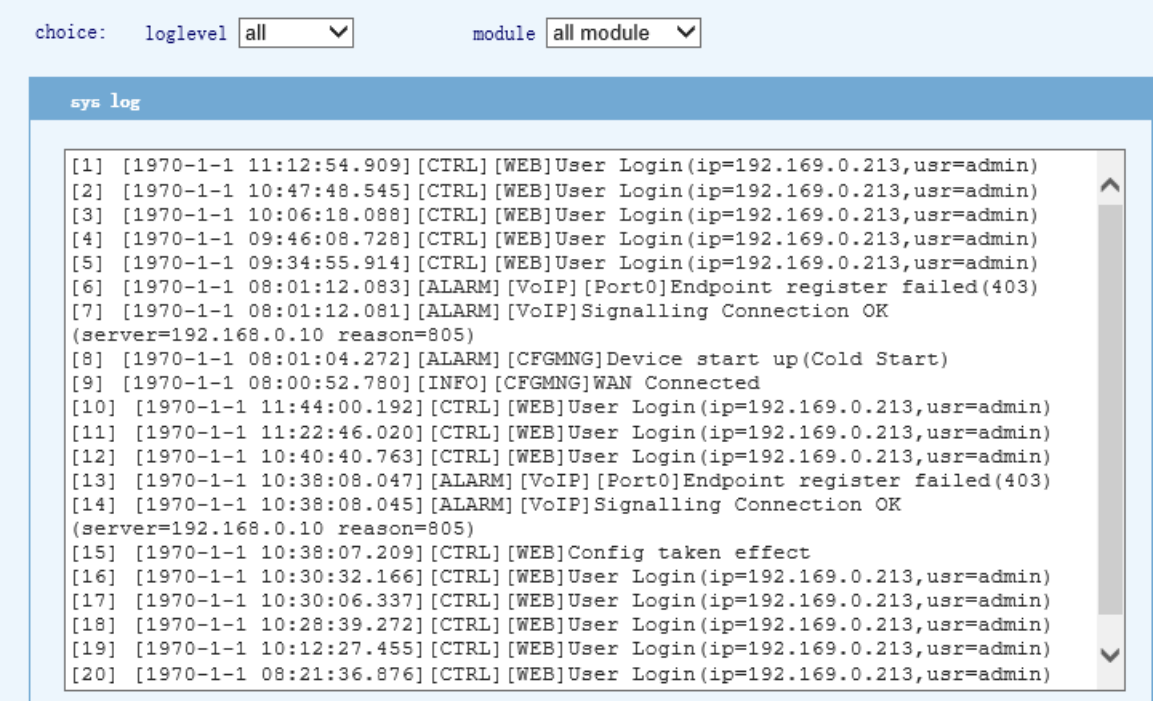
It needs to reserve gateway' s IP address and routing settings except for factory settings.

5.3.5 Gateway Reboot

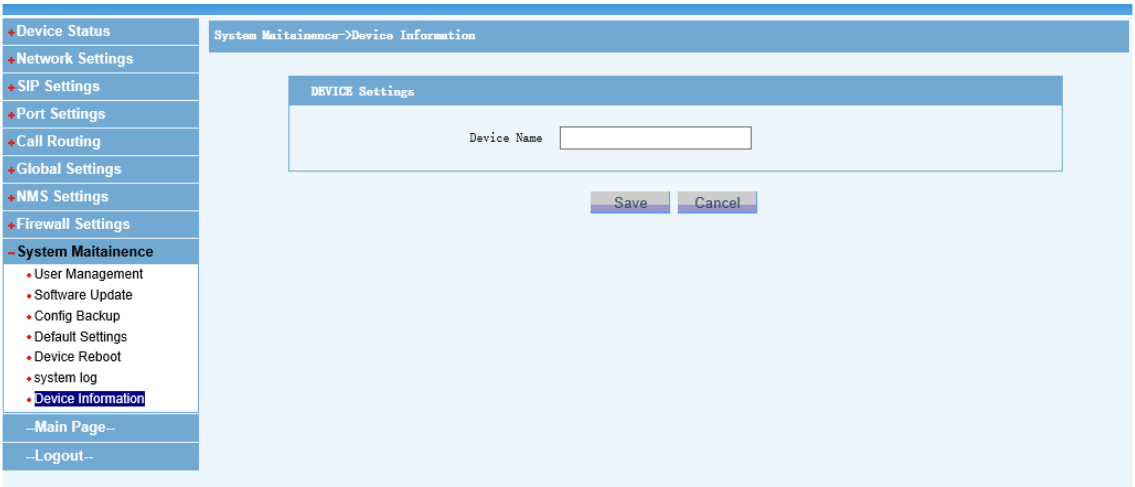


Explanations: Reboot gateway causes the unsaved parameters to be lost. Restart takes around 2 minutes.

