

Operator's Manual of HYC-G302 SIP-based S-MTA

2006



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1. Getting Started

This VoIP-embedded S-MTA provides toll-quality voice services as well as very high-speed internet services.

1.1 Package Contents

Please be sure to check if the followings are ready before you begin installing.

Items	Quantity	Remarks
S-MTA main device	1	
AC Power Adapter	1	
Telephone cable	1	RJ-11 Telephone cable
LAN cable	1	RJ-45 Ethernet Cable

Note 1) For the Ethernet interface between S-MTA and PC, you need an extra Ethernet card for the PC which usually does not come with the package

Note 2) In the case of PPPoE Connection (using ADSL), you need User ID and Password from the ISP.

1.2 Key Features

Before you start installation and configuration of this S-MTA, please read carefully the following key features of this S-MTA, then you can get some ideas how to configure correctly this S-MTA in your environment.

PPPoE mode and DHCP client mode

This S-MTA provides PPPoE mode and DHCP client mode, so that you don't need to configure your IP configuration mode if you don't use fixed or static IP address.

However, in case this S-MTA should be connected to xDSL modem, you should specify the PPP user ID and password before you connect this S-MTA to your xDSL modem.

Router and Bridge function

This S-MTA support two LAN modes. Router mode network provides private IP connections to many PCs using NAT(Network Address Translator). Bridge mode network provides can be used when using ADSL modem or router function of BBR(Broadband Router). Bridge mode does not affect any influences to the packets between WAN and LAN and pass-through all the packets.

LAN-side IP Address

The default IP address of LAN interface is 192.168.100.1. If you are using a broadband router with DHCP server function, you must check the router IP address for LAN-side network of your broadband router.

If the router IP address is the same with the default LAN-side IP address of this S-MTA, you must reconfigure the default LAN-side IP address of this S-MTA to any other one.

CODEC support

This S-MTA supports G.729 (AB), G.723.1, G26, PCMU, PCMA as a CODECs.

UPnP functions

This S-MTA supports UPnP CP and IGD functions, and the default mode of UPnP CP and UPnP IGD are disable.

In case that you are using a broadband router which supports UPnP IGD function between your networking device such as a cable modem or an xDSL modem and this S-MTA, you can enable UPnP CP function if you want to.

Please enable UPnP IGD function in case this S-MTA is connected directly to the networking device such as a cable modem or a xDSL mode, and your PC is connected to this S-MTA.

SIP port number and RTP port number

This S-MTA provides to change or modify the local SIP port, the default port number is 5060, and the local starting RTP port, the default port number 5090.

In case that your PC is connected to this S-MTA, and you are using a SIP client program such as a USB phone, the SIP port number is conflicted between this S-MTA and your PC client program. If you want to use both VoIP services, please change the local SIP port number of this S-MTA.

Further this S-MTA's RTP port number and your PC's SIP client program use the same RTP port number, please change the local starting RTP port number of this S-MTA.

Web Access

This S-MTA provides embedded web pages and you can access to this S-MTA's web pages by entering the default address <http://192.168.100.1>.

URL of this S-MTA : ***http://192.168.100.1***

ID and password : ***root/wakeup***

Provisioning

This S-MTA performs HTTPS, HTTP or TFTP provisioning which automatically downloads configuration file information from the provisioning server every time S-MTA boots up. Parameters in configuration file are consist of the proxy sever, LAN, Upgrade firmware, VoIP Digitmap, VoIP port, CODEC information and so on. HTTP based provisioning type is default. The S-MTA automatically

checks if there is an upgrade F/W version and downloads the F/W if necessary.

