Micronet®
Faster and Easier Networks

User's Manual

IP Telephony Gateway

Model No.: SP5008A, SP5018A, SP5058A

Website: http://www.micronet.info

About this User's Manual

This User's Manual gives users basic steps on installation and operation. Please read this manual chapter by chapter.

Chapter 1. Introduction

Introduce the IP Telephony Gateway to users in terms of feature, appearance, and application.

Chapter 2. Startup

Help user complete basic configuration.

Chapter 4. Web Administration

Provide command reference of Web Interface for advanced setting.

Chapter 3. Operation

Show user how to use the device to process phone call.

Chapter 6. Specification

List the specification of the gateway in detail.

Online Upgrade

Please refer to http://www.micronet.info/ for additional support.

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1. Introduction

Micronet SP5008A / SP5018A / SP5058A are high-capacity SIP Gateway Series that provides 8 FXS / 4 FXS + 4 FXO / 8 FXO ports, and suit to build an IP-based communication platform with other VoIP devices. They meet enterprise's requirement for functionality (VoIP) upgrade and larger scale implementation by interoperating with legacy PABX and IP PBX/Soft-switch.

To connect with legacy PABX, SP5018A supports PABX Mode for PSTN backup. When network or power fails, PSTN lines (FXO) bypass to FXS ports and users still can make/receive calls via PSTN lines.

In addition, SP5008A includes some wonderful PABX features for small business. They help operate users on various VoIP applications, such as extension calling among 8 FXS ports, inbound/outbound calls via SIP trunk, DID (direct line), DOD, prefix routing, operator attendant, etc. Users can easily benefit from the ease-to-use device.

1.1 Key Features

- IETF SIP standards compliant
- Support 1 RJ-45 WAN port and 4 RJ-45 LAN ports
- Support POTS interfaces: 8 FXS / 4 FXS + 4 FXO / 8 FXO ports
- Support single-account registration on FXS ports for representative number
- Support extension calling among FXS ports
- Support rich call features: call hold, call transfer, call forward, hotline, warm line, speed dial, anonymous call, P2P call, etc
- Support PSTN prefix routing (SP5018A only)
- Support PABX mode for legacy PABX function upgrade (SP5018A only)
- Support PSTN lifeline – PSTN bypass in case of power or registration failure (SP5018A only)
- Support detection of disconnect tone, polarity reversal, and loop current drop (zero voltage) on FXO ports
- Well interoperability with industry-leading IP-PBX/Soft-Switch, such as Alcatel, Lucent, Siemens, etc.

1.2 Physical Description

***SP5008A*:**

SP5008A Front Panel

SP5058A

SP5058A Front Panel

SP5018A

SP5018A Front Panel

LED Indicators

LED	Status	Description
POWER	On / Green	The Power is on
READY	Blink / Green	Booting up for self test
PROXY	Blink / Green	Gateway reg. fails
	Constant / Green	Gateway reg. successes
WAN	Blink / Green	Transmitting or receiving data /Network connection established
LAN(1-4)	Blink / Green	Transmitting or receiving data /Network connection established
T(1*)	On / Orange	Busy / Off-hook
	Off	Available / On-hook
L(1*)	On / Orange	Busy
	Off	Available

1*. SP5008A: FXS = T1 - T8

SP5018A: FXS = T1 - T4, FXO = L1 - L4

SP5058A: FXO = L1 - L8

SP5008A

SP5008A Rear Panel

SP5058A

SP5058A Rear Panel

SP5018A

SP5018A Rear Panel

RESET	Factory default button. Press and hold for 5 seconds to reset
T1-T8	The RJ-11 FXS port 1-8, connects analog phone sets, trunk line in PABX.
L1-L8	The RJ-11 FXO port 1-8, connect to PSTN
T1/P1-T4/P4	It is a pair of FXO and FXS connector. The different is that the when power off or application is crashed, the FXO and FXS will be connected together automatically for local surviving.
WAN	RJ-45 port of 10/100M for connecting to modem
LAN(1-4)	RJ-45 port of 10/100M for connecting to PC or hub/switch that connects PCs
DC 12V	The power socket, input AC 100V~120V; output DC12V.3A

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2. Startup

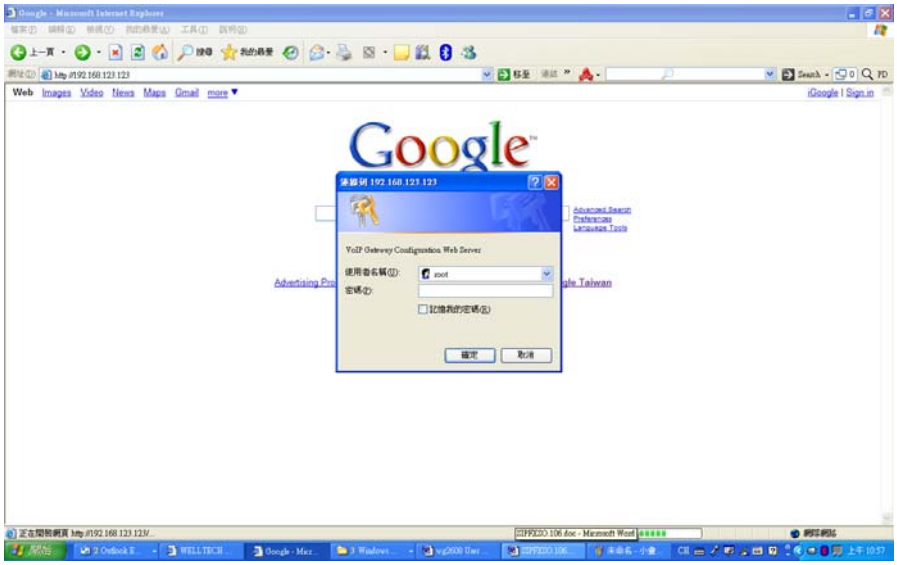
2.1 Login into the System

First of all, connect your computer to MICRONET SP5008A / SP5018A / SP5058A's LAN port by using DHCP. The IP address assign to your computer should be 192.168.123.x by default. Once you can get the IP address from MICRONET SP5008A / SP5018A / SP5058A, you can start the configuration as below.

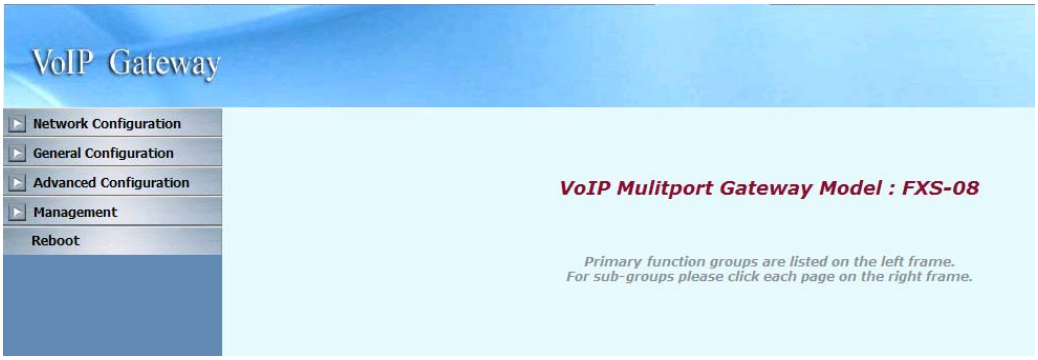
Step 1. Connect LAN port to your managing PC. Or, connect the gateway with PC by hub/switch.

Step 2. Launch your web browser with **http://192.168.123.123/**. Please configure IP address of PC with 192.168.123.x. Or set up your PC in DHCP mode to get IP address automatically.

Step 3. The Password screen now appears. Type "***root***" in the user name field, and your password (none by default) in the password field.



Step 4. You will enter the main page of the web configuration interface after you keyed in the username and password correctly (see figure below).


VoIP Gateway
Network Configuration
General Configuration
Advanced Configuration
Management
Reboot
VoIP Mulitport Gateway Model : FXS-08
Primary function groups are listed on the left frame.
For sub-groups please click each page on the right frame.

2.2 Network Configuration

By default, the gateway is in NAT mode (router mode) and can share Internet access with PCs. Go to [*Network Configuration / WAN Setting*], and configure WAN setting according to actual condition. In default IP type of DHCP client, it requests necessary IP information from your ISP automatically.

Note:

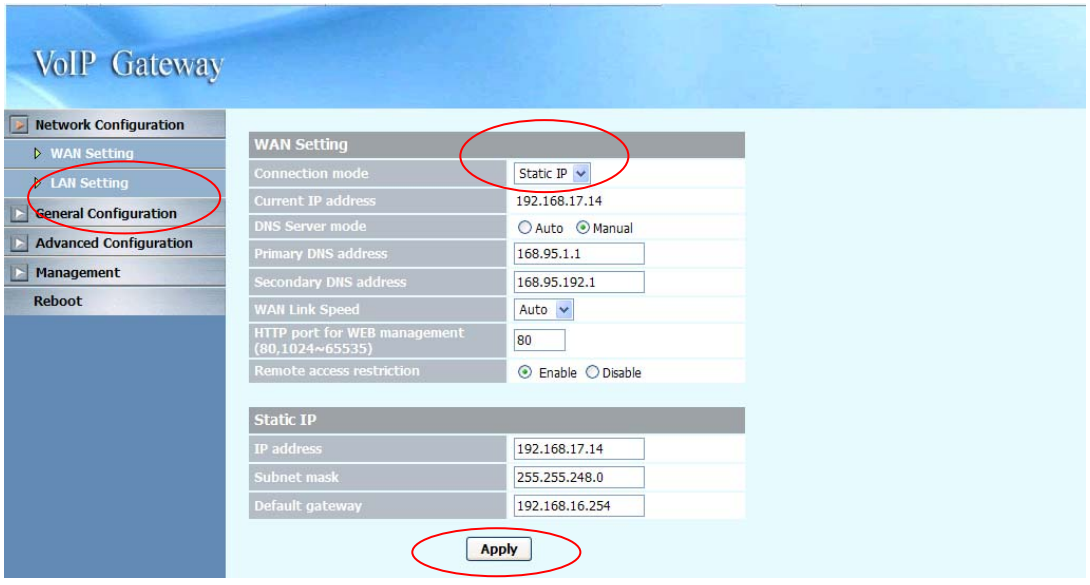
1. *Different ISPs require different methods of connecting to the Internet. Please consult your ISP to select right IP type (Fixed IP, PPPoE) of WAN.*
2. *You can retrieve the IP address of the WAN port by keying #126# on the phone set that is connected to the FXS port of the gateway. You will hear an IVR announcing the current IP address of the WAN port.*

WAN Setting

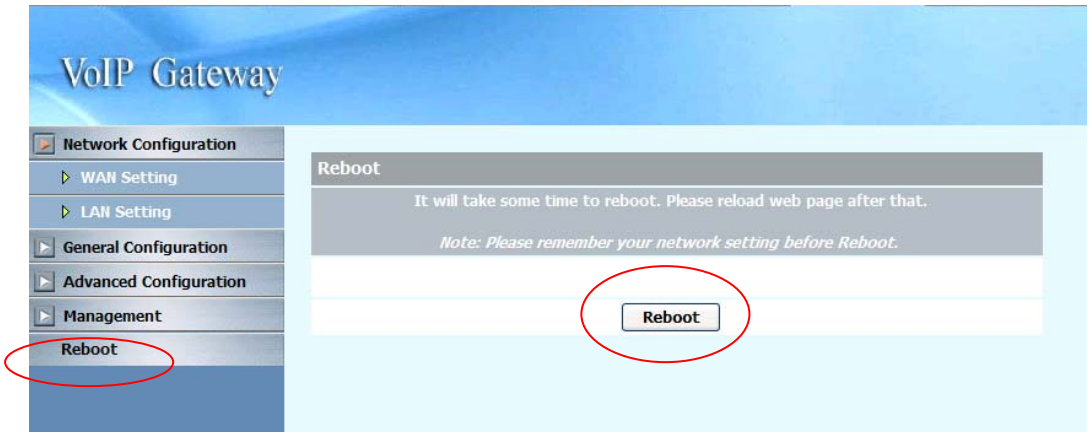
Item	Description	Static IP	DHCP	PPPoE
Connected mode	Select the connection method for the WAN port of the SP5008A/SP5018A/SP5058A, you can choose the following: ● Static IP ● DHCP ● PPPoE	V	V	V
Current IP Address	Show current IP address	V	V	V
DNS server mode	Select the DNS behavior, you can choose the following: ● Auto ● Manual “DNS auto” will retrieve the DNS information sent from the DHCP server. “Manual” will look at the specified Primary and Secondary DNS address.	V	V	V
Primary DNS address	Specify the address of the Primary DNS.	V	V	V
Secondary DNS address	Specify the address of the Secondary DNS.	V	V	V
WAN Link Speed	Select the connection speed for the WAN port of the SP5008A/SP5018A/SP5058A, you can choose the following: ● Auto ● 100M ● 10M	V	V	V
HTTP port for WEB management	Specify the port number for WEB management, the allowable range is 80,1024~65535.	V	V	V
IP address	Specify the IP address.	V		
Subnet mask	Specify the subnet mask.	V		

Item	Description	Static IP	DHCP	PPPoE
Default gateway	Specify the IP address of the default gateway.	V		
Remote access restriction	Restricts/Blocks users connecting to the WAN port's IP remotely, you can **Enable/Disable** this option.	V	V	V
PPPoE userID	Specify the username of the PPPoE account			V
PPPoE password	Specify the password associated to the PPPoE account above.			V
Reboot after remote host disconnection	When the remote host (PPPoE) fails, the gateway will retry 3 times to reconnect, if there is no reply from the remote host within 3 tries, then the gateway will reboot. You can **Enable/Disable** this option.			V

2.2.1 Static IP

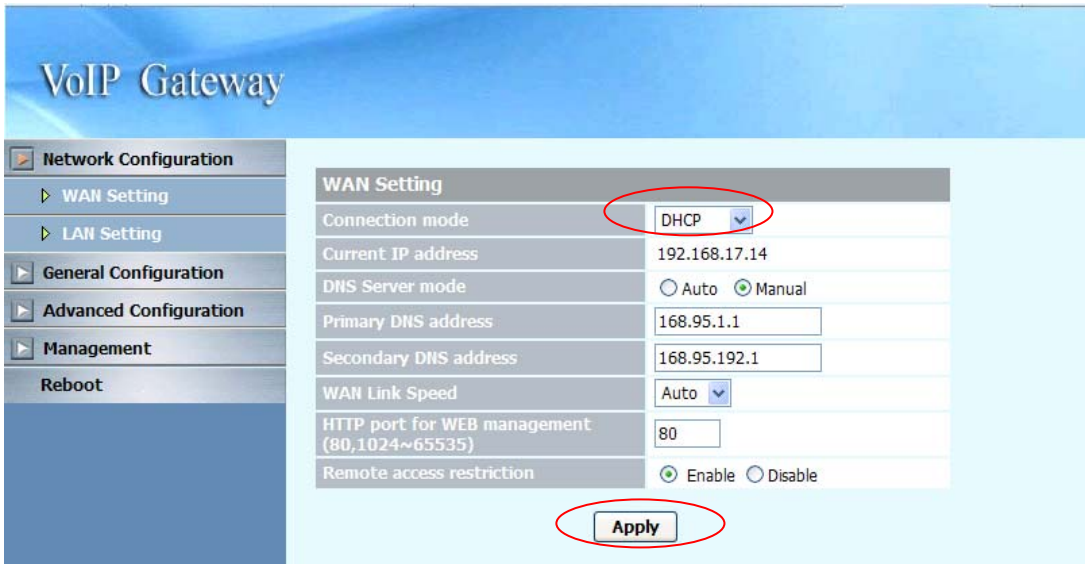


1. Press the **"Apply"** button (at the bottom) after you finish to save changes.



2. Press the "**Reboot**" button to apply the changes.

2.2.2 DHCP

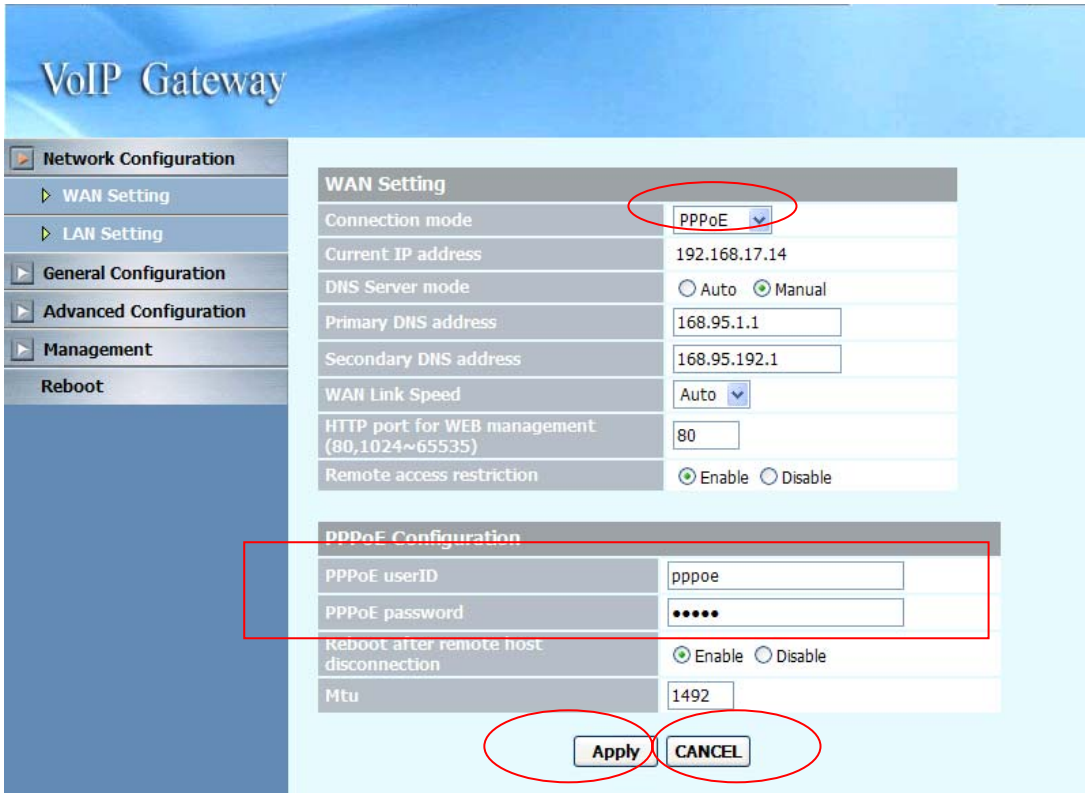


1. Press the **"Apply"** button (at the bottom) after you finish to save changes.
2. Press the **"Reboot"** button to apply the changes.