5.3.6 System Log



5.3.7 Voice File Upload



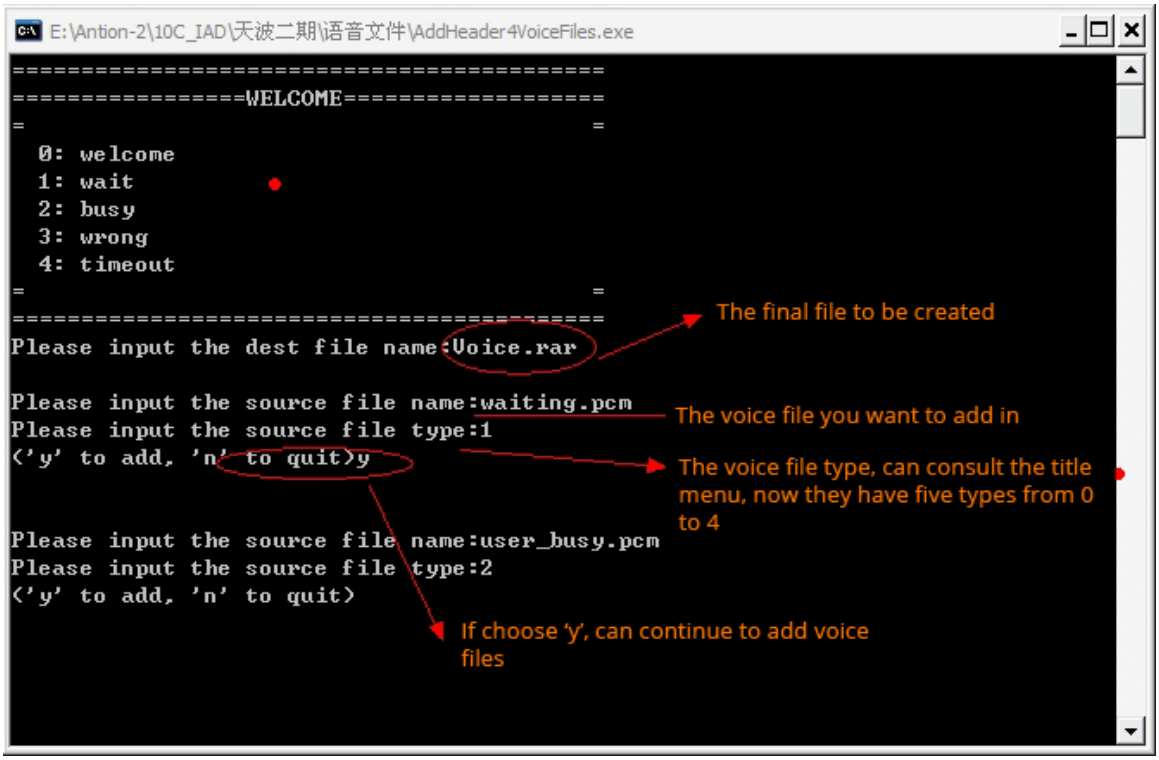
Upgrade explanations

Upgrade in WEB, choose the voice you want to upload, and click upload to upgrade

The voice file need to be created by a special tool, follow the operation guide as

below, to pack the voice file to the final file。

Voice file create tool.rar



Chapter VI Appendix

Appendix I Basic Configuration Commands

This section includes:

Command line interface profile: It focuses on introducing how to log onto the command line interface, command line format and characteristics;

Compressed chip configuration: It focuses on introducing the configuration commands and methods related to compressed chip;

Network parameters configuration: It focuses on introducing the configuration commands and methods related to network parameters;

System parameters configuration: It focuses on introducing the configuration commands and methods related to system.。

6.1 Profile of Voice Command Line Interface

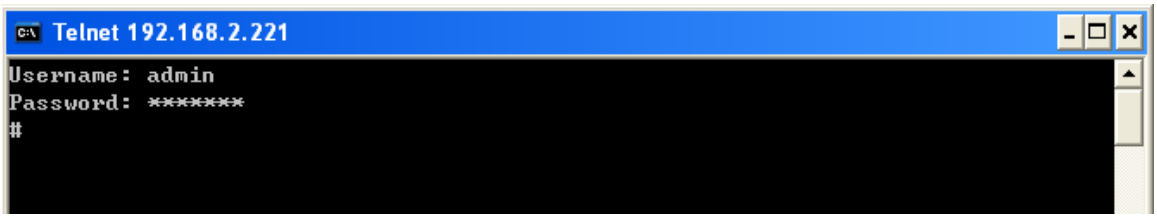
6.1.1 Command Line Entry

Users can get access to command line interface via the two ways as follows.