How to use supplementary services

Call Hold

- ① During a call, regardless of an incoming call or an outgoing call
- ② When you push the **FLASH** hook, you will hear the **stutter dial tone**
- ③ Hang up
- ④ In order to return the previous call, pick up the handset

Call Waiting

- ① During a call, regardless of an incoming call or an outgoing call
- ② When there is another incoming call, the **call waiting tone** will be generated on every 5 second
- ③ If you want to receive the incoming call, please push the **FLASH** hook, then your phone will be switched to another call after holding the first call
- ④ Use the **FLASH** hook as long as you want to switch between 2 calls

Three-way Call

- ① During a call, regardless of an incoming call or an outgoing call
- ② If you want to make another call, please push the **FLASH** hook, then you will hear the **stutter dial tone**
- ③ Please dial your second destination number in a **stutter dial tone**
- ④ After the second call has established, if you push the **FLASH** hook, you can enjoy the three-way calling.

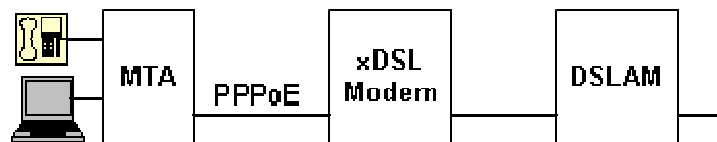
1.3 IP Configuration Mode

This S-MTA provides three IP configuration modes, PPPoE mode, Dynamic IP mode, and Static IP mode to adapt various network configurations.

In this section, we will give brief descriptions for typical network configuration of each mode. However, there are various network configurations for each mode, which are dependent on the specific network configuration of ISP.

1.3.1 PPPoE mode

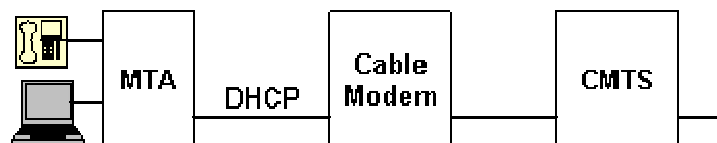
The following figure is a typical network configuration for PPPoE mode. In this mode, S-MTA is connected to xDSL modem usually and uses PPPoE protocol to acquire S-MTA's IP address from PPP server.



1.3.2 Dynamic IP mode

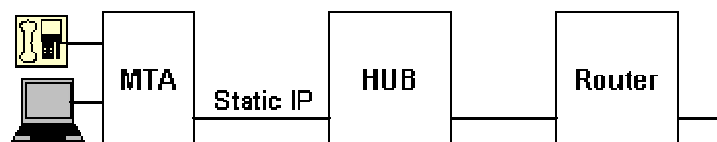
The following figure is a typical network configuration for Dynamic IP mode. In this mode, S-MTA is connected to cable modem usually and acts as a DHCP client to acquire S-MTA's IP address from DHCP server.

If this S-MTA is connected to a broadband router, whether the broadband router supports UPnP or not, S-MTA should be a dynamic IP mode. Of course, dynamic IP mode can be configured in LAN environment if there is a DHCP server in LAN environment.



1.3.3 Static IP mode

The following figure is a typical network configuration for Static IP mode. In this mode, S-MTA is connected to HUB located in LAN environments.

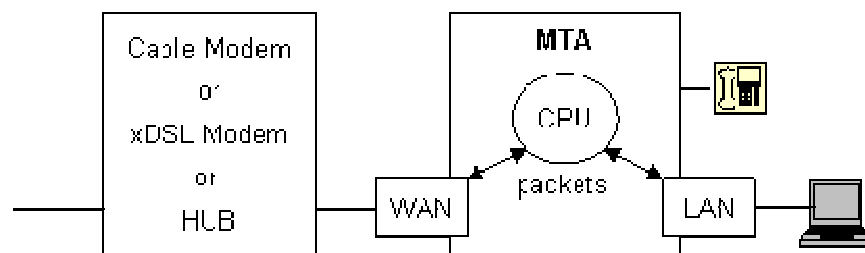


1.4 Router function

This S-MTA provides router functions. S-MTA will take care of all packets between WAN-port and LAN-port, and enable the DHCP server function and NAT function to support internet functions of PC, when it is connected to S-MTA.