Note:

When you are using DHCP in WAN and not connected, please make sure you connect Ethernet before use PC to connect to LAN port.

2.2.3 PPPoE



1. Input PPPoE user ID and password
2. Press the **"Apply"** button (at the bottom) after you finish to save changes.
3. Press the **"CANCEL"** button (next to the Apply button) to clear the values in the page.
4. Press the **"Reboot"** button to apply the changes.

2.2.4 LAN Setting

ITEM	Description
LAN IP address	Specify the IP address of the SP5008A / SP5018A / SP5058A LAN port.
LAN mask address	Specify the mask address for SP5008A / SP5018A / SP5058A LAN port.
DHCP server	**Enable/Disable** DHCP function on the LAN port. Once enabled, the LAN ports will function as a DHCP server, network devices connected to them will be issued with IP addresses.
IP address from	When DHCP is enabled, you can specify the IP address to start from when assigning to attach network devices.
IP address to	When DHCP is enabled, you can specify the ending IP address assigned to the attached network devices.

ITEM	Description
Domain Name	You can specify the domain name that will be assigned by the DHCP server to the attached network devices. The DHCP server will send information on the “server host name” to the DHCP client.
Lease time(sec)	You can specify the maximum lease time of the IP address allocated to the DHCP client.
DNS server mode	Select the DNS behavior, you can choose the following: ● Auto ● Manual “DNS auto” will retrieve the DNS information sent from the DHCP server. “Manual” will look at the specified Primary and Secondary DNS address.
Primary DNS address	Specify the address of the Primary DNS.
Secondary DNS address	Specify the address of the Secondary DNS.

1. Press the **“Apply”** button (at the bottom) after you finish to save changes.
2. Press the **“Reboot”** button to apply the changes.

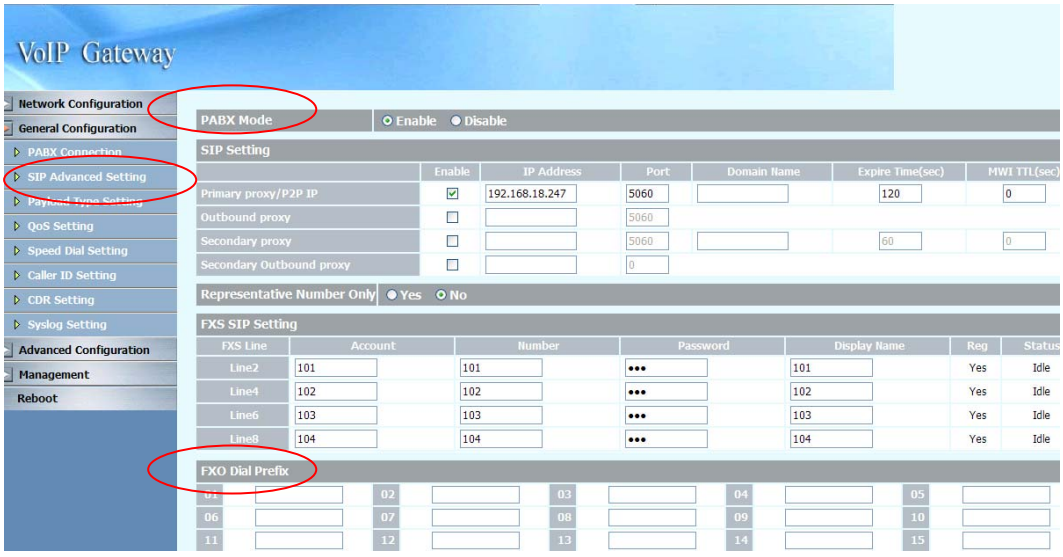
2.3 General configuration

To make VoIP calls, you will need a SIP account provided by the SIP Proxy you are registered with. To configure the relevant SIP settings, please refer to the instructions explained below.

2.3.1 PABX Mode (SP5018A only)

This quick setting is used for MICRONET SP5018A to operate in PABX connection mode between PSTN and traditional PABX. Enable PABX mode for ISP/ITSP scenario that forbids SIP call to/from PSTN via the gateway (SP5018A). The call scenario will be working as below:

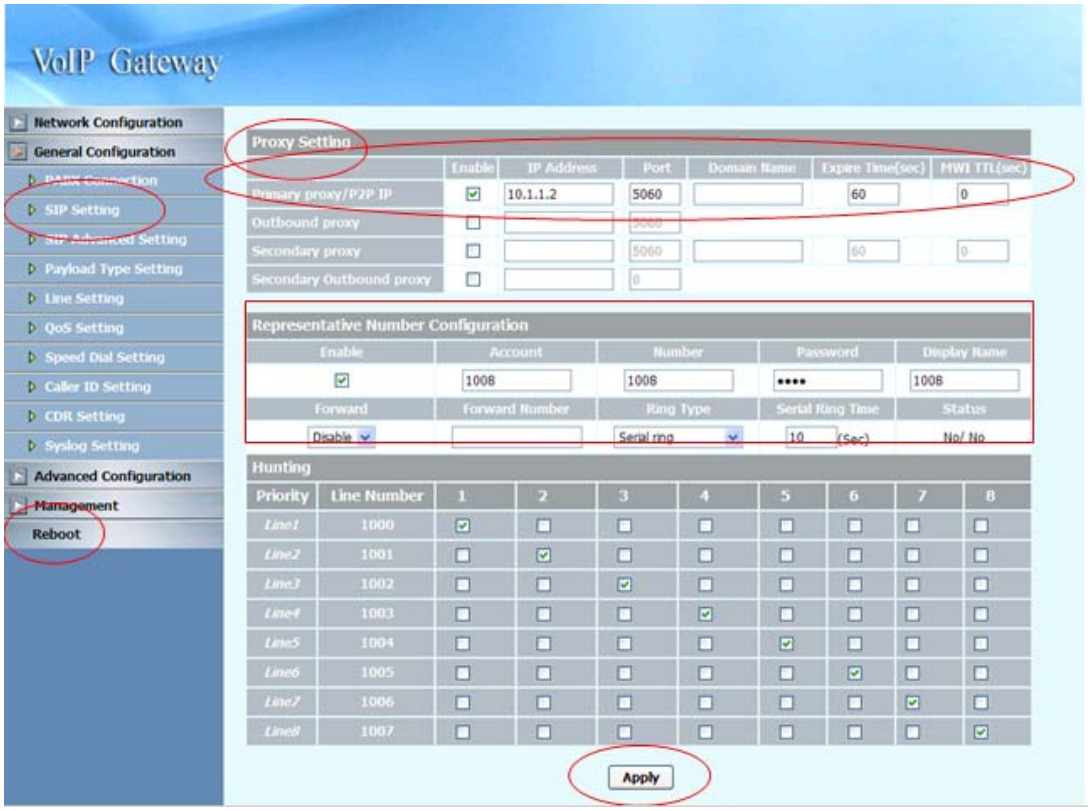
1. For FXO incoming call, it will route to corresponding FXS directly (1 by 1)
2. For FXS outgoing call, it will route to VOIP except those prefix set in FXO dialing Prefix.
3. For VOIP incoming call, it will route to FXS based on the called number
4. When VOIP call is failed to be called out such as register fail or network issue, the call will be route to FXO as backup.
5. When MICRONET SP5008A / SP5018A / SP5058A is malfunction or power failure, the all call will be directly bypassed to FXO.



PABX Connection	To enable PABX behavior or not.
SIP Setting	Please refer to 3.3.2.1
Representative Number Only	It is used (Yes) when you only have 1 SIP account and would like to be shared for all FXS lines. Please refer to

	3.3.2.1
Primary FXS SIP settings	When you have multiple SIP accounts for each FXS line, please set Representative Number Only to No. Then refer to 3.3.2.1 for the detail
FXO Dialing Prefix	When the prefix is set here, the call will be route to FXO instead of VOIP.

2.3.2 SIP Setting



Primary proxy/P2P IP	Specify the data of primary proxy : Enable/Disable, IP address, Port#, Domain Name, Expire time and MWI TTL. The P2P mode will be explained in paragraph Appendix A
Secondary proxy	Specify the data of secondary proxy: Enable/Disable, IP address, Port#, Domain Name, Expire time and MWI TTL. When you enable secondary proxy, it will start to register no matter whether primary proxy is registered or not. However, it will be used only when primary proxy is not registered or the incoming call is coming from it.
Outbound proxy	Specify the data of Outbound proxy: Enable/Disable, IP address and Port#.
Secondary Outbound proxy	Specify the data of Outbound proxy for secondary proxy: Enable/Disable, IP address and Port#.
Representative Number	The representative number is working as a SIP trunk for the selected FXS line (for all FXS or FXO/FXS combination model) or FXO line (for all FXO model). When an incoming call to the representative number, the selected FXS or FXO port will be hunted.
Enable	Enable the Line, the default setting is “Enable” and it will

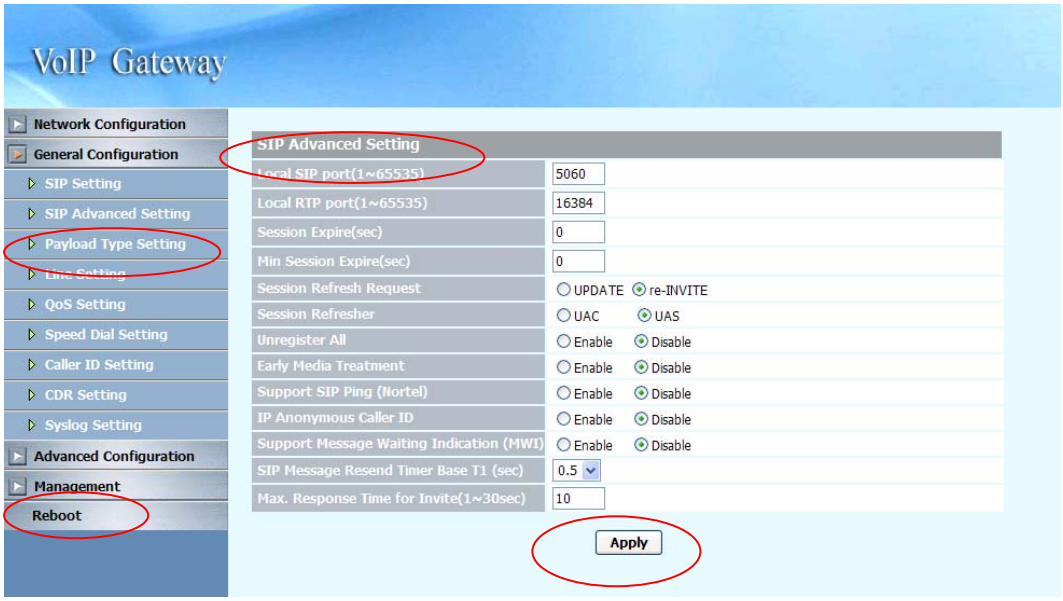
	Register or Unregister to SIP Proxy
Account	Input the SIP Proxy registration account ID.
Number	Input the phone number.
Password	Input the password of IP Proxy registration account ID.
Display name	Specify the Display name of the phone number
Forward	Specify the Representative forwarding type to be used, only choose busy
Forward Number	Specify the number to be forwarded when the specified forward condition is met.
Ring Type	Select the Ring Type of representative number. You can choose the following: ● Serial ring (Follow the ring priority defined below) ● Simultaneous(ring all)
Ring Time (s) for Serial ring	Specify the Ring Time for Serial ring
Status	Displays the registration status, whether it is registered or not.
Priority	Select the group of representative number, and specify the priority. Only the checked line will become the member of the representative number. The default setting L1~L8 is grouped.

1. Enter the IP address and port number of the SIP proxy into the Primary proxy address and Port fields. Press the **“Apply”** button to save changes.
2. Press the **“Reboot”** button to apply the changes.

3. Web Administration

3.1 General configuration

3.1.1 SIP Advanced Setting

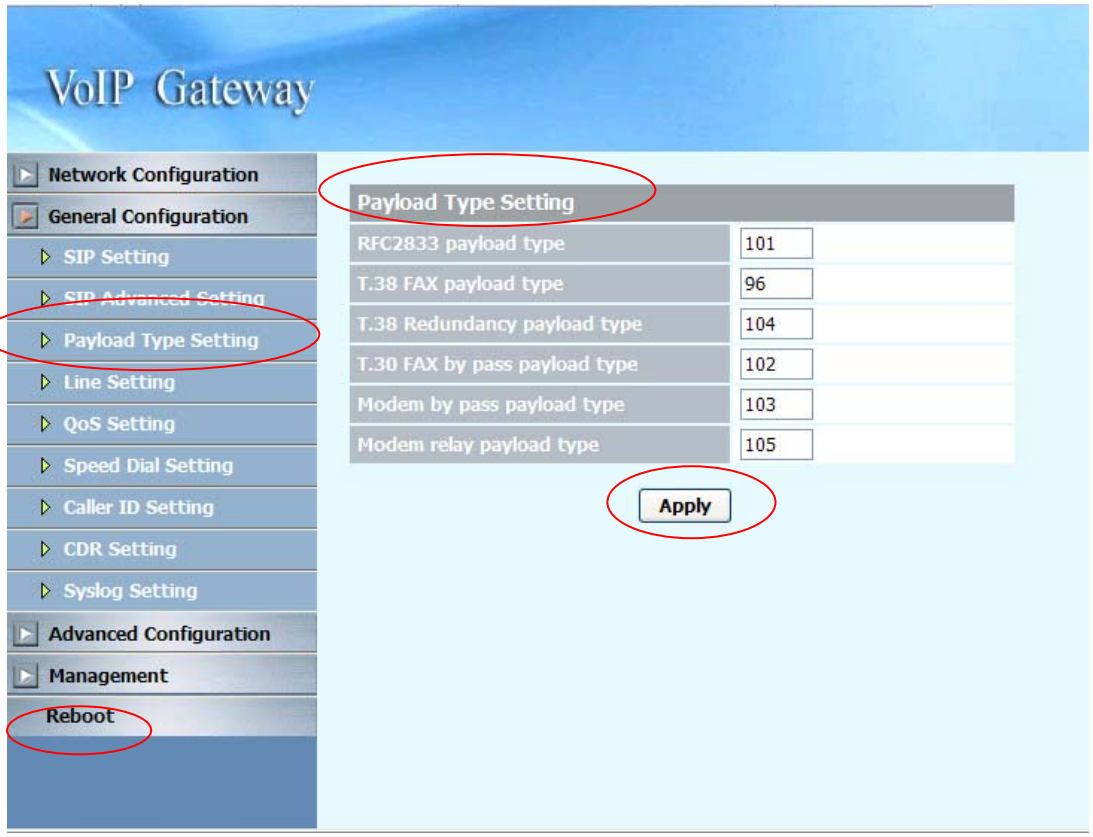


Local SIP port (1~65535)	Specify the local SIP port's number.
Local RTP port (1~65535)	Specify the local RTP port's number.
Session Expire (Sec)	Specify the session expire time that will be used to negotiate with the remote host or proxy.
Min Session Expire (Sec)	Specify the minimum session expire time that other host or proxy will need to follow when calling the MICRONET SP5008A/SP5018A/SP5058A.
Session Refresh Request	Select the session refresh method that will be used on the MICRONET SP5008A/SP5018A/SP5058A, you can choose among the two methods: ● UPDATE ● Re-Invite
Session Refresher	Select who will perform the refreshes, you can choose among the two methods: ● UAC (Client) ● UAS (Server) This will add the parameter refresher=uac or uas in the

	Session Refresh Request message.
Unregister All	Send SIP unregister signaling message after the SP5008A / SP5018A / SP5058A has been restarted
Early media Treatment	Use early media treatment SIP protocol, where SIP invite messages will not include SDP.
Support SIP Ping	Special feature used with only **Nortel's** SIP proxy.
IP Anonymous Caller ID	When this feature is **Enabled**, all IP outgoing calls' Caller ID will not be displayed to the destination.**(Please make sure your proxy server or soft switch supports the feature, if the proxy does not support it and you enable this feature, all IP outgoing calls will be dropped.)** When **Disabled,** all IP outgoing calls' Caller ID will be displayed to the destination.
Support Message Waiting Indication (MWI)	You can Enable or Disable the MWI function.(**This feature is for FXS only)**
SIP Message Resend Timer Base (sec)	Specify the resend time in seconds for each SIP request message that has not received a response.
Max. Response Time for Invite (1~30sec)	Specify the timeout period for SIP Invite messages. For example, if the timeout period is 10 seconds, when the SP5008A / SP5018A / SP5058A sends an Invite message and does not receive a response within 10 seconds, it will cancel the call.

1. Press the **"Apply"** button (at the bottom) after you finish to save changes.
2. Press the **"Reboot"** button to apply the changes.