Link target board with PC via serial port, and then make use of super terminal and other software to log in;

Link target board with PC via network port, and then make use of Telnet login software to log in;

Under either login method, it needs to import the default username and password to log in. The default username is admin, and password is psw.AG. How to configure the users with different authorities, refer to section 1.2.4. Now it is possible for you to operate all introduced commands. See command line login interface as follows:



6.1.2 Command Line Prompts

CLI mould’s command line prompts include the following two levels:

Root command level: Cursor display with “#” after, it means the current command is in the root command layer;

Sub-command level: current setting directory name with “>” and cursor display after , it means the current command is in the sub-command layer;

6.1.3 Command Classification and Command Format

Two major commands are root command and sub-command:

Root command

It refers to the first-layer command set after entering CLI, including

codec: compressed chip configuration command

network: network parameters setting command

protocol: protocol-related parameters setting command

switch: CLI command entering data configuration

system: command of system-related parameters setting and tool

manage: CLI command of management protocol-related settings

logout: CLI cancellation command

Help: command for help

show: various parameters display command

reboot: MDU restart command

take-effect: command to take make parameters effect.

Among the above said commands, 1～5 belong to the directory commands, namely, they have sub-commands.

Sub-command

It refers to the command set after entering a particular setting directory, see below:

Command Layer	Sub-command
Codec-layer sub-command	audio_port , cid , cn , dtmf , df_codec , ec , fax , fax_ctrl_mode , g.723.1 , gain , jb , line_hook , oa , pktintvl , priority , rfc2833_pt , rfc2833_neg_mode , rfc2833_red_pt , ring , ring_pattern , sc , t38_ev_det_mode , t38_mode , t38_port , tone , tone_duration , dm_timer , keepRTP , vbd , show , exit , help
Network-layer sub-command	dns , gateway , hostname , ip-mask , mode , ntp , vlan , pppoe , show , exit , help
Protocol-layer sub-command	al_par_en , cmddelay , digitmap , empty_no_with_blank , ep_name , ephterm , heartbeat , howler_logout , local_ctrl_resp , local_tone_ctrl , md5 , mg , mgc , mgc2 , mgc3 , mgcmode ,

	port_vis， pos_num，reg_reason_code，remote_dscr_resp，rereg， resend_time，send_local_sdp，sig_ab_mode，trans_type， wt_to_handle，show，exit，help
System-layer sub-command	debug，dmesg，download，ifshow，load，logoutep，logoutmg， mem，regmg，resourceinquiry，ping，protocol，ps，regep， reboot_type，route，save，test，timezone upload，version， exit，help
Manage/snmp-laye r sub-command	agent, community, exit, group, help, show, switch, trap, user

Every command format is organized in the form of "command name, parameter 1, parameter 2....." . For instance, network> ip-mask 192.168.1.2/24

Therein, "network>" is the command prompt, "ip-mask" is the command name, and "192.168.1.2/24" is a parameter.

Part of commands have no need of parameters, and can be operated by way of interaction.

6.1.4 Auxiliary Function

Automatic completion functions of command and parameter

CLI module has the automatic completion functions of command and partial parameters. If users press "TAB" button when entering command word or parameters, CLI will automatically look for the words matching with the entered ones. If it looked for a sole matched command or parameter, CLI will automatically make the whole word complete and add a space after it so as to smoothly import a next parameter. For instance, after inputting "n" +TAB in the root command layer, CLI will automatically complete the command "network": #n (TAB) —> #network.

If no any match word can be found, TAB button will be ignored.

Function for command line history record

After ending the command line entry (press enter key after nonempty character string), CLI will write the contents input last time into command history butter memory; After pressing upkey or downkey, users are able to search command history records and the searched records will be automatically written into command line.

Parameter absence reminding function

When parameters are not filled in or incorrect ones are completed in, a lot of available parameters will display once enter key is pressed. For example, input "cid" in "codec" command layer and press enter key, CLI will display reminding information codec_ep1> cid (enter key): The command is not completed! Available parameters: dtmf fsk command usage: cid {dtmf | fsk}

Hidden command and maskoff command

The hidden command refers to the command that the user fails to complete by CLI command or help function. These commands only work after users manually enter the preset hidden command name. For instance: system> user

The maskoff command refers to the command is not allowed to execute under the command line logged in by Telnet. These commands also are the ones that were preset via procedure code.

6.2 Detailed Explanations for Voice Command Usage

6.2.1 Compressed Chip Setting Command Set

You could go to compressed chip setting contents once entering "codec" command, see below: # codec

Please input endpoint index (1 ~ 24): 1

In consideration of many ONU ports, so the subport displays port' s parameters. The hosts of parameters are the global parameters, and the parameters showing in every port mode is the same as the set ones. Including

Endpoint1 audio port: 4000

Endpoint1 T.38 port: 14000

The above two are different from the parameters shown in each port, and they can be set respectively.

CID mode setting command

codec_ep1> cid {parameter}

This command is used to set the caller ID display mode; parameter is "dtmf" or "fsk" .

Comfort noise setting command

codec_ep1> cn {parameter}

The parameter is only "enable" or "disable" , "enable" means to turn on the comfort noise function, and "disable" means to turn it off.

DTMF mode setting command

codec_ep1> dtmf

DTMF Mode:

[1] In Band

[2] RFC2833

[3] RFC2833 Redundance

Input your choice [1~3]:

This command is set by way of interaction, and it will work if only the corresponding serial number is chosen.