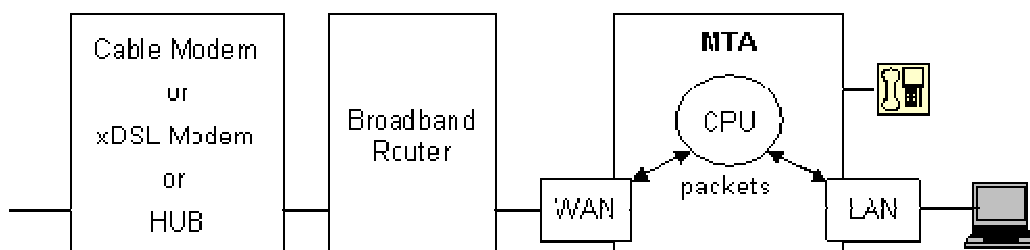
1.4.1 S-MTA is connected to Cable Modem or xDSL modem directly

In this configuration, S-MTA will receive a public IP address from the network via cable modem, ADSL modem, or HUB depending on the network configuration. The PC will receive a private IP address from the S-MTA through DHCP function. S-MTA automatically enables the NAT to solve problems, which can be occurred when PC uses a private IP address.



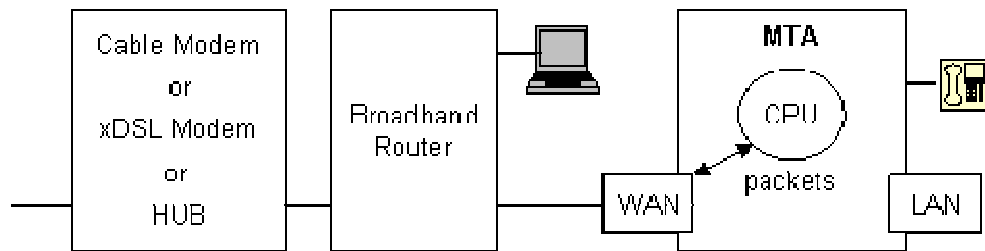
1.4.2 S-MTA is connected to BBR – PC is connected to S-MTA

In this configuration, a broadband router, which supports UPnP IGD function usually, is connected in front of S-MTA. The broadband router will receive a public IP address, and S-MTA will receive a private IP address from the broadband router via DHCP protocol, and PC will receive a private IP address from S-MTA via DHCP protocol.



1.4.3 S-MTA is connected to BBR – PC is connected to BBR

In this configuration, a broadband router, which supports UPnP IGD function usually, is connected in front of S-MTA. The broadband router will receive a public IP address, and both S-MTA and PC will receive a private IP address from the broadband router by means of DHCP protocol.



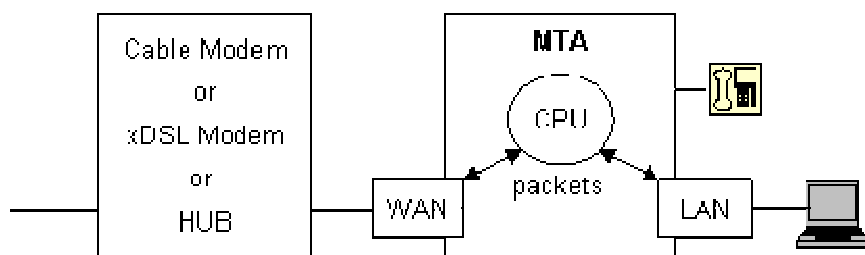
1.5 Bridge function

This S-MTA also supports Bridge Mode network. In Bridge Mode network, all the packets between LAN and WAN are being pass-through. And the DHCP server, DNS resolver and UPNP are disabled automatically.

1.5.1 S-MTA is connected to Cable Modem or xDSL modem directly