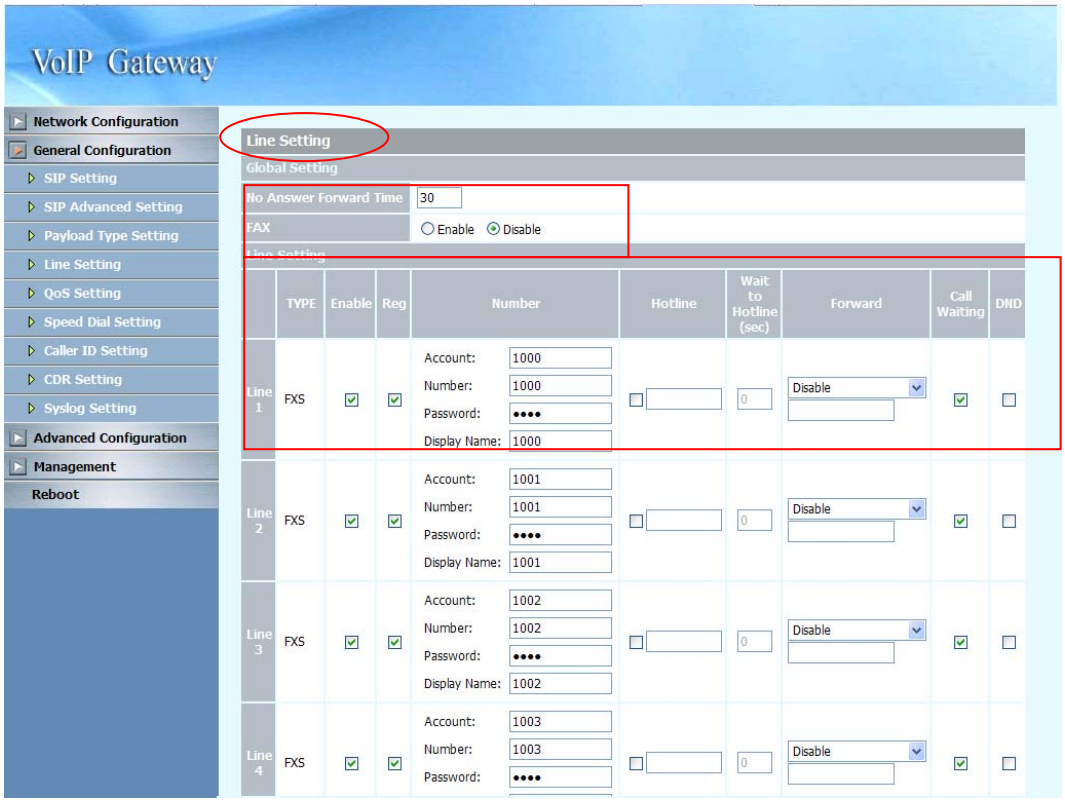
3.1.2 Payload Type Setting

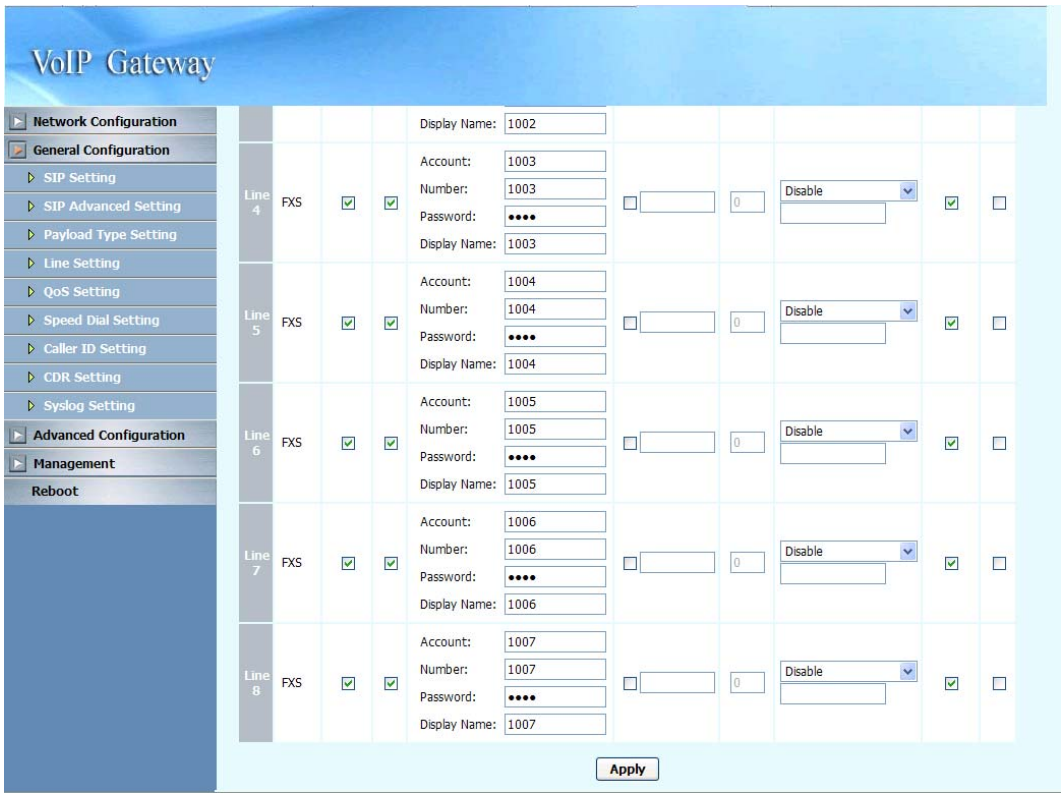


RFC2833 payload type	Specify the RFC2833 payload type (range is 96~128, however 100, 102~105 is reserved by other payload types).
T.38 FAX payload type	Specify the FAX payload type (range is 96~128, however 100, 102~105 is reserved by other payload types)
T.38 Redundancy payload type	Specify the Redundancy payload type (range is 96~128, default value is 104. 100, 102, 103, 105 is reserved by other payload types).
T.30 FAX by pass payload type	Specify the FAX by pass payload type (range is 96~128, default value is 102. 100, 103~105 is reserved by other payload types).
Modem by pass payload type	Specify the Modem by pass payload type (range is 96~128, default value is 103. 100, 102, 104, 105 is reserved by other payload types).
Modem relay payload type	Specify the Modem relay payload type (range is 96~128, default value is 105. 100, 102~104 is reserved by other payload types).

1. Press the **“Apply”** button (at the bottom) after you finish to save changes.
2. Press the **“Reboot”** button to apply the changes.

3.1.3 Line Setting

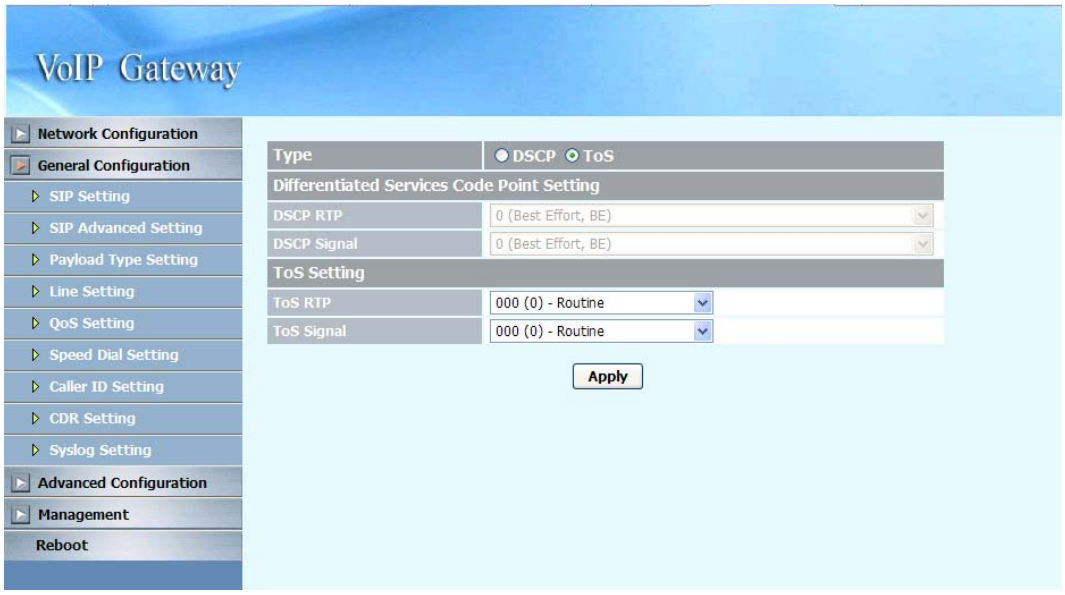




No Answer Forward Time (FXS only)	If you enable the No Answer Forward function (Representative number or L1~L8 number), please specify the time of no answer. The default setting is 30 sec.
FAX	Enable/Disable FAX T.38 function.
Line1~Line8 relevant data	
Type	Displays the port type of that particular line.
Enable	Enable the line or not
Reg	Register or Unregister to SIP Proxy
Number	Displays the line numbers that specified in SIP Setting. **Account:** Input the SIP Proxy registration account ID. **Number:** Input the phone number. **Password:** Input the password of IP Proxy registration account ID. **Display name:** Specify the Display name of the phone number. The first is the number registers to Primary proxy. The default setting is 1000~1007.
Enable Hotline	Click the check box to enable hotline feature. If enabled, The check box will display as  .
Hotline Number	Specify the number to forward the call to when the Hotline feature is enabled.
Wait to Hotline(sec)	Specify the time (sec) for wait to hotline, the default value is 0.
Forward Type	Specify the forwarding type to use, you can choose the following: ● Disable ● Unconditional ● Busy ● No Answer **(FXS only)** ● Busy and No Answer **(FXS only)** The “Disable” option will allow you to disable this particular function.
Forward Number	Specify the number to forward the call to when the call forwarding feature is enabled.
Call Waiting (FXS only)	Enable/Disable per-line Call Waiting function.
DND (FXS only)	Enable/Disable per-line DND (Do Not Disturb) function.
Greeting (FXO only)	Enable/Disable Greeting for FXO

1. Press the **“Apply”** button (at the bottom) after you finish to save changes.
2. Press the **“Reboot”** button to apply the changes.

3.1.4 Qos Setting



Type	Select Qos Type: DSCP or ToS
Differentiated Services Code Point Setting (DSCP)	
DSCP RTP	Select the DSCP value for RTP (voice packets), the value in the drop down list is expressed in binary format, you can choose to meet your network environment.
DSCP Signal	Select the DSCP value for SIP message, the value in the drop down list is expressed in binary format, you can choose to meet your network environment.
ToS Setting	
ToS RTP	Select the ToS value for RTP (voice packets), the value in the drop down list is expressed in binary format, you can choose to meet your network environment.
ToS Signal	Select the ToS value for SIP messages, the value in the drop down list is expressed in binary format, you can choose to meet your network environment.

1. Press the **"Apply"** button (at the bottom) after you finish to save changes.
2. Press the **"Reboot"** button to apply the changes.

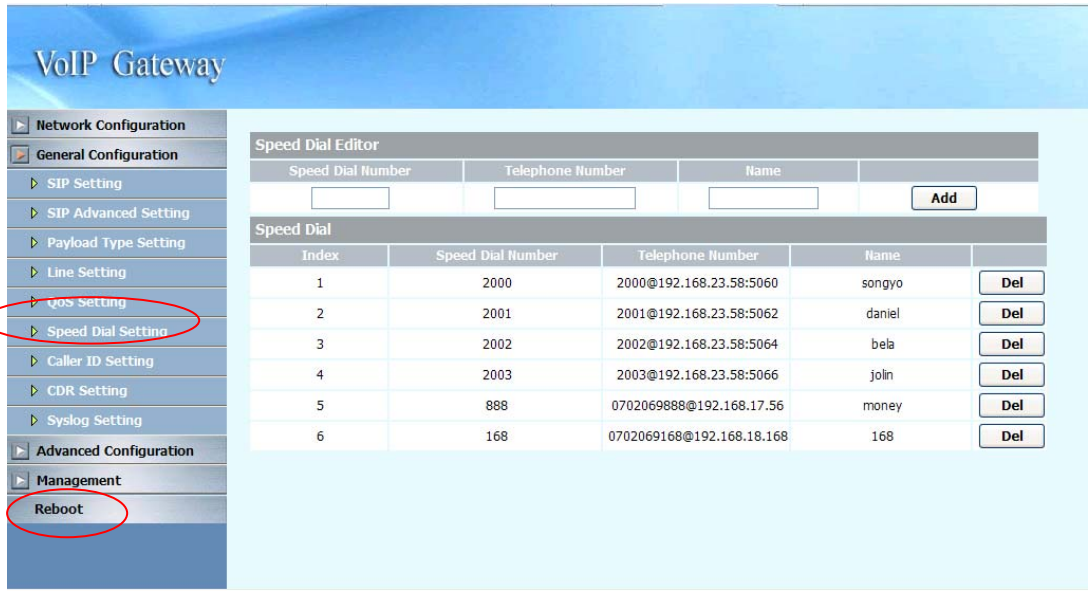
3.1.5 Speed Dial Setting

Speed Dial

Speed Dial Editor	Specify the speed Dial Number/Telephone Number/Name, then press the Add or Del button to add or delete record

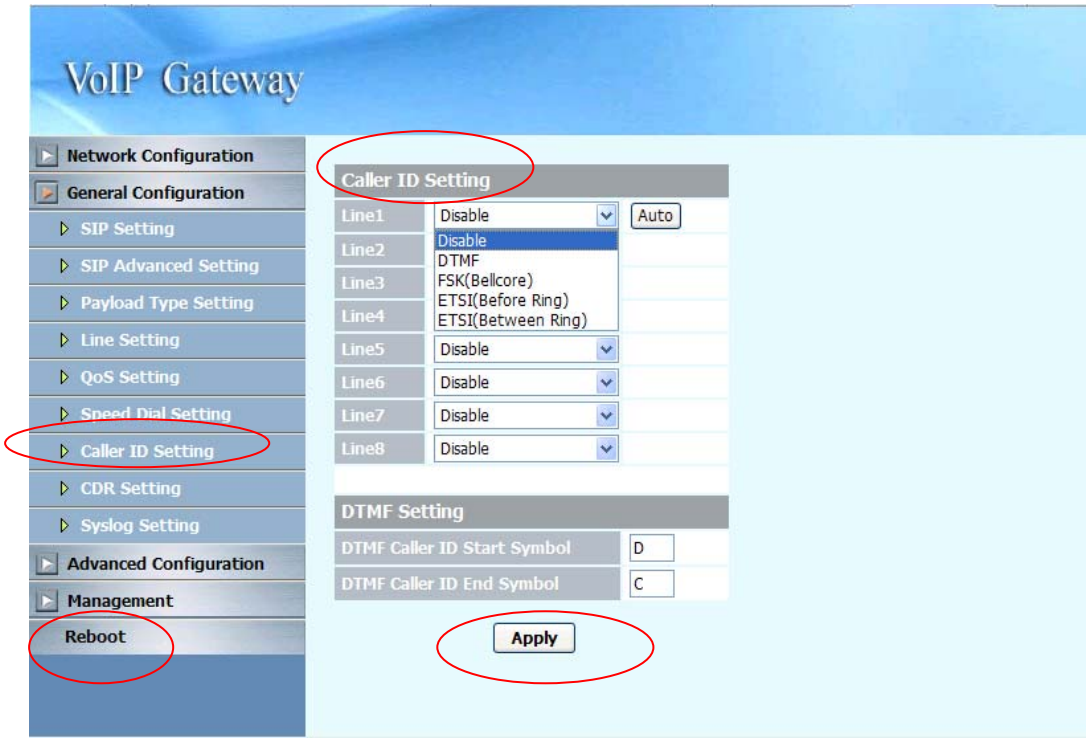
Peer to Peer call

You can use speed dial to do the peer to peer call as follows:



Speed Dial Editor **(In P2P application)**	Specify the speed Dial Number/Telephone Number/Name, then press the Add or Del button to add or delete record The format of “Telephone Number” is “#@ip address: port”, for example 2000@192.168.23.58:5060

3.1.6 Caller ID Setting



Caller ID Setting (Line 1~Line 8)	Select the (Line 1~Line 8)Caller ID generation type to use, you can choose the following: ● Disable ● DTMF ● FSK(Bellcore) ● ETSI(Before Ring) ● ETSI(Between ring) **FXO only** choose Enable/Disable the caller ID detection AUTO: You can choose different caller ID type by line. If Line1~Line 8 uses the same type, you only need to set line 1 and click the “Auto” button, then the other lines will set the same type automatically. The “Disable” option will allow you to disable this particular function.
DTMF Caller ID Start Symbol	Specify the DTMF Caller ID Start Symbol The default symbol is D.
DTMF Caller ID End Symbol	Specify the DTMF Caller ID End Symbol

	The default symbol is C.

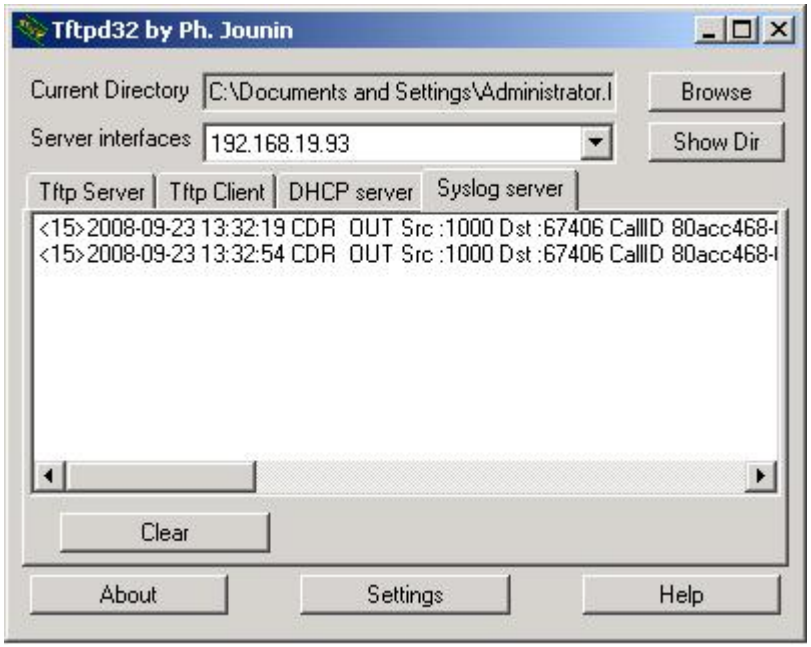
1. Press the **“Apply”** button (at the bottom) after you finish to save changes.
2. Press the **“Reboot”** button to apply the changes.