Command to cancel Echo switch setting

codec_ep1> ec {parameter}

The parameter is only "enable" or "disable", "enable" means to turn on the echo canceling function, and "disable" means to turn it off.

Fax mode setting command

codec_ep1> fax {parameter}

The parameter is only "t38" or "transparent", "t38" means the fax protocol is T.38, and "transparent" means the fax protocol is EAP over radius.

G.723.1 code rate setting command

codec_ep1> g.723.1 {parameter}

The parameter is only "high" or "low", "high" means the code rate is 6.3Kbps, and "low" means it is 5.3Kbps.

Gain setting command

codec_ep1> gain {parameter 1} { parameter 2}

Therein, parameter 1 is the In-Gain, the value of In-Gain; parameter 2 is Out-Gain, the value of Out-Gain. The value of the both ranges from -31to 31, unit is dB.

Vibrating buffer depth setting command

codec_ep1> jb {parameter}

The parameter is only "0", 50", 100", 150" or "200", unit is ms.

"Line hook" parameter setting command

codec_ep1> line_hook

This command is set by way of interaction, it does not need any parameter, and the

set parameters include:

- ☐ Pulse Min Width
- ☐ Pulse Max Width
- ☐ Inter Digit Min Time
- ☐ Flash Min Time
- ☐ Flash Max Time
- ☐ Off Hook Time
- ☐ On Hook Time

Such as:

codec_ep1> line_hook

Pulse Min Width [40]:

Pulse Max Width [75]:

Inter Digit Min Time [150]:

Flash Min Time [100]:

Flash Max Time [400]:

Off Hook Time [40]:

On Hook Time [400]:

Therein, the value in "[ ]" refers to the value set to the parameter currently, unit is ms.

Output attenuation setting command

codec_ep1> oa {parameter}

The parameter is only "- 3.5", "- 7" or "0", unit is dB.

Command to set compressed chip package cycle

codec_ep1> pktintvl {parameter}

The parameter is the package cycle, unit is ms. For example:

codec_ep1> pktintvl 20

Coding priority setting command

Interaction setting mode:

codec_ep1> priority

Only "priority" command is entered, the command line will inquire the priority that user is going to set, as shown below:

Algorithm priorities:

[1] G.711A G.711U G.729 G.723.1

[2] G.711U G.711A G.723.1 G.729

[3] G.729 G.711A G.711U G.723.1

[4] G.729 G.723.1 G.711A G.711U

[5] G.723.1 G.711A G.711U G.729

[6] G.723.1 G.729 G.711A G.711U

Input your choice [1~6]:

At this time it is only allowed to enter numbers from choice [1~6]. Users are able to press "Ctrl + C" or directly button enter key to get out of priority setting status if driven by the intention to give up setting.

Non-interaction setting method

codec_ep1> priority {parameter}

The parameter is only chosen from [1~6], which stands for the sequences of six coding priorities under interaction method.

Setting command of value of RFC2833 payload type

codec_ep1> rfc2833_pt {parameter}

The parameter ranges from 96 ~ 127.

Ring time setting command

codec_ep1> ring {parameter1} {parameter2}

Parameter 1 is "on time", namely the ring duration time; parameter 2 is "off time", namely the ring interval time. The parameters for the both range from 0~65535, unit is ms.

Command of mute compressed switch setting

codec_ep1> sc {parameter}

The parameter is only "enable" or "disable". Therein, "enable" means to open the mute compressing function; and "disable" means to close it.

T38 control mode setting command

codec_ep1> t38_mode {parameter}

The parameter is only "mgc" or "mg". Therein, "mgc" means T38 mode is controlled by mgc; and "mg" means T38 mode is controlled by mg.

T38 port setting command

codec_ep1> t38_port

The command is set by mode of interaction; it does not need any parameter. After carrying out a command, CLI will show the value range of port is 1 ~ 65535, and show the port number of Endpoint 1, input new port number after Endpoint1. For example:

Port range: 1 ~ 65535

Endpoint1 [14000]: 10000

During the setting, users button the enter key to keep the original port setting, and press "Ctrl + C" to cancel it.

Ring style setting command

codec_ep1> tone {parameter}

The parameter is only "0", 1" or "2", which stands for different ring styles.

Command for progress tone duration time setting codec_ep1> tone_duration

The command is set by mode of interaction; it does not need any parameter. The set parameters include:

- ☐ Dial Tone Duration
- ☐ Busy Tone Duration
- ☐ Howler Tone Duration
- ☐ Digit max interval
- ☐ Ringback Tone Duration
- ☐ Ring Max Time

  Call Waiting Time
- ☐ Confirm Tone Duration

Such as:

Dial Tone Duration (1 ~ 254), [60]:

Busy Tone Duration (1 ~ 254), [60]:

Howler Tone Duration (1 ~ 254), [60]:

Digit Max Interval (10 ~ 60), [25]:

Ringback Tone Duration (1 ~ 254), [60]:

Ring Max Time (1 ~ 254), [60]:

Call Waiting Time (1 ~ 30), [30]:

Confirm Tone Duration (1 ~ 254), [0]:

Therein, the numbers in "[ ]" means the value set for the parameter currently, unit is second.