3.1.7 CDR Setting

CDR mode	Select the CDR mode for **Enable** or **Disable**. If you Enable this feature, please specify the CDR Server address and port number at the CDR server address and port's text box, then you can get Call Detail Data form CDR Server.
CDR Server address	If you Enable the CDR mode, please specify the IP address of CDR Sever for data storage.
CDR Server port	Specify the CDR Server port number, The default port number is 514.

1. Press the **"Apply"** button (at the bottom) after you finish to save changes.
2. Press the **"Reboot"** button to apply the changes.

NOTE: To receive the SYSLOG CDR, you need to have a syslog server to collect the CDR from MICRONET SP5008A / SP5018A / SP5058A. The following is a tool you can be used for testing purpose which can be downloaded from http://tftpd32.jounin.net/. You need to enable syslog server from settings before you can use it.


Tftpd32 by Ph. Jounin
Current Directory
C:\Documents and Settings\Administrator.I
Browse
Server interfaces
192.168.19.93
Show Dir
Tftp Server
Tftp Client
DHCP server
Syslog server
<15>2008-09-23 13:32:19 CDR OUT Src :1000 Dst :67406 CallID 80acc468-
<15>2008-09-23 13:32:54 CDR OUT Src :1000 Dst :67406 CallID 80acc468-
Clear
About
Settings
Help

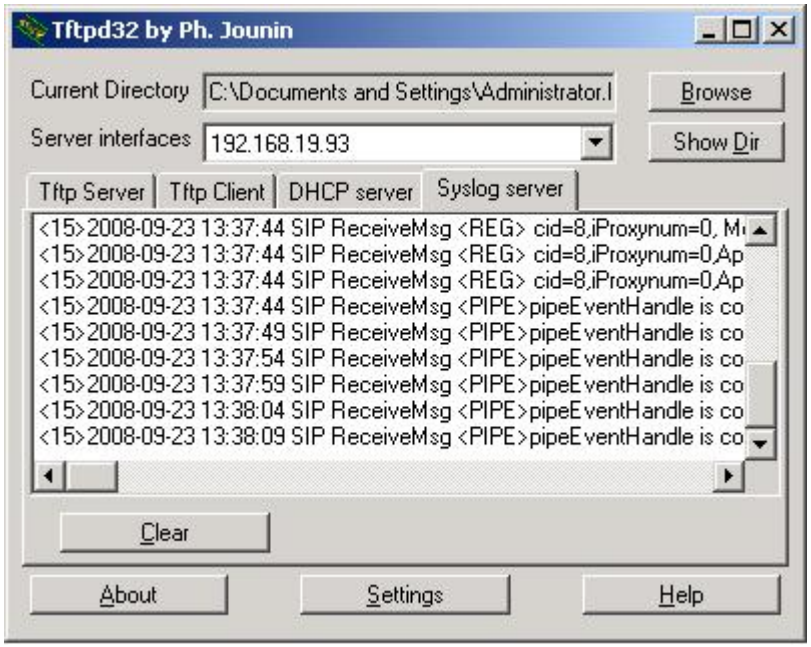
3.1.8 Syslog Setting

This syslog is used to send the debug log from MICRONET SP5008A / SP5018A / SP5058A to syslog server.

Syslog mode	Select the Syslog mode for **Enable** or **Disable**. If you **Enable** this feature, please specify the Syslog Server address and port number at the Syslog server address and port's text box, then you can get detail system log from Syslog server.
Syslog Server address	If you Enable the Syslog mode, please specify the IP address of Syslog Sever for data storage.
Syslog Server port	Specify the Syslog Server port number, The default port number is 514.

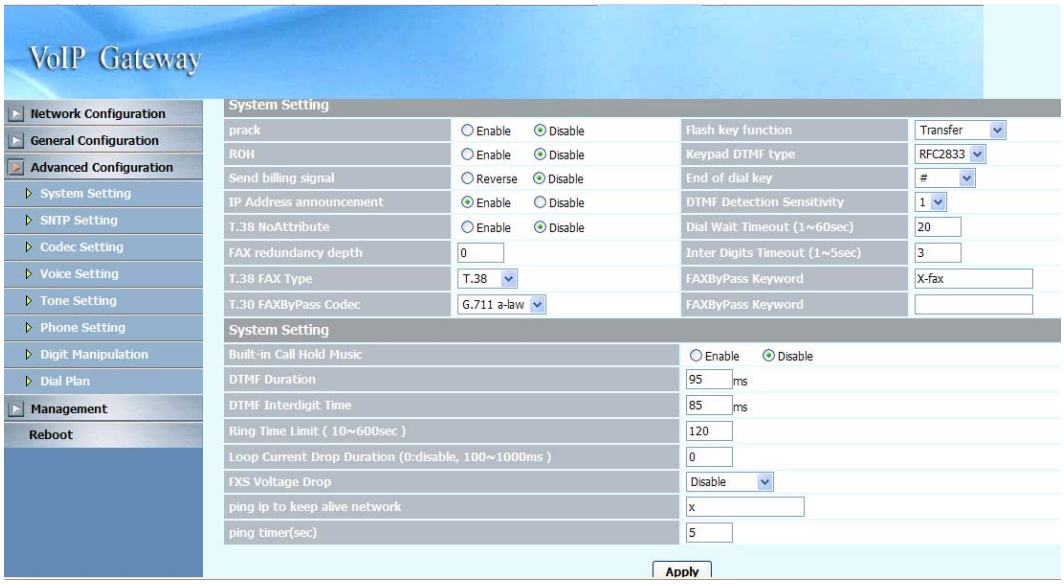
1. Press the **"Apply"** button (at the bottom) after you finish to save changes.
2. Press the **"Reboot"** button to apply the changes.

NOTE: To receive the SYSLOG debug information, you need to have a syslogd server to collect the debug information from MICRONET SP5008A / SP5018A / SP5058A . The following is a tool you can be used for testing purpose which can be downloaded from http://tftpd32.jounin.net/. You need to enable syslog server from settings before you can use it.


Tftpd32 by Ph. Jounin
Current Directory
C:\Documents and Settings\Administrator.I
Browse
Server interfaces
192.168.19.93
Show Dir
Tftp Server
Tftp Client
DHCP server
Syslog server
<15>2008-09-23 13:37:44 SIP ReceiveMsg <REG> cid=8,iProxynum=0, M
<15>2008-09-23 13:37:44 SIP ReceiveMsg <REG> cid=8,iProxynum=0,Ap
<15>2008-09-23 13:37:44 SIP ReceiveMsg <REG> cid=8,iProxynum=0,Ap
<15>2008-09-23 13:37:44 SIP ReceiveMsg <PIPE>pipeEventHandle is co
<15>2008-09-23 13:37:49 SIP ReceiveMsg <PIPE>pipeEventHandle is co
<15>2008-09-23 13:37:54 SIP ReceiveMsg <PIPE>pipeEventHandle is co
<15>2008-09-23 13:37:59 SIP ReceiveMsg <PIPE>pipeEventHandle is co
<15>2008-09-23 13:38:04 SIP ReceiveMsg <PIPE>pipeEventHandle is co
<15>2008-09-23 13:38:09 SIP ReceiveMsg <PIPE>pipeEventHandle is co
Clear
About
Settings
Help

3.2 Advanced Configuration

3.2.1 System setting



prack	PRACK is defined in RFC 3262: Reliability of Provisional Responses in SIP. You can accommodate your softswitch (Proxy Server) to Enable or Disable this feature.
ROH (FXS only)	Receiver-Off-Hook (ROH) Tone A ROH tone is sent to the subscriber to inform him that his receiver is off-hook. You can Enable/Disable this option.
Send billing signal (FXS only)	Polarity Reversal for billing signal, you can enable **(Reverse)**/Disable the feature.
T.38 NoAttribute	No attribute (Fax version, BitRate, Buffer, Datagram…) indicated in T.38 Re-Invite with Session Description Protocol (SDP). You can Enable/Disable this option.
FAX redundancy depth	Specify the resend times (0~3)for FAX error packet,
T.38 FAX Type	Select the FAX Type to use, you can choose the following: ● T.38 ● ByPass

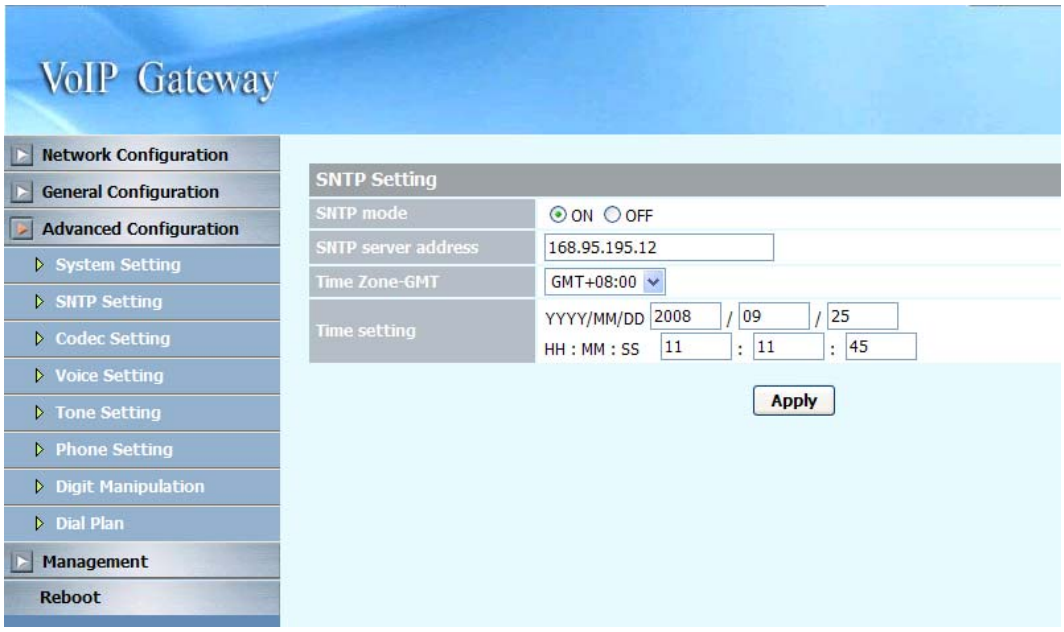
	● Auto
T.30 FAXByPass Codec	Select the FAX ByPass Codec to use, you can choose the following: ● G.711 a-law ● G.711 u-law ● G.726 32k
Flash key function (FXS only)	Select the function of Flash key, you can choose the following: ● Disable ● Transfer ● SIP Message
Keypad DTMF type	Select the type of Keypad DTMF, you can choose the following: ● In-Band ● RFC2833 ● SIP Info
End of dial key	Select the End of dial key, you can choose the following: ● Disable ● * ● #
DTMF Detection Sensitivity	Specify the grade of DTMF Detection Sensitivity, the value range is (1~5)
Dial Wait Timeout (1~60sec)	Specify the duration of dial waiting when the receiver is off hook. The range is 1~60 sec.
Inter Digits Timeout (1~5sec)	Specify the interval of input digits, if the interval is over the setting, the system will end the dial and send out the DTMF. The limitation range is 1~5sec.
FAXByPass Keyword	Some SIP Proxy need specify special keyword for FAXByPass function. Input the data as SIP Proxy required.
FAXByPass Keyword	Some SIP Proxy need specify special keyword for FAXByPass function. Input the data as SIP Proxy required.
IP Address announcement	You can Enable/Disable this function, If you select Enable, you can connect T1 port with a phone set and press #120#, you will hear

	the announcement of IP address of LAN port, or press #126# to get WAN port IP address. **FXO** please following under step: 1. You can get a PSTN line and connect to the L1 FXO port. 2. Use another PSTN phone to dial the PSTN number (in step 1you connected on FXO-08), you will hear a second dial tone or greeting (please dial extension number). 3. Press #126# on the phone set, and you will hear an IVR announcing the current IP address of the WAN port. 4. Press #120# on the phone set, and you will hear an IVR announcing the current IP address of the LAN port.
Built-in Call Hold Music	System built-in music of call hold, you can Enable/Disable this feature.
DTMF Duration	Specify the DTMF tone duration.
DTMF Interdigit Time	Specify the interval of DTMF digit
Ring Time Limit (10~600sec) **(FXS only)**	Specify the limitation of Ring time for incoming call, when the ring is over the limit, system will drop the call. The default range is 10~600sec.
Loop Current Drop Duration (0:disable, 100~1000ms)	Specify the duration (100~1000ms) of loop current drop, 0 for disable. This feature is used when the SP5008A (FXS) are connected with answering machines. When the remote site disconnects, the system will drop FXS port's voltage to 0, and make the answering machines disconnect.
FXS Voltage Drop (FXS only)	This option is used when a stand alone relay box containing a PSTN and FXS port is connected to the SP5008A's FXS port. In this special application, if there is a network or registration failure, the system will drop the FXS port's voltage to 0, when the relay box detects the status, it will switch the line to PSTN.

	The default setting is “Disable”, if you are not using this particular special application mentioned above, please do not enable this function.
ping ip to keep alive network	Specify the IP for pinging to make sure the network keeps alive.
ping timer(sec)	Specify the interval of ping timer(sec)

1. Press the **“Apply”** button (at the bottom) after you finish to save changes.
2. Press the **“Reboot”** button to apply the changes.

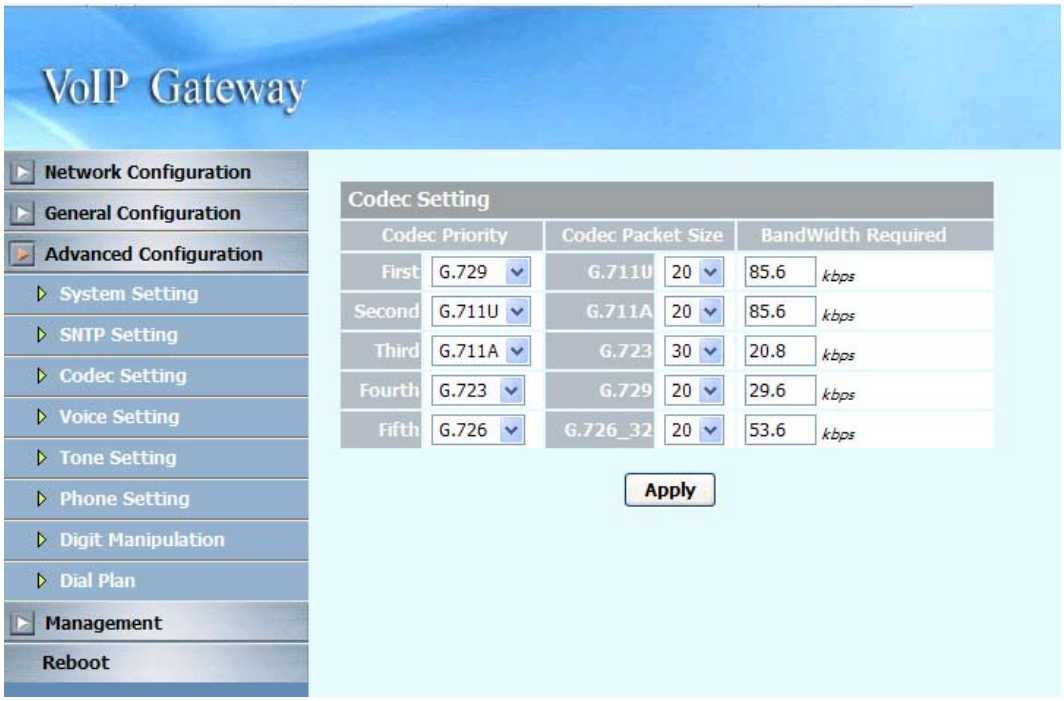
3.2.2 SNTP Setting



SNTP mode	Select the SNTP mode : On or Off
SNTP server address	Specify the SNTP server address for time synchronization.
Time Zone -GMT	Select the Time Zone of your location
Time setting	You can specify the time with year/month/date /hour/minute /second when you select the SNTP mode with “Off”.

1. Press the **“Apply”** button (at the bottom) after you finish to save changes.
2. Press the **“Reboot”** button to apply the changes.

3.2.3 Codec Setting



Codec Priority	You can specify the priority of the codec from First to Fifth (first being the highest priority and Fifth being the lowest). You can choose the following codec's: ● G711U ● G711A ● G723 ● G729A ● G726
Codec Packet Size	You can specify the packet size in the drop down list for each particular codec, you can choose the following:
Bandwidth Required	When you select the codec packet size shown above, system will set default requirement of bandwidth.

G711U	10,20,30,40,50,60
G711A	10,20,30,40,50,60
G723	30,60,90
G729A	10,20,30,40,50,60
G726	10,20,30,40,50,60

1. Press the **"Apply"** button (at the bottom) after you finish to save changes.
2. Press the **"Reboot"** button to apply the changes.

3.2.4 Voice Setting

Jitter Buffer	
Minimal Delay	Specify the minimal delay of the jitter buffer. The range is 0~150 ms and the default setting is 0 ms.
Maximal Delay	Specify the maximal delay of the jitter buffer. The range is 0~200 ms and the default setting is 200 ms.
OPTFactor	Specify the dynamic jitter buffer frame error/delay optimization factor, the range is 0~13.
VAD	Enable/Disable the VAD (Voice Activity Detection) feature. This is supported on all codecs that the FXS-FXO equips.
Echo cancellation	Enable/Disable the echo cancellation feature. The default setting is “Enable”.
Local voice volume	Specify the volume gain of the voice in the local side (0~63, default is 32). You can set this option for each of the 8 lines.
Remote receive volume	Specify the volume gain of the voice in the remote side (0~63, default is 32). You can set this option for each of the 8 lines.
DTMF volume	Specify the volume gain of the DTMF (0~63, default is 27).

	You can set this option for each of the 8 lines.

1. Press the **“Apply”** button (at the bottom) after you finish to save changes.
2. Press the **“Reboot”** button to apply the changes.

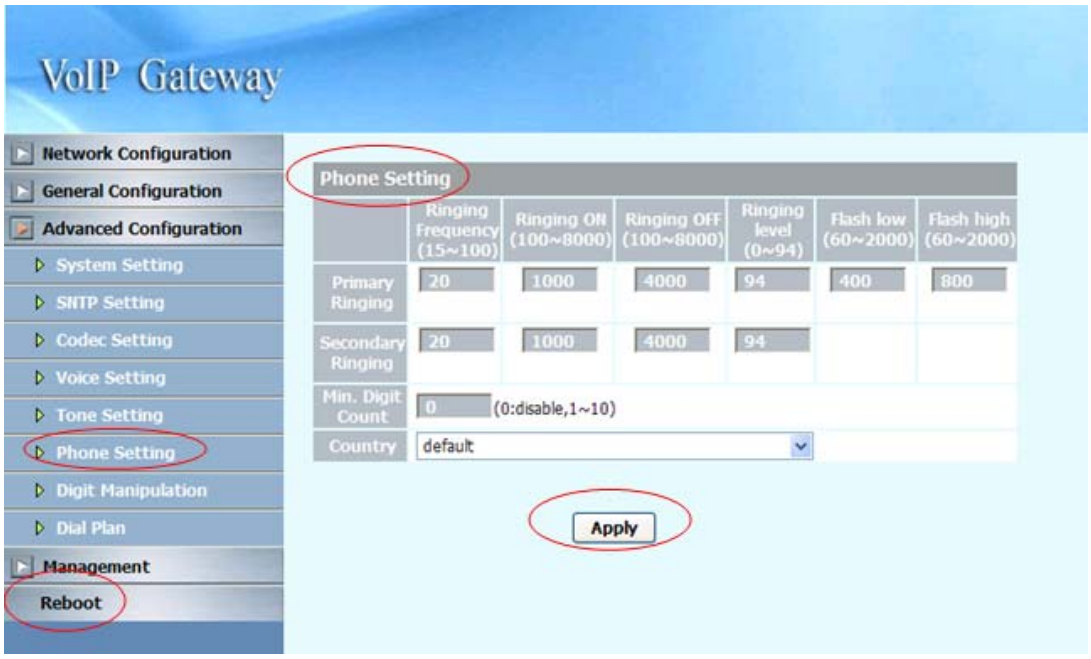
3.2.5 Tone Setting

Dial tone	Specify the pattern of the Dial tone, you can adjust the high frequency, low frequency, high level, low level, the On and Off time for tone 1 and 2.
Ringback tone (FXS only)	Specify the pattern of the Ringback tone, you can adjust the high frequency, low frequency, high level, low level, the On and Off time for tone 1 and 2.
Busy tone	Specify the pattern of the Busy tone, you can adjust the high frequency, low frequency, high level, low level, the On and Off time for tone 1 and 2.
Call-waiting (FXS only)	Specify the pattern of the call-waiting tone, you can adjust the high frequency, low frequency, high level, low level, the On and Off time for tone 1 and 2.
Voice-Notify (for FXS+PSTN only)	Specify the pattern of the Voice-Notify, you can adjust the high frequency, low frequency, high level, low level, the On and Off time for tone 1 and 2.
ROH Tone (FXS only)	Specify the pattern of the ROH Tone, you can adjust the high frequency, low frequency, high level, low level, the On and Off time for tone 1 and 2. The ROH tone is a single high frequency tone used to warn users that their phone is not placed on-hook (hang up) correctly.
Disconnect tone 1	Specify the pattern of the disconnect tone for disconnect tone 1 (first set), you can adjust the high frequency, low frequency, high level, low level, the On and Off time for tone 1 and 2.

	NOTE: If the disconnect tone only has single frequency, please set it to low frequency. If the disconnect tone only has single cadence, please set it to Tone 1.
Disconnect tone 2	Specify the pattern of the disconnect tone for disconnect tone 2 (second set), you can adjust the high frequency, low frequency, high level, low level, the On and Off time for tone 1 and 2. NOTE: If the disconnect tone only has single frequency, please set it to low frequency. If the disconnect tone only has single cadence, please set it to Tone 1.

1. Press the **"Apply"** button (at the bottom) after you finish to save changes.
2. Press the **"Reboot"** button to apply the changes.

3.2.6 Phone Setting

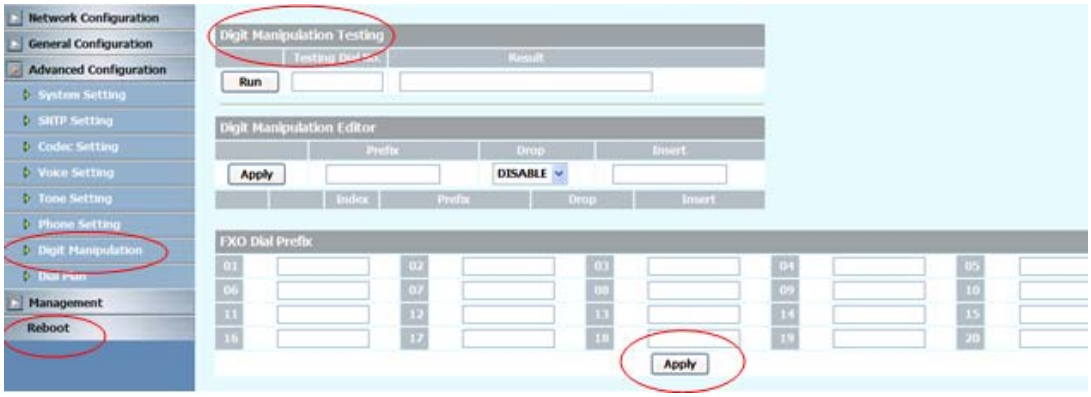


Primary Ringing	
Ringing Frequency	Specify the Ringing frequency value. ringing frequency : 15~100 (Unit : Hz)
Ringing ON	Specify the Ringing ON value. ringing ring ON : 0~8000 (Unit : ms)
Ringing OFF	Specify the Ringing OFF value. ringing ring OFF : 0~8000 (Unit : ms)
Ringing level	Specify the ringing level. ringing level : 0 ~ 94 (Unit : V)
Flash low	Specify the value of the flash (low). : 60~2000 (Unit : ms). If the phone-set's flash time is smaller than the Flash Low setting, the flash will be ignored.
Flash high	Specify the value of the flash (high). : 60~2000 (Unit : ms) If the phone-set's flash time is larger than the Flash high setting, the flash will be handled as hang-up.
Secondary Ringing (FXS only) Note: The feature will be enabled automatically when the Min. Digit Count has been enabled and specified. It is used to have different ring cadence when the incoming caller number is shorter than the setting of "Min. Digit Count"	

Ringing Frequency	Specify the Ringing frequency value. ringing frequency : 15~100 (Unit : Hz)
Ringing ON	Specify the Ringing ON value. ringing ring ON : 0~8000 (Unit : ms)
Ringing OFF	Specify the Ringing OFF value. ringing ring OFF : 0~8000 (Unit : ms)
Ringing level	Specify the ringing level. ringing level : 0 ~ 94 (Unit : V)
Min. Digit Count	Specify the minimum digit count (1~10, 0: Disable), this feature is used to change the ringing frequency by detecting the digit length of incoming calls' number. When the digit length of an incoming caller number is greater than the specified setting, the system will use primary ringing. If the digit is less than the specified setting, the system will use the secondary ringing.
Country	Specify the ringing standard to use.

1. Press the **"Apply"** button (at the bottom) after you finish to save changes.
2. Press the **"Reboot"** button to apply the changes.

3.2.7 Digit Manipulation

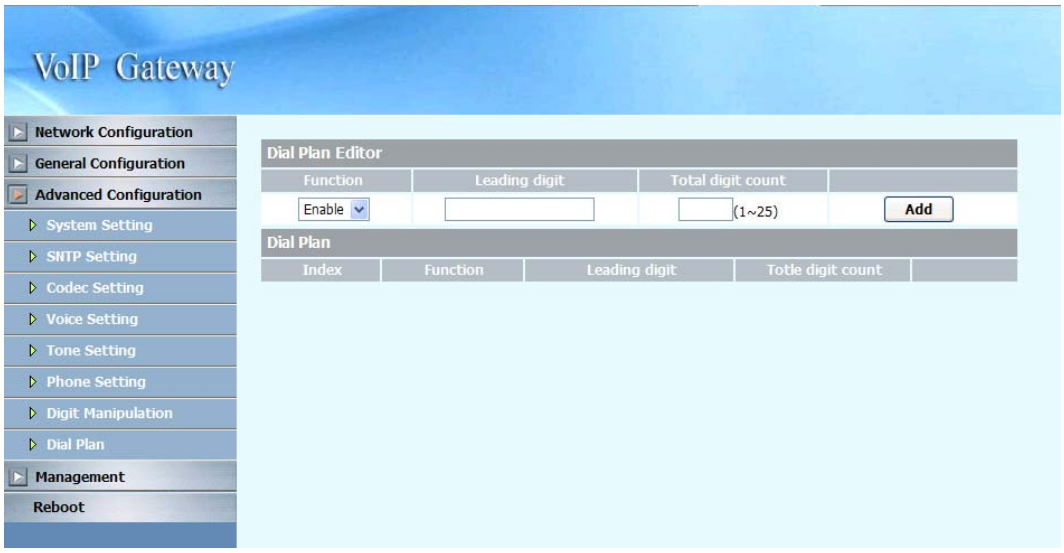


Digit Manipulation Testing	This option allows users to test the digit manipulation rule you set.
Digit Manipulation Editor	With this option, you can specify whether to add digits to a prefix number or drop a prefix number. For example, if the user sets: **First Example** ● Prefix: 02 (matched prefix) ● Drop: Enable (drop prefix) ● Insert: If the user dials 0282265699, the resulting dial out number will be 82265699. **Second Example** ● Prefix: 7 ● Drop: Disable ● Insert: 886 If the user dials 778, the resulting dial out number will be 886778. **Third Example (Only applicable for SP5058A FXO)** ● Prefix: 8226 ● Drop: Disable ● Insert: 02 If the user dials 82265699, the resulting dial out number will be 0282265699. You can configure up to 50 entries in the Digit Manipulation Editor.

FXO Dial Prefix	For outgoing call, the default will be made to VOIP. However, if you set the FXO prefix here, the call will be route to FXO instead of VOIP. It can be applied to FXO model only.

1. Press the **“Apply”** button (at the bottom) after you finish to save changes.
2. Press the **“Reboot”** button to apply the changes.

3.2.8 Dial Plan



Dial Plan Editor	Using this feature, users can specify the number that will be immediately dialed out without having to press the "#" (at the end of the dialed number) on the keypad or until the dial time timeout period. The number can be specified depending on the length of the dialed number, or the prefix of the dialed number. For example, if the user sets: **First Example** ● Function: Enable ● Leading digit: 02 ● Total Digit count: 10 If the user dials a 10 digit number with a prefix of 02 (e.g. 0282265699), the MICRONET SP5008A / SP5018A / SP5058A will immediately detect it and dial this number straight away. **Second Example** ● Function: Enable ● Leading digit: ● Total digit count: 8 If the user dials an 8 digit number (e.g. 82265699), the MICRONET SP5008A / SP5018A / SP5058A will immediately detect it and dial this number straight away. **Third Example** ● Function: Disable

	• Leading digit: 02 • Total digit count: 10 If the user set the Function parameter as “Disable”, the call number with a length of 10 digits and a prefix of 02 will proceed as normal. The user will need to wait until dial timeout period for the call to be made, or press the “#” on the keypad at the end of the dialing number to make the call. You can configure up to 50 entries in the Dial Plan.

1.Press the **“Apply”** button (at the bottom) after you finish to save changes.
2.Press the **“Reboot”** button to apply the changes.

3.3 Management

3.3.1 Provision Server

Note: If you need this requirement, Please contact MICRONET for availabilities.

Provision server Mode	Enable/Disable provision function
Provision server IP address	Specify the Provision Server's IP address.
Provision server port	Specify the Provision server port
Provision cycle time	Specify the cycle time of the provisioning.(unit: sec)
Provision default time	Specify a scheduled time in a day

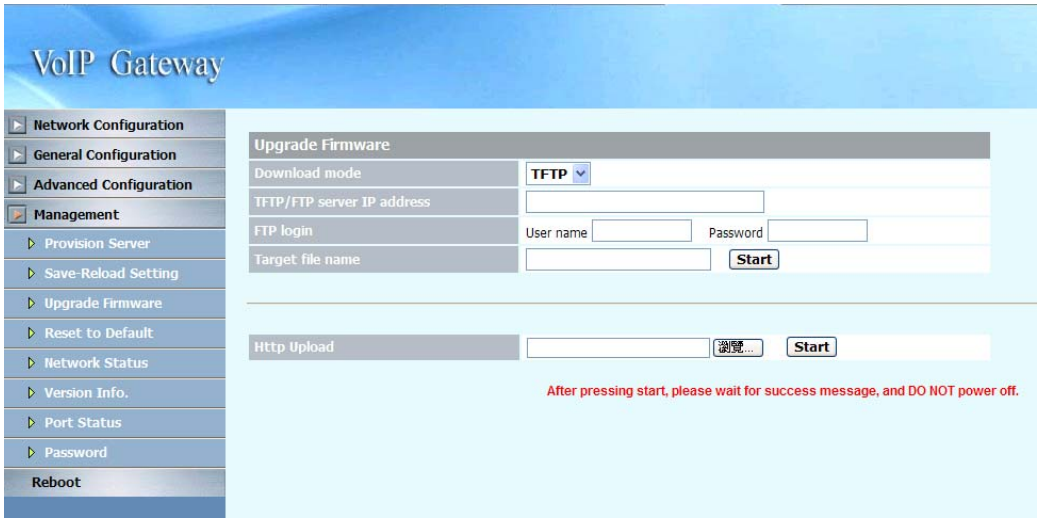
1. Press the **"Apply"** button (at the bottom) after you finish to save changes.
2. Press the **"Reboot"** button to apply the changes.

3.3.2 Save-Reload setting

Export File	Click the “Export” button to export “user.cfg” data
Import File	Specify the file path and file name to Import the configure data.

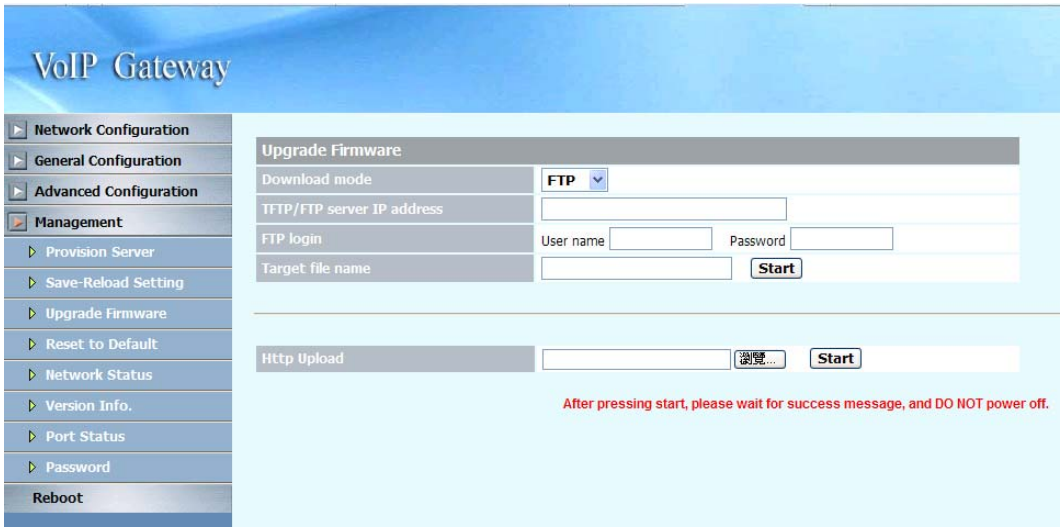
Press the **“Reboot”** button to apply the changes.

3.3.3 Upgrade Firmware



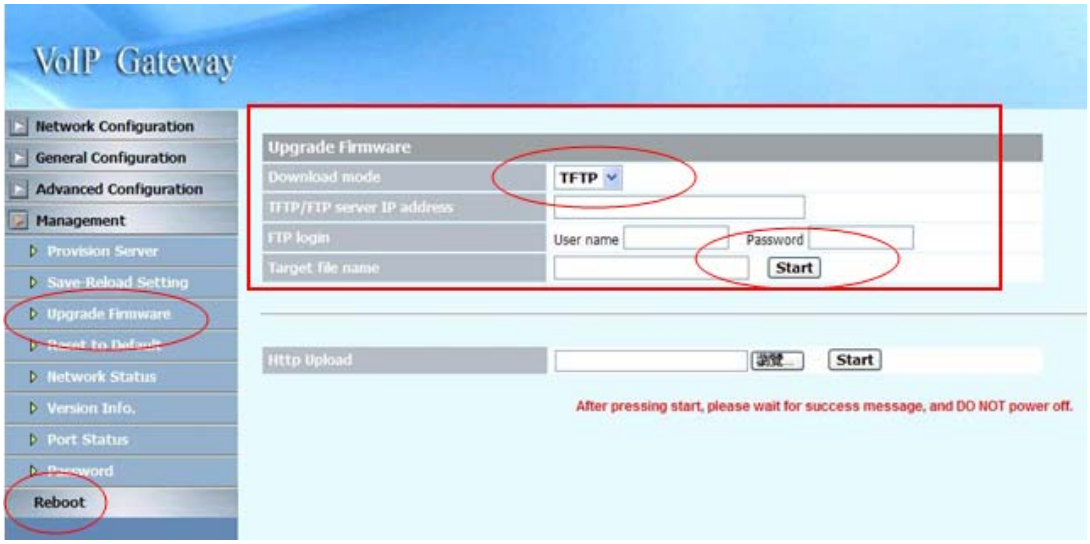
Download mode	Select the connection method to update the MICRONET SP5008A/SP5018A/SP5058A's firmware, you can choose the following: ● TFTP ● FTP
TFTP/FTP server IP address	Specify the TFTP/FTP server's IP address.
FTP login	Specify the login username/password for the FTP server.
Target file name	Specify the target file name for the firmware.
Http Upload	Specify the location of the firmware for uploading through Http.