H.248 timer setting command

codec_ep1> dm_timer {parameter1} {parameter2} {parameter3}

Therein, parameter1 is the short timer, parameter 2 is the long timer, parameter 3 is the start timer, and unit is second.

Setting command of RTP flow keeping of H.248

codec_ep1> keepRTP

The command is set by mode of interaction; it does not need any parameter. After performing the command, CLI will show RTP flow keeping on-off state, and then inquire the user whether to turn it on or turn it off. For example:

RTP keeping is enabled.

Enable RTP keeping? [y/n]:

At this time users only can enter bite "y" or "n", and have no need of noting capital and small letters. "y" means to turn on, and "n" means to turn off.

Users can close, or directly press enter key to automatically get out of the setting, or press "Ctrl +C" to cancel the setting.

codec_ep1> show {parameter}

The parameter can be "all" or the command name of each compressed chip setting, for instance:

codec_ep1> show dtmf

When the parameter is "all", it will show all parameter values in directory of this layer; when the parameter is the designated command name, it will show the parameter value. Therein, when the parameter configuration value is different from the value which is being used, CLI will show the value which are being used together, and with "*" before them. For instance:

codec_ep1> show fax

("*" means the Running Config Value)

FAX mode: T.38 * Transparent

Exit command

Interactive exit mode

codec_ep1> exit

If there is no any parameter set, please directly go back to the root command layer.

If there is one or more parameter sets, after buttoning "exit", the command line will inquire the users whether to save the setting or take effect immediately, see below:

Changes found, please select the operations:

[1] Discard changes.

[2] Save changes without taking effect.

[3] Save changes with taking effect instantly.

Your choice? (Press Ctrl-C or Enter to cancel exiting):

Therein, "[1]" means to give up setting, "[2]" stands for only to save the changed parameters instead of taking effect immediately, and "[3]" refers to saving the changed parameters and take effect immediately. After making a choice, CLI will go back to the root command layer. Users can button "Ctrl-C" or enter key to cancel the operation.

Non-interaction mode

codec_ep1> exit discard

Give up setting and return back to the root command layer.

codec_ep1> exit save-only

Only save the setting and do not take effect immediately.

codec_ep1> exit effect

Save the setting and take effect immediately

How to perform "exit" command in the directory of each layer? It is the same as the above said. So there will be no any detailed explanations.

Help command

codec_ep1> help [parameter]

The parameter is the name of any command in this directory, it is optional. For instance, enter "help ring" : codec_ep1> help ring in codec layer.

Function: Set ring on time and off time.

Command usage: ring {On Time} {Off Time}

Therein, "Functioln" is the functional explanation of this command; and "Command usage" is the grammar of it.

When command "help" has no any parameter, CLI will show the function explanations of all commands in this layer.

In future, usage of command "help" in directory of each layer is same, and there will be no any detailed explanation.

6.2.2 Network Parameter Setting Command Set

Once input "network" command in the root command layer, you could go to network parameter setting content, for example, # network

If the network setting is based on the unit of connection, every connection can be set different network configurations.

Add connection#network> add connection {parameter}

Parameter is the identifier of connection which is going to be added. After adding connection, you could go into the corresponding connection to set related parameters.

Go into the corresponding connection

#network> connection {parameter}

Parameter is the identifier of connection which is going to be gone into. You could go into the corresponding connection to set related parameters, including IP, VLAN and the like.

Example: #network> connection connection1

Setting of the physical port for connection

network/conn connection1> set phyport {parameter}

Parameter is the physical port. There are two physical ports on the device, one is FEO, the other is FE1. So parameter’ s value is fec0 or fec1.

Setting of connection static network mode

#network/conn connection1> set ip static {parameter1} {parameter2}

Parameter 1 is the IP address that will be set, and parameter 2 is netmask.

Setting of connection dhcp network mode

#network/conn connection1> set ip dhcp

There is no need of any parameter when setting connection dhcp network mode, just button enter key.

Setting of connection PPPoE network mode

#network/conn connection1> set ip pppoe {parameter1}{parameter2}

Parameter 1 is the username of pppoe; and parameter 2 is the password of it.

VLAN of connection closure

#network/conn connection1> set vlan {parameter}

Setting parameter as disable can close VLAN of connection.

VLAN of connection setting

#network/conn connection1> set vlan enable {param1} {param2}

Parameter 1 is the ID of vlan; and parameter 2 is the priority of it.

configuration of connection effect taking

network/conn connection1> exit effect

The configuration of connection will take effect once this command is carried out.

DNS setting command

network> dns {parameter1} {parameter2}

Parameter 1 is the IP of DNS1; and parameter 2 is the IP of DNS2.