Updating the firmware by FTP



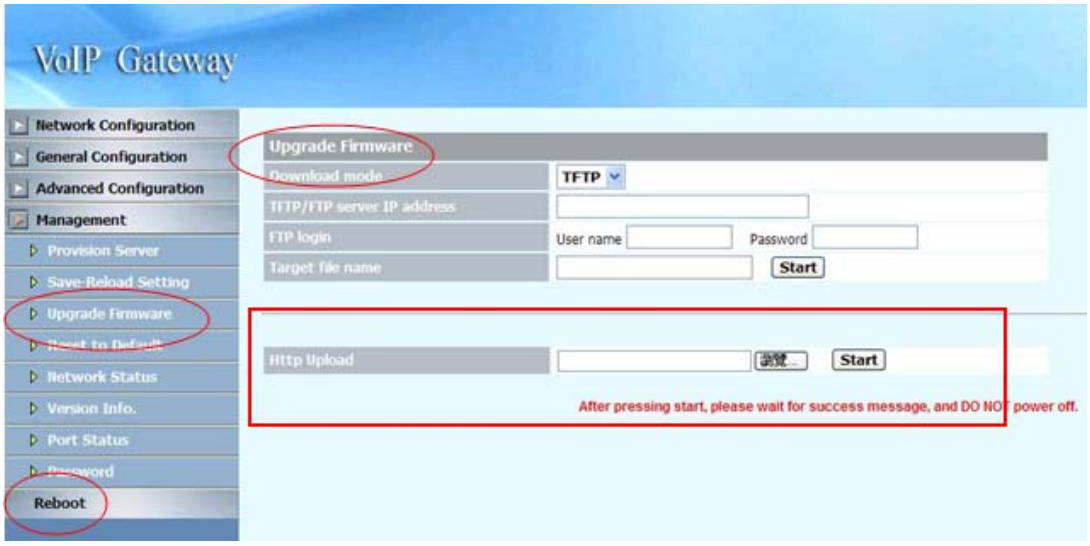
1. Select FTP mode in the drop down list.
2. Key in the IP address, login name, password of your FTP server and specify the correct filename of the firmware.
3. Press the Start button (next to the Target file name text box) to execute the upgrade process.
4. Please wait while the device updates itself with the firmware.
5. After the update process is finish, you will be taken to a web page indicating that it was successful (see figure below).
6. Press the **"Reboot"** button to apply the changes.

Updating the firmware by TFTP



1. First, download the TFTP program from our website. Unzip the TFTP to a directory that you desire in your hard drive and execute the TFTP program. Make sure that the TFTP program points to the directory of where your firmware is stored. Now, leave the TFTP program running and switch back to the MICRONET SP5008A / SP5018A / SP5058A web configuration interface.
2. Under Device Management => Software Upgrade select TFTP mode in the drop down list.
3. Key in the IP address of the TFTP server and specify the correct filename of the firmware.
4. Press the Start button (next to the Target file name text box) to execute the upgrade process.
5. Please wait while the device updates itself with the firmware.
6. After the update process is finish, you will be taken to a web page indicating that it was successful (see figure below).
7. Press the "**Reboot**" button to apply the changes.

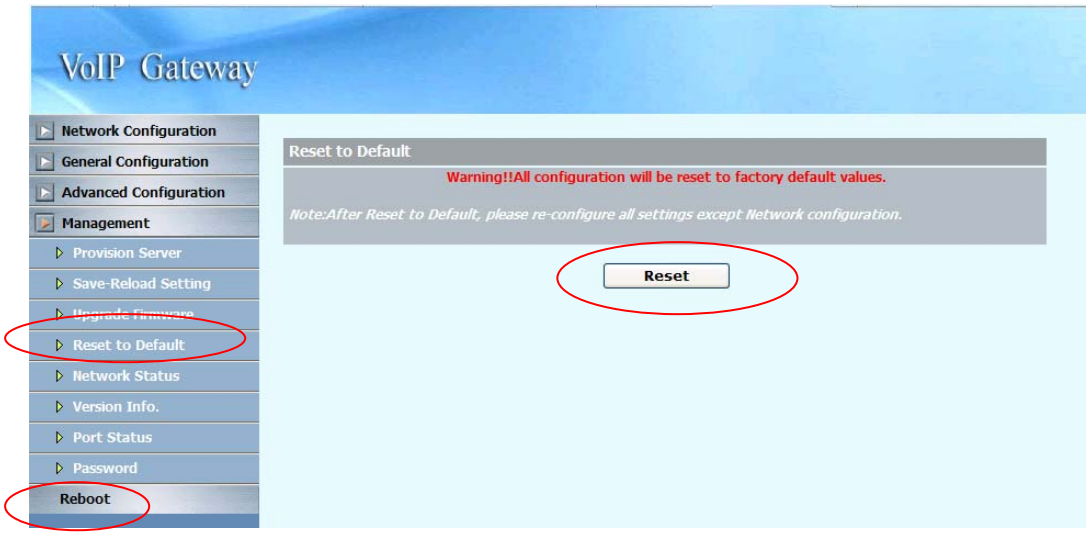
Updating the firmware by HTTP



1. Under Device Management => Software Upgrade web menu, specify the location of the firmware by clicking the Browse button next to the Http Upload text box.
2. You will be prompted with a window requesting the location of the firmware.
3. Locate the firmware that is stored in your hard drive.
4. Once located, click the Open button.
5. Back in the web configuration menu, press the Start button (next to the Http Upload's browse button) to execute the upgrade process.
6. Please wait while the device updates itself with the firmware.
7. After the update process is finish, you will be taken to a web page indicating that it was successful (see figure below).

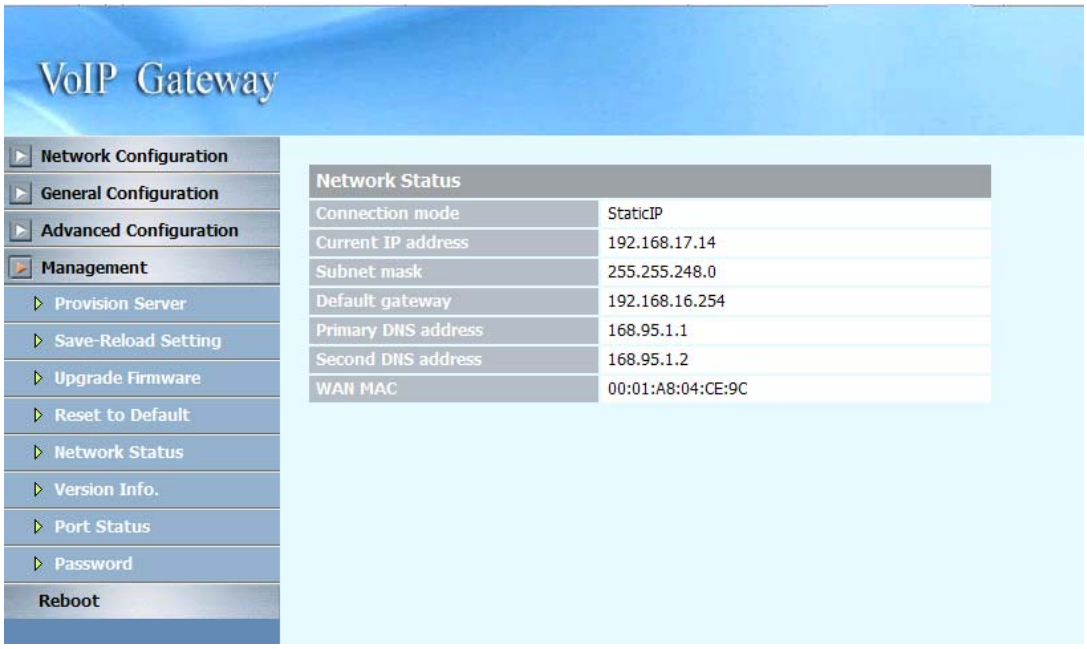
Note: For consistency, it is recommended to reload default setting every time you update the firmware on the MICRONET SP5008A /SP5018A / SP5058A. However, you will lose all the settings configured on the MICRONET SP5008A / SP5018A / SP5058A except Network configuration. For more details on reload default setting, please refer to the next page below.

3.3.4 Reset to Default



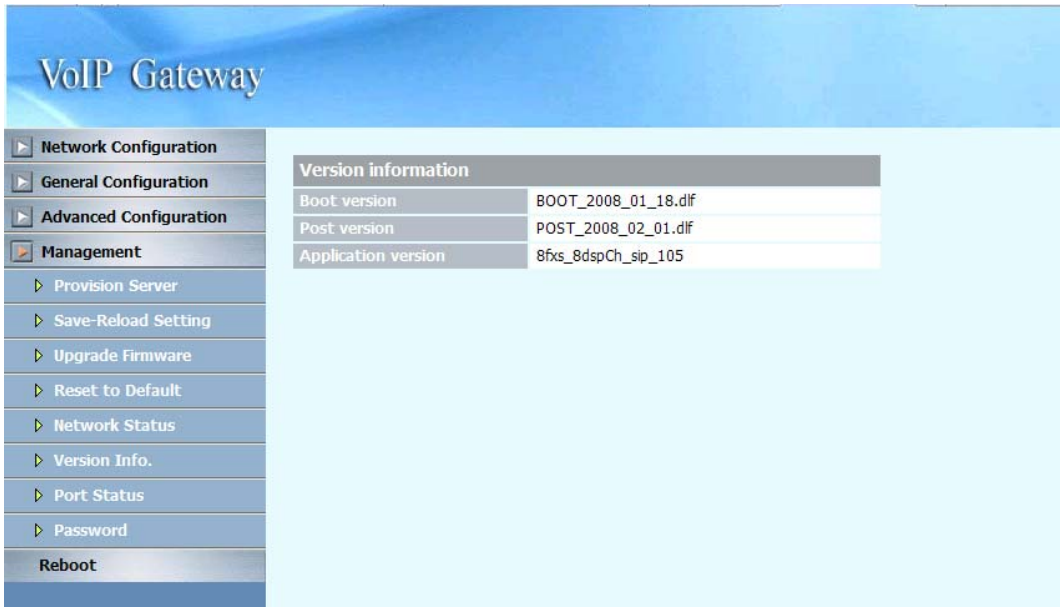
Users can restore back to factory default settings using this feature. The password of the account and the network configurations are the things that will not be changed when this feature is executed.

3.3.5 Network Status



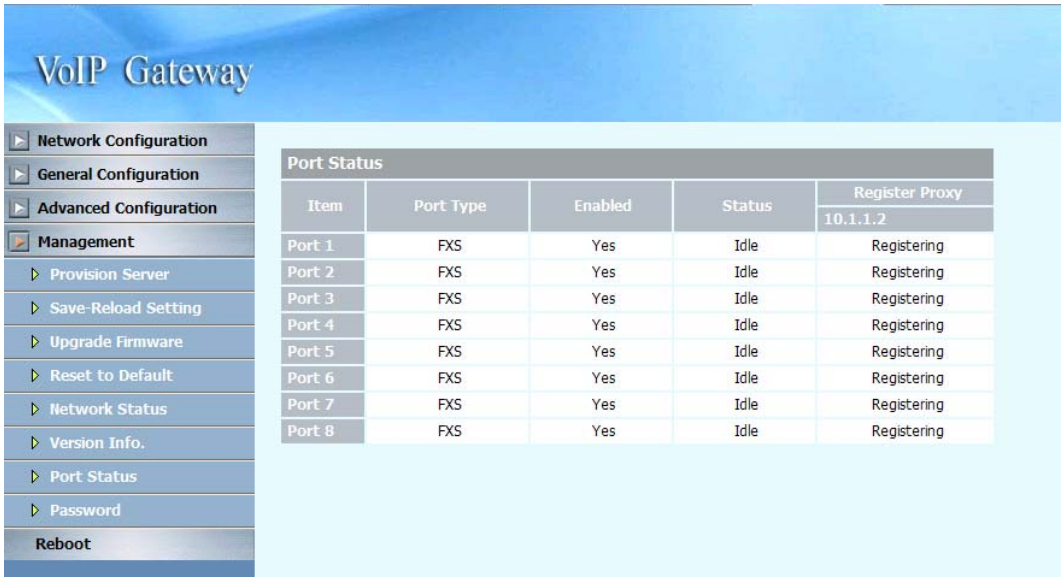
Connection mode	Displays the current connection mode.
Current IP address	Displays the current IP address of the WAN port.
Subnet mask	Displays the current subnet mask's IP.
Default gateway	Displays the current default gateway's IP.
Primary DNS address	Displays the current primary DNS address.
Second DNS address	Displays the current secondary DNS address.
WAN MAC	Displays the MAC address of the WAN port.

3.3.6 Version Info.



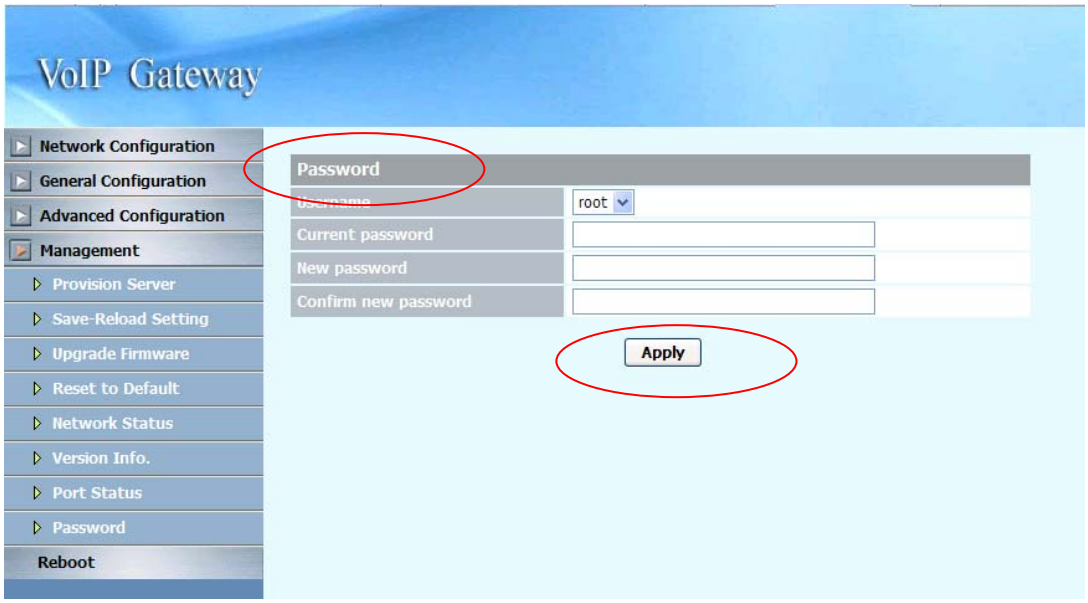
Boot version	Displays the current boot version loaded on the MICRONET SP5008A / SP5018A / SP5058A.
Post version	Displays the current post version loaded on the MICRONET SP5008A / SP5018A / SP5058A.
Application version	Displays the current application version loaded on the MICRONET SP5008A / SP5018A / SP5058A.

3.3.7 Port Status



Item	Displays the corresponding port number.
Status	Displays the status of the port.
Port Type	Displays the port type (FXS,FXO)of the corresponding port number.
Register Proxy	Displays the registration status of the corresponding port number. if the port Register success it will display “Yes” .

3.3.8 Password

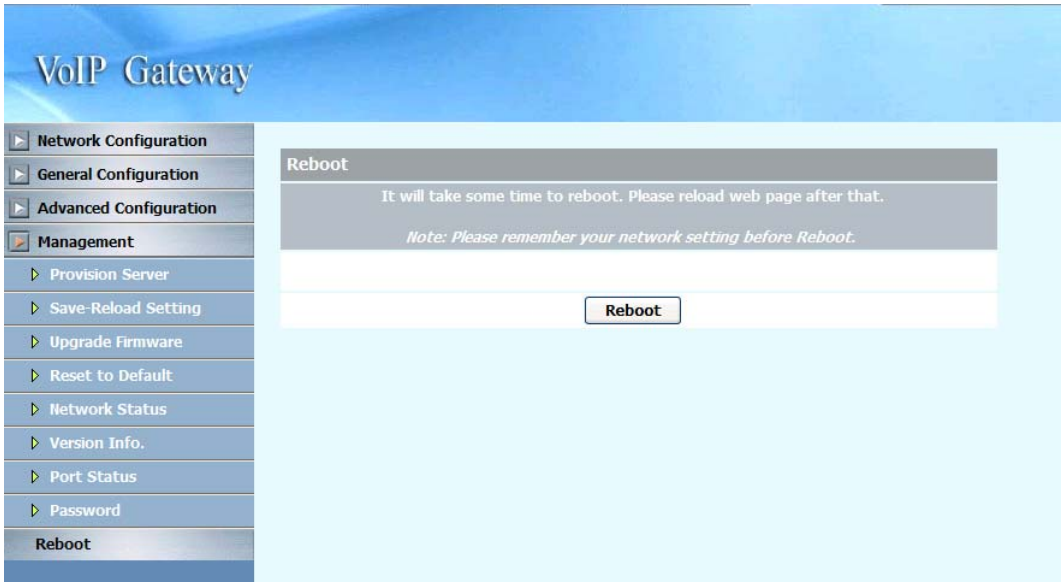


Username	Select the type of user name that you would like to configure the password for, you can choose the following: ● root ● user
Current password	Specify the current password for the user selected in the drop down list above.
New password	Specify the new password for the user selected in the drop down list above.
Confirm new password	Repeat the new password again for confirmation.

1. Press the **"Apply"** button (at the bottom) after you finish to save changes.
2. Press the **"Reboot"** button to apply the changes.

3.4 Rebooting the system

Executing this function will reboot the whole system, when configuration changes are made to the device, it needs to be rebooted for the changes to take effect (see figure below).



4. Operation

4.1 Peer to Peer mode (FXO to FXS)

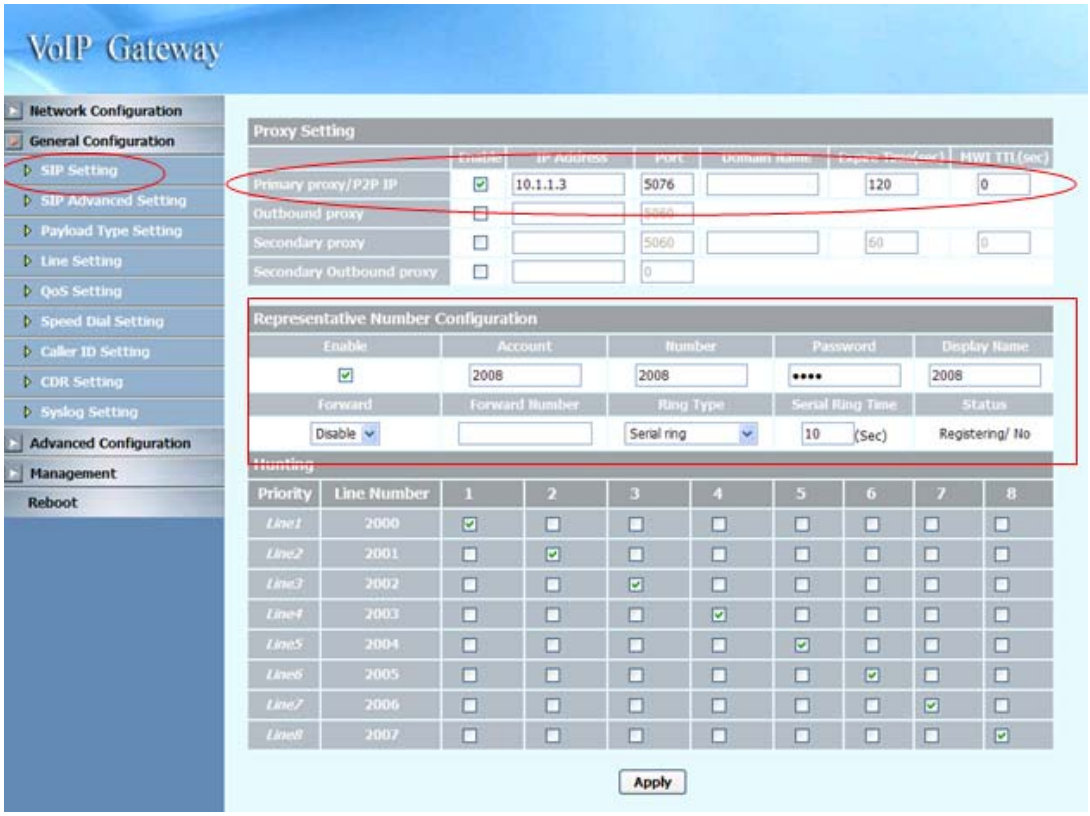
In this application, the distance of PABX extension is not limited. You can use the same PABX in two or more branches.

Configuration:

1. Side A (FXO): IP address: 10.1.1.2, number is 2000 to 2008
2. Side B (FXS): IP address: 10.1.1.3, number is 1000 to 1008

Side A : (SP5058A: IP address 10.1.1.2)

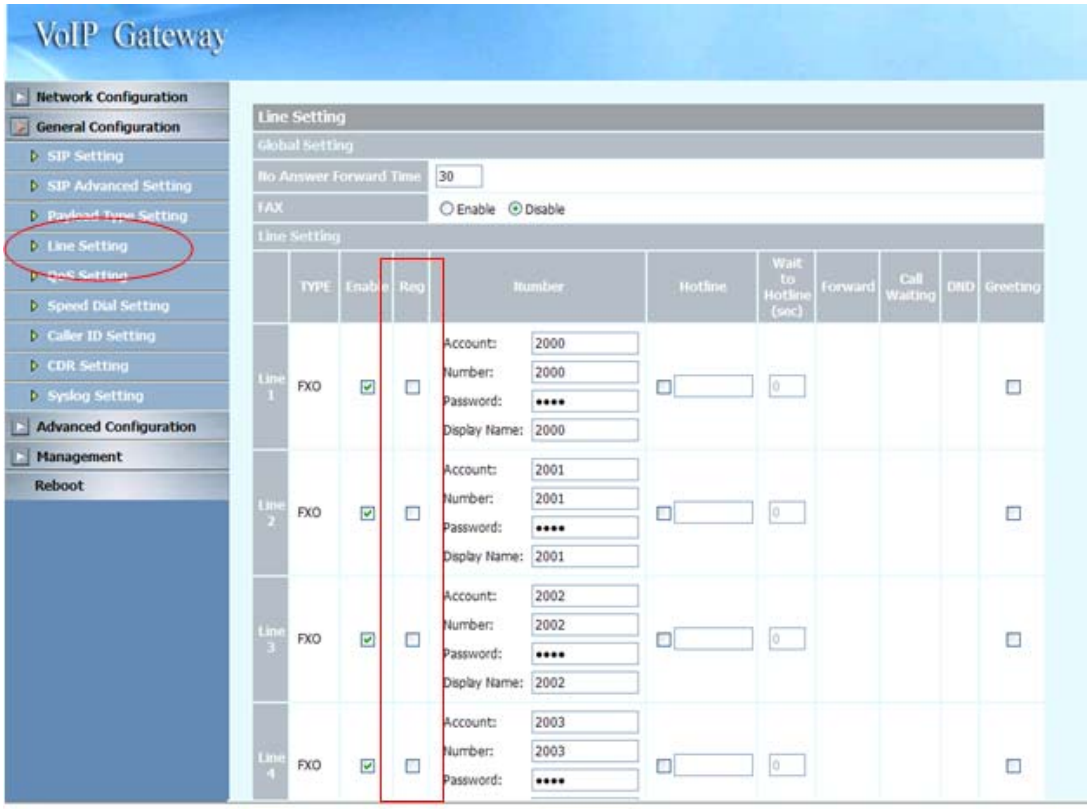
General Configuration / SIP Setting



Primary proxy/P2P IP **(Side A--FXO)**	Specify the destination (Side B) IP Address of Peer to Peer mode, and specify the port# with 5076.
Call number configuration	
Representative number **(Side A -- FXO)**	**Enable the representative line**

Side A : (SP5058A : IP address 10.1.1.2)

General Configuration / Line Setting

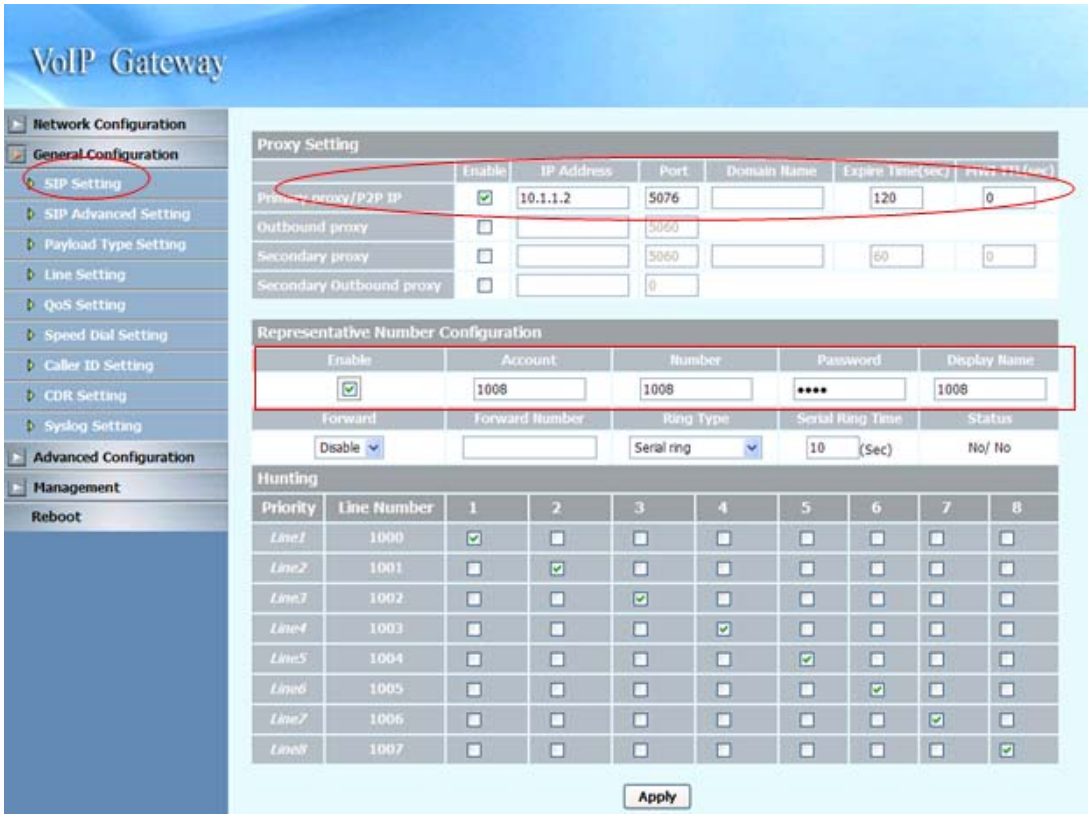


Line 1~Line 8 (Side A -- FXO)	Please refer to the figure shown above, **Enable all the line** and **Disable all the register.** Specify the relevant data: Account, number, password and display name.

1. Press the **"Apply"** button (at the bottom) after you finish to save changes.
2. Press the **"Reboot"** button to apply the changes.

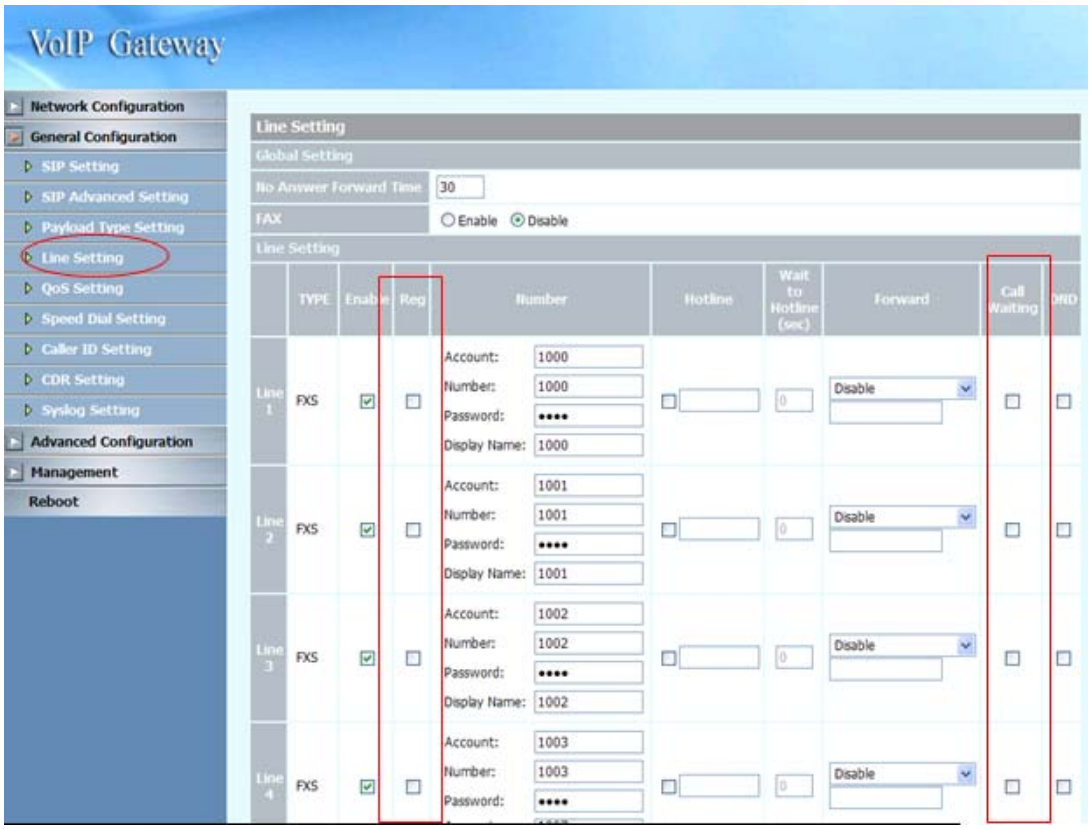
Side B: (MICRONET SP5008A : IP address 10.1.1.3)

General Configuration—SIP Setting



Primary proxy/P2P IP **(Side B)**	Specify the destination (Side A) IP Address of Peer to Peer mode, and specify the port# with 5076
Call number configuration	
Representative number **(Side B)**	**Enable the representative line**
Line 1~Line 8 **(Side B)**	Please refer to the figure shown above, **Enable all the line** and **Disable all the register.** Specify the relevant data: Account, number, password and display name.

Side B: (MICRONET SP5008A: IP address 10.1.1.3)
General Configuration / Line Setting



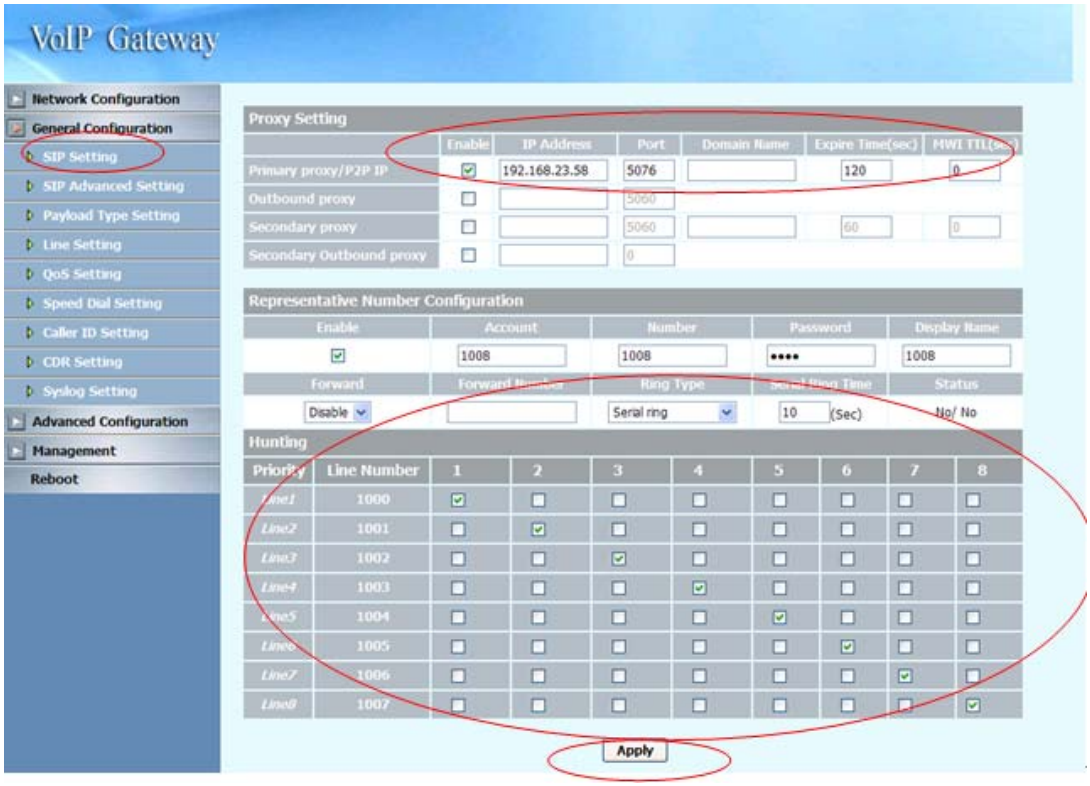
Line 1~Line 8 **(Side B)**	Please refer to the figure shown above, **Enable all the line** and **Disable all the register and call waiting.** Specify the relevant data: Account, number, password and display name

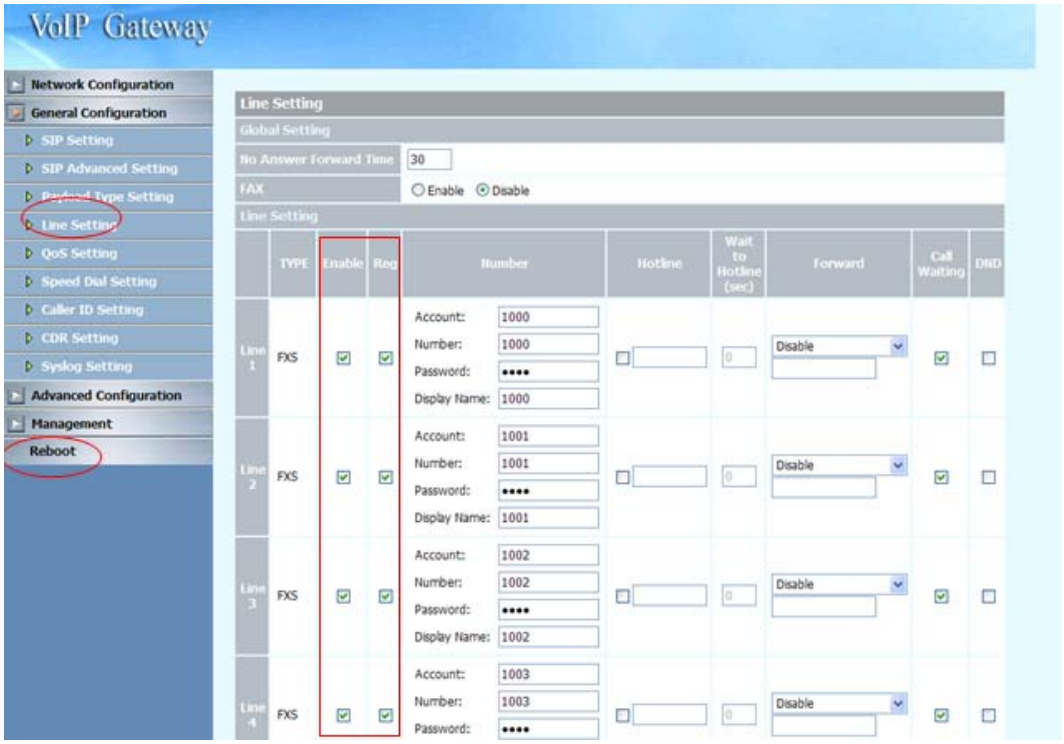
1. Press the **"Apply"** button (at the bottom) after you finish to save changes.
2. Press the **"Reboot"** button to apply the changes.