The address format is xxx.xxx.xxx.xxx. For instance, 202.116.128.86. All the IP addresses mentioned below are subject to this format.

Gateway setting command

network> gateway {parameter}

The parameter is the gateway IP address.

NTP setting command

network> ntp

The command is set by mode of interaction, it does not need any parameter. After performing the command, CLI will show the on-off state of current NTP client service, and then inquire users whether to open or close it. Users can choose "disable" or directly button enter key to get out of the setting, or else, CLI will show the value set for the address of current NTP server, and inquire users about the server address that is going to be reset. For instance:

Ntp service is disabled.

Enable Ntpserver? [y/n]: y

Current Ntp IP or domain name is "www.asia.pool.ntp.org".Please

input a new Ntp IP or domain name.

NTPSERVER (Enter to pass):

Ntp IP or domain name is not changed.

Buttoning "Ctrl + C" during setting can give up setting.

Exit command

network> exit [parameter]

Help command

network> help [parameter]

6.2.3 Protocol-related Parameter Setting Command Set

It will immediately go into the protocol-related parameter setting content once input "protocol" command in the root command layer, see below:

protocol

Port name setting command

protocol_ep1> ep_name {parameter}

The parameter is the port name, and the max bit is 255.

Command to set heartbeat mode and interval protocol_ep1> heartbeat

The command is set by mode of interaction, it has no need of any parameter. Buttoning enter key will remind you whether to close heartbeat mode or which heartbeat mode should be chosen. Choosing "disable" or directly buttoning enter key will automatically get out of settings; choosing "[2]MGC" or "[3]MG" will let system require to set heartbeat interval and heartbeat survival time, and choosing "[3]GC" mode will inquire whether to send heartbeat package. Heartbeat interval' s value ranges from 1~65535, and its survival time' s value ranges from 1~255, unit is ms.

Command to set MG domain name and port

protocol_ep1> mg {parameter1} [parameter2]

Parameter 1 is the MG domain name, and parameter 2 is the MG port number (optional). The max domain name bit is 255, and port number ranges from 0～65535.

Command to set MGC domain name and port protocol_ep1> mgc {parameter1} [parameter2]

Its usage is the same as the "mg" command.

Command for setting standby MGC domain name and port

protocol_ep1> mgc2 {parameter1} [parameter2]

或

protocol_ep1> mgc3 {parameter1} [parameter2]

Its usage is the same as the "mg" command.

Command of H.248 permission mode setting

protocol_ep1> trans_type {parameter}

The parameter is only "tcp" or "udp".

Command for setting H.248 signaling abbrev-mode

protocol > sig_ab_mode {parameter}

The parameter is only "enable" or "disable". "enable" means to open it, and "disable" means to close it.

Command for setting H.248 temporary endpoint

protocol > ephterm

The command is set by mode of interaction, it does not need any parameter. After carrying out the command, CLI will require users to set relevant parameters. Direct

buttoning of the enter key by users will keep the original set value, and buttoning "Ctrl + C" can cancel the settings. For instance:

protocol_ep1> ephterm

Ephterm Prefixion [RTP/]:

Start NO. [0]:

Ephterm Max Number [10000]:

Ephterm Step [1]:

Ephterm Name same length [n] (y/n)?

Command to set H.248 command re-sending time

protocol_ep1> resend_time {parameter}

The parameter is the time value of resent command, and unit is second.

MGC platform setting command of H.248

Interaction setting mode

protocol_ep1> mgcmode

After only entering "mgcmode" command, the command will inquire users about the MGC platform that will be set. See below:

MGC Mode:

[0] DEFAULT

[1] HW

[2] ZTE

[3] BELL

Input your choice[0~3]:

At this time only numbers chosen from 0～3 can be input. If the users want to give up the settings, they are able to button "Ctrl＋C" or directly button enter key to get out of priority setting state.

Non-interaction setting mode

protocol_ep1>mgcmode {parameter}

Only numbers chosen from 0～3 can be input, which stands for the three MGC platforms under interaction mode.

Command to set H.248 command delay

protocol_ep1> cmddelay {parameter}

The parameter is the time value of command delay, and unit is ms.

Parameter displaying command

protocol_ep1> show {parameter}

The parameter is only "all", auth ", "ep", heartbeat", mg", mgc" or "type". If the configured parameter value is not the same as the valued being used, CLI will display the being used value concurrently, and before them there is "*", for instance:

system> show mg

("*" means the Running Config Value)

MG name:	192.168.1.1	* 192.168.1.166
MG port:	2727	

Exit command

protocol_ep1> exit [parameter]

Help command

protocol_ep1> help [parameter]

6.2.4 System Parameter Settings and System Tool

Command Set

You are able to enter system parameter settings and system tool contents once input "system" command in the root command layer, see below:

#system

System user configuration command

The user groups of the system cover Admin, DataUser, VoiceUser and Guest. Each group has the default users, they are Admin, DataUser, VoiceUser and Guest respectively. Password and username are not different. Users from different group have different rights. User from guest group only has right to read, but has no right to configure; user from VoiceUser is only able to configure voice business but unable to configure data business; user from DataUser is only able to configure data business but unable to configure voice business; and user from Admin group is administrator, possessing all rights. The following command is for user from Admin group, and they are invisible for users from other groups after login.