4.2 Peer to Peer mode (FXS to FXS)

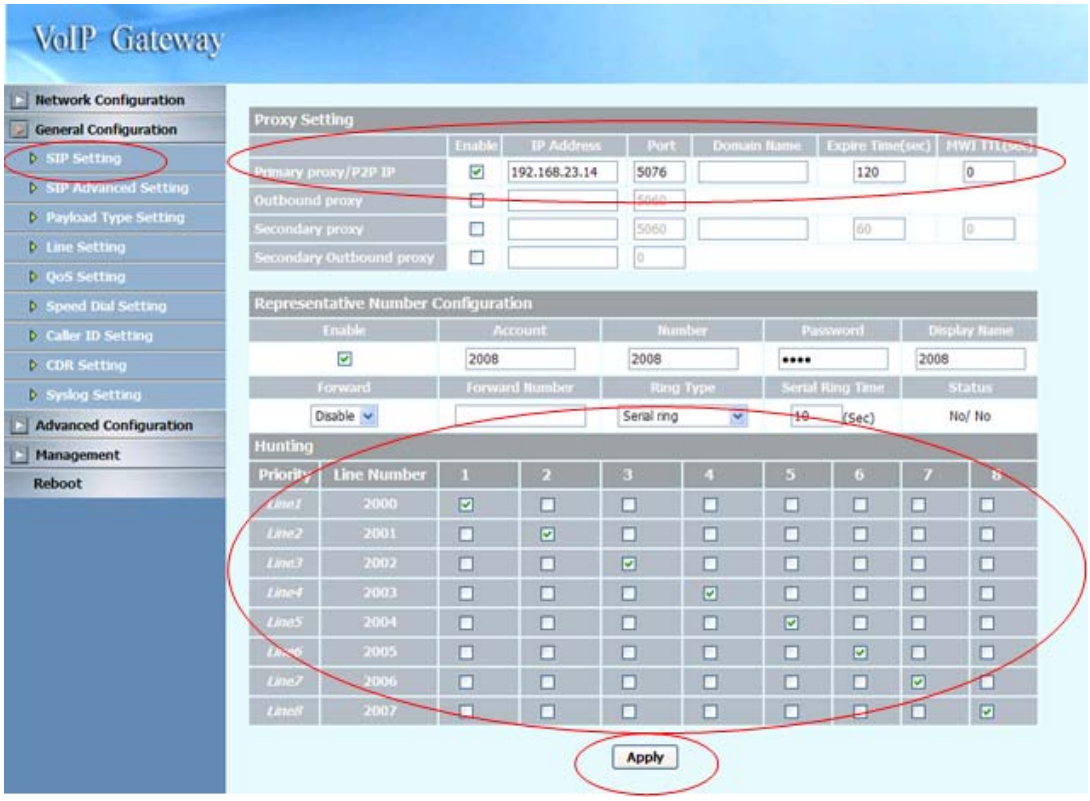
Peer A—MICRONET SP5008A / SP5018A / SP5058A (for example the IP address is: 192.168.23.14)
Peer B—MICRONET SP5008A / SP5018A / SP5058A (for example the IP address is: 192.168.23.58)

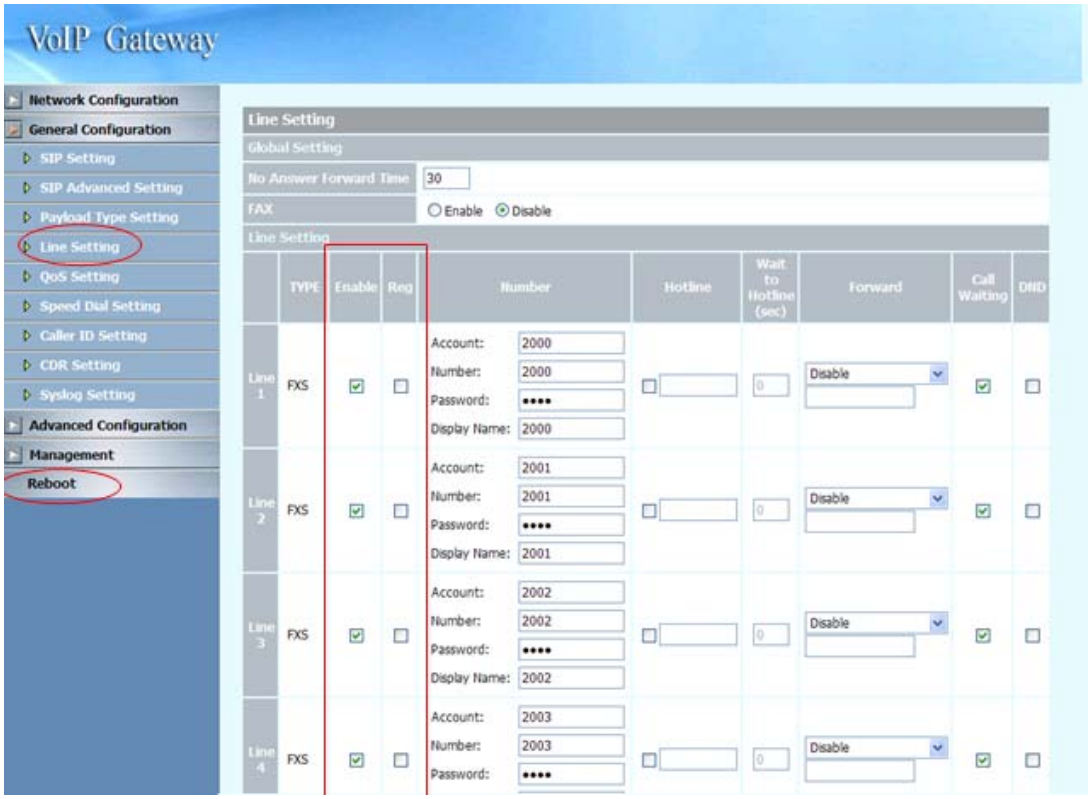
Peer A—MICRONET SP5008A / SP5018A / SP5058A (for example the IP address is: 192.168.23.14)

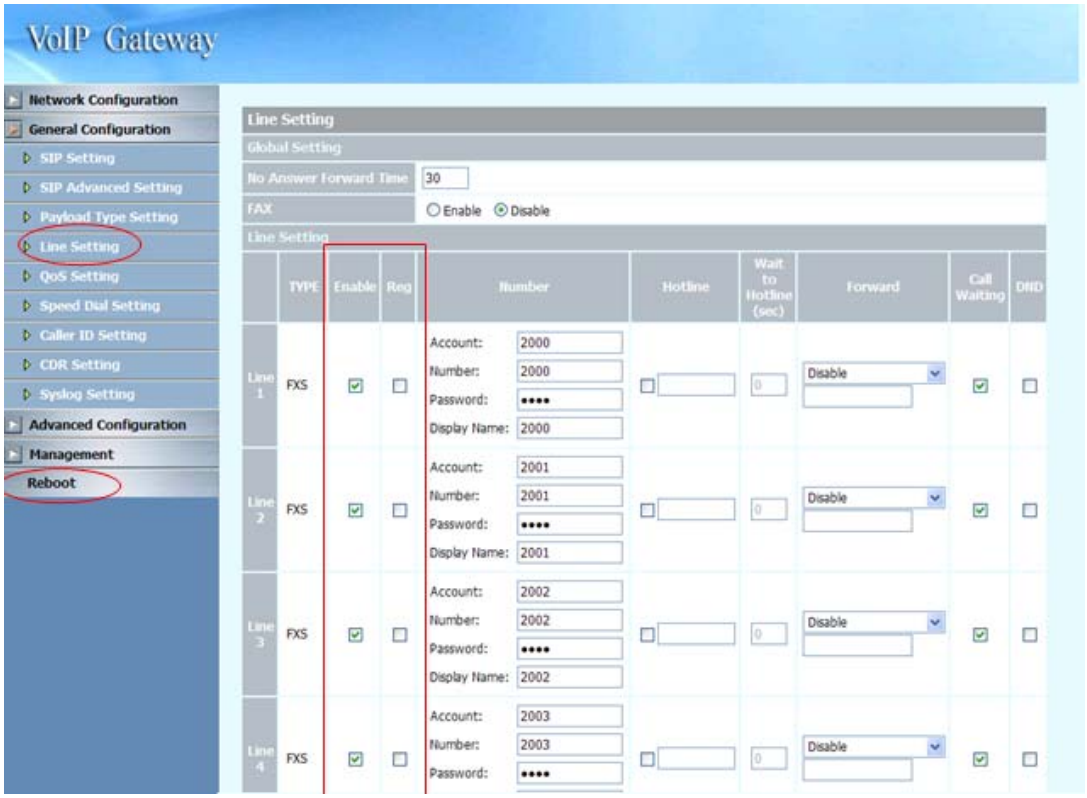



VoIP Gateway
Network Configuration
General Configuration
SIP Setting
SIP Advanced Setting
Line Setting
QoS Setting
Speed Dial Setting
Caller ID Setting
CDR Setting
Syslog Setting
Advanced Configuration
Management
Reboot
Line Setting
Global Setting
No Answer Forward Time
30
FAX
Enable
Disable
Line Setting
TYPE
Enable
Reg
Number
Hotline
Wait to Hotline (sec)
Forward
Call Waiting
DND
Line 1
FXS
Account: 1000
Number: 1000
Password: ••••
Display Name: 1000
Disable
Line 2
FXS
Account: 1001
Number: 1001
Password: ••••
Display Name: 1001
Disable
Line 3
FXS
Account: 1002
Number: 1002
Password: ••••
Display Name: 1002
Disable
Line 4
FXS
Account: 1003
Number: 1003
Password: ••••
Disable

Peer B—MICRONET SP5008A / SP5018A / SP5058A (for example the IP address is: 192.168.23.58)







Primary proxy/P2P IP **(Peer A / Peer B)**	Specify the destination IP Address of Peer to Peer mode, and specify the port# with 5076. **In this application, we define the Peer to Peer mode in 2 groups. If you want to make call to others IP addresses, please refer to the paragraph 3.3.7 Speed dial setting.**
Call number configuration	
Representative number **(Peer A / Peer B)**	**Enable the representative line**
Line 1~Line 8 **(Peer A / Peer B)**	Please refer to the figure shown above, **Enable all the line** and **Disable all the register** of two sides. Specify the relevant data: Account, number, password and display name.

3. Press the **"Apply"** button (at the bottom) after you finish to save changes.
4. Press the **"Reboot"** button to apply the changes.

5. Specification

Model	**SP5008A**
Standard	SIPv2 (RFC 3261): Primary and Secondary Proxy, Primary and Secondary Outbound Proxy
POTS Interface	8 FXS
Ethernet Port	• 1 x RJ-45 WAN port of 10/100M • 4 x RJ-45 LAN ports of 10/100M
Voice	• Codec: G.711a/mu-law, G.723.1 (6.3K), G.729, G.729.A • VAD, CNG, and Silence Suppression • Echo Cancellation (G.165 / G.168) • Adaptive Jitter Buffer • Packet Loss Compensation • Adjustable volume level
DTMF	In-band, SIP Info, RFC2833
Telephony	• Caller ID Detection: FSK, DTMF, ETSI (before ringing, between ringing) • Call hold, Call transfer, Call waiting, Call forward (Unconditional, No answer, Busy, No Answer+Busy) • Music on Hold • Hotline and Waiting Time to Hotline • Speed Dial and Peer-to-Peer Call • Anonymous Call • DND (Do Not Disturb) • Dial Plan and Digit Manipulation • Tone Generation/Detection: Ringing Tone, Ring Back Tone, Dial Tone, Programmable Tone • CDR (Call Detail Record) • MWI (Message Waiting Indication) • FAX over IP: G.711 pass-through, T.38 Fax relay
PBX Features	• Representative number setting • Support SIP Trunk • Extension calling among FXS ports • Direct line (DID) to extension • Max. 9 registrars (SIP trunk and 8 direct lines) • Operator (Serial ring on extension) for attendant
Security	• HTTP 1.1 basic/digest authentication for WEB access • MD5 for SIP authentication (RFC 2069/2617)

	• Password protected for Admin access authority
Networking	• PPPoE Client, DHCP Client / Server, NAT, SNTP • QoS: DiffServ / ToS
Management	• User interface: HTTP and Telnet • Firmware upgrade via FTP/TFTP/HTTP/Telnet • Auto Provisioning
Environment	• Operating Temperature: 0 – 45 degree C • Storage Temperature: 0 – 55 degree C • Operating Humidity: 10 to 85% (non-condensing) • Storage Humidity: 10 to 95% (non-condensing)
Power Supply	DC 12V, 3A
Emission	CE FCC Part 15, Class B

Model	**SP5018A**
Standards	• SIPv2 (RFC 3261): Primary and Secondary Proxy, Primary and Secondary Outbound Proxy
Interface	• 1 x RJ-45 WAN port of 10/100M • 4 x RJ-45 LAN ports of 10/100M • 4 x RJ-11 FXS ports for connecting with phone set and fax machine • 4 x RJ-11 FXO ports for connecting with PSTN line or PABX's extension
Voice Processing	• Codec: G.711a/mu-law, G.723.1 (6.3K), G.729, G.729.A • VAD, CNG, and Silence Suppression • Echo Cancellation (G.165 / G.168) • Adaptive Jitter Buffer • Packet Loss Compensation • Adjustable volume level • DTMF relay: In-band, RFC 2833, SIP Info
Call Features	• Caller ID Detection: FSK, DTMF, ETSI (before ringing, between ringing) • Call hold • Call transfer (blind & consultant) • Call forward (Unconditional, No answer, Busy) • MWI (Message Waiting Indication) • FAX over IP: G.711 pass-through, T.38 Fax relay • PSTN Lifeline: PSTN bypass if network or system fails • Detection of disconnect tone, polarity reversal, and loop current drop (zero voltage) on FXO ports

Security	• HTTP 1.1 basic/digest authentication for WEB access • MD5 for SIP authentication (RFC 2069/2617) • Password protected for Admin access authority
Networking	• PPPoE Client, DHCP Client / Server, NAT, SNTP • QoS: DiffServ / ToS
Management	• User interface: HTTP and Telnet • Firmware upgrade via FTP/TFTP/HTTP/Telnet • Auto Provisioning
Power Supply	• DC 12V, 3A
Environment	• Operating Temperature: 0 – 45 degree C • Storage Temperature: 0 – 55 degree C • Operating Humidity: 10 to 85% (non-condensing) • Storage Humidity: 10 to 95% (non-condensing)
Dimension	35 × 242 × 160 (mm)
Emission	• CE • FCC Part 15, Class B

Model	**SP5058A**
Standards	• SIPv2 (RFC 3261): Primary and Secondary Proxy, Primary and Secondary Outbound Proxy
Interface	• 1 x RJ-45 WAN port of 10/100M • 4 x RJ-45 LAN ports of 10/100M • 8 x RJ-11 FXO ports for connecting with PSTN line or PABX's extension
Voice Processing	• Codec: G.711a/mu-law, G.723.1 (6.3K), G.729, G.729.A • VAD, CNG, and Silence Suppression • Echo Cancellation (G.165 / G.168) • Adaptive Jitter Buffer • Packet Loss Compensation • DTMF relay: In-band, RFC 2833, SIP Info
Call Features	• Caller ID Detection: FSK, DTMF, ETSI (before ringing, between ringing) • Call hold • Call transfer (blind & consultant) • Call forward (Unconditional, No answer, Busy) • FAX over IP: G.711 pass-through, T.38 Fax relay • Detection of disconnect tone, polarity reversal, and loop current drop (zero voltage) on FXO ports
Security	• HTTP 1.1 basic/digest authentication for WEB access

	• MD5 for SIP authentication (RFC 2069/2617) • Password protected for Admin access authority
Networking	• PPPoE Client, DHCP Client / Server, NAT, SNTP • QoS: DiffServ / ToS
Management	• User interface: HTTP and Telnet • Firmware upgrade via FTP/TFTP/HTTP/Telnet • Auto Provisioning
Power Supply	• DC 12V, 3A
Environment	• Operating Temperature: 0 – 45 degree C • Storage Temperature: 0 – 55 degree C • Operating Humidity: 10 to 85% (non-condensing) • Storage Humidity: 10 to 95% (non-condensing)
Dimension	35 × 242 × 160 (mm)
Emission	• CE • FCC Part 15, Class B