System users increase

#system> user add {parameter1} {parameter2} {parameter3}

Parameter 1 is the username which will be added; parameter 2 is the login password of users; and parameter 3 is the group that the users belong to. The parameter 3 is only 1, 2, 3 or 4, they are Admin, DataUser, VoiceUser and Guest respectively.

System users modification

#system> user modify {parameter1} {parameter2} {parameter3}

Parameter 1 is the modified username; parameter 2 is the login password of users; and parameter 3 is the group that the users belong to. The parameter 3 is only 1, 2, 3 or 4, they are Admin, DataUser, VoiceUser and Guest respectively.

System users deletion

#system>user delete antion {parameter}

The parameter is the username that will be deleted.

All system users displaying

#system>user list

This command has no need of any parameter. All information, including username and user group, will be displayed after the command is performed..

Commission command

system> debug {parameter1} {parameter2}

Parameter 1 is only "call", pri" or "start"; and parameter 2 is only 0~3. Parameter 1 refers to the commissioned objects that will be set, such as "Call" module and private protocol module, or the "start" when the users begin to enter the commission status. Parameter 2 refers to commission level. Normally, display of more information means the level is more lower. No any information will be displayed at level 0. For example:

system> debug pri 3

system> debug start

Users are unable to perform other commands in the commission status. The command line status can not be restored until you button "Ctrl + C" to get out of the status.

Document upload/download command

Download command

system> download {parameter1} {parameter2} {parameter3}

Parameter 1 only can be "config", pf0", pf1", pf2" or "program". Of them, "program" refers to procedure mapping files, others refer to parameter configuration files, they are required to be relative to the different parts of Flash respectively. Parameter 2 is the IP address of server, for instance, 192.168.1.3.

Parameter 3 is the name of server port document, for example:

system> download config 192.168.1.3 cfg-pf2

system> download program 192.168.1.3 prog

Upload command

system> upload {parameter1} {parameter2} {parameter3}

Usage is similar with download command.

Internet interface information display command

system> ifshow

This command does not need any parameter. It is transplanted into ifconfig command of busybox, and used to display network access information, but is without configuration function. For example:

```
eth0    Link encap:Ethernet    HWaddr 00:1D:2B:02:AB:0C
        inet6 addr: fe80::21d:2bff:fe02:ab0c/64 Scope:Link
        UP BROADCAST RUNNING    MTU:1500    Metric:1
        RX packets:736646 errors:0 dropped:0 overruns:0 frame:0
        TX packets:471395 errors:0 dropped:0 overruns:0 carrier:0
        collisions:0 txqueuelen:1000
        RXbytes:63351556(60.4   MiB) TXbytes:31267836
        Interrupt:1
```

Manual-cancellation endpoint command

system>logoutep

This command is performed by way of interaction, it does not need any parameter. It is used to force endpoint to be canceled from MGC, so as to forbid this endpoint’s NGN business. After the command is executed, CLI will display the following information:

system> logoutep

Start endpoint (1~24): 1

Number of endpoints (1~24): 1

POTS1 Status

Act:

Port:

Reg:

Hook: HOOK_ON

Conn: IDLE

Sig: IDLE

Among them, "Start endpoint" is the operating start endpoint number, beginning with 1; and "Number of endpoint" refers to the quantity of the operating endpoints, it is at least 1, but is not allowed to exceed the practical endpoint number.

Memory status display command

system> mem

This command does not need any parameter. It is used to display the current memory status of the system.

Network connectivity test command

system> ping {parameter}

The parameter is the IP address planned to be tested, for instance:

system> ping 192.168.1.1

Users can button "Ctrl + C" to get out of the command.

Protocol mode setting command

system> protocol {parameter}

The current protocol type will not be listed into the parameter reminding list. For example:

system> protocol h248

Progress information display command

system> ps

This parameter has no need of any parameter. It is transplanted into ps command of busybox and used to display related information of current each progress of the system. For instance:

```
PID TTY          TIME CMD
9930 pts/2       00:00:00 bash
19587 pts/2      00:00:01 Init315
19588 pts/2      00:00:00 Init315
19589 pts/2      00:00:00 cli
19967 pts/2      00:00:00 ps
```

Manual-registration endpoint command

system> regep

This command is adopted to manually open the endpoint of the forbidden NGN business, and then the endpoint will be used to register at MGC once more. The usage of the command is similar with 2.4.4.

Routing table display command

system> route

This parameter has no need of any parameter. It is transplanted into the route command of busybox to display current route setting state of the system, but it has no configuration function.

Command to save and load parameters

Parameter saving command

system> save or

system> save as {parameter}

The parameter only can be "pf0", pf1" or "pf2". "save as pf0" means there is no any parameter for this command. The command is used to save the configured values of the all current parameters into the different parts of Flash. For example:

system> save as pf1

Parameters loading command

system> load {parameter}

The parameter only can be "pf1", pf2", df1" or "df2". "pf1" and pf2" means two places of the memory, with two sets of default configured values saved, which are not allowed to be changed by users. The command is used to load the configured values in the Flash or memory as the current configured values. For example:

system> load pf2

Testing command

system> test {parameter}

The parameter only can be ring, connect, playtone {parameter}, loop or gr909{ parameter }. Therein, the parameter of playtone only can be Silence, dial, ringback, busy, callwaiting or howler; and the parameter of gr909 is Channel No.

system> timezone

This command is set by way of interaction, and does not need any parameter. After carrying out the command, CLI will display the time zone set currently and require new time zone to be entered. Negative number means east time zone, positive number means west time zone. For example, China locates at east time zone 8, UTC offset [-8].

During setting, users button enter key to keep the original port settings, and button "Ctrl + C" to cancel the setting.

Command to display software and hardware version numbers

system> version

It has no need of any parameter. After the command is performed, CLI will display the following information:

Hardware Version: … …

Software Version: … …

Created Time: … …

"Hardware Version" and "Software Version" refer to the version number of hardware and software respectively, and "Created Time" refers to the software compilation time.

Exit command

system.> exit [parameter]

Help command

system.> help [parameter]

6.2.5 CLI Cancellation Command

#logout

The command has no need of any parameter, and it is used to cancel CLI.

6.2.6 System Restart Command

reboot

The command has no need of any parameter, and it is used to restart the target board.

6.2.7 Parameter Display Command

show {parameter}

The parameter can only be "codec", protocol", net", private" or "epstatus". Of them, "codec" refers to the compressed chip; "protocol" refers to the protocol; "net" refers to network; and "private" means the private protocol. If the configured parameter value differs from the value being used, CLI will display all values which are being used together, and with "*" before them. When the parameter is "net" or "private", CLI will also show the state of current module, for example:

show private

("*" means the Running Config Value)

Private IP:	10.25.101.1
OLT:	255
ONU:	255
Current status:	CONFIGING

If the parameter is "epsatus", the system will remind to input port number after the command is performed. Once entered, the state of the port number, including actived state, registered MGC state, hookswitch state, linking state and signal state, etc., will be shown, for instance:

show epstatus

Please input endpoint index(0 for MG status) (0 ~ 24): 1

POTS1 Status

Act:	ACTIVED
Port:	REGISTERING
Reg:	REGISTERING
Hook:	HOOK_ON
Conn:	IDLE
Sig:	IDLE

6.2.8 Parameter Effect-taking Command

take-effect

The command does not need any parameter. It is adopted to force the current all configured values to take effect.

6.2.9 SNMP-related Parameter Setting Command Set

Command to enable or disable snmp setting

#manage/snmp> switch { parameter }

This command is to turn on or off the snmp module. The parameter only can be "on" or "off ". "on" means to turn on snmp function; and "off" means to turn off snmp function.

Example : #manage/snmp> switch on

Command to add community

#manage/snmp>community set { parameter1 }{ parameter2} { parameter3}

The command with two parameters is used to add community. Parameter 1 refers to the name of the community being going to be added, and parameter 2 refers to the rights of community, the right only can be "ro" or "rw" . "ro" indicates that community only has the right to read, while "rw" indicates that it has the right of both writing and reading. Parameter 3 is an IP address, showing the community only can be visited via that IP. This parameter is not essential. Absence of it means the community can use any IP.

Example : #manage/snmp> community set public rw

Community deletion command

#manage/snmp> community delete { parameter }

This command is used to delete system' s community. Parameter is the name of

deleted community.

Command to display all community information

#manage/snmp> community list

This command displays all community information in the system, including name of community, right, and the IP designated to be visited.

Command for setting snmp proxy port

#manage/snmp> agent port {parameter}

This command is to set the proxy port. Its defaulted number is "162". Parameter is the number of the proxy port planned to be set.

Example : #manage/snmp> proxy port 161

Command to enable or disable trap

#manage/snmp> trap switch {parameter}

This command is adopted to turn on or turn off trap function of snmp. Parameter only can be "on" or "off". "On" means to turn on trap function; and "off" means to turn it off.

Example : #manage/snmp> trap switch on

Command for setting trap-related parameters

#manage/snmp> trap set {parameter 1} {parameter 2}

The command is used to set trap' s port number and host IP. Parameter 1 is host IP, namely the address that trap information is sent to; parameter 2 is trap' s port number, the default is 162. (All communities here use the same trap configuration).

Example : #manage/snmp> trap set 192.168.3.17 162

Command for displaying SNMP configured information

#manage/snmp> show all

Once the command is carried out, all of snmp configured information will be shown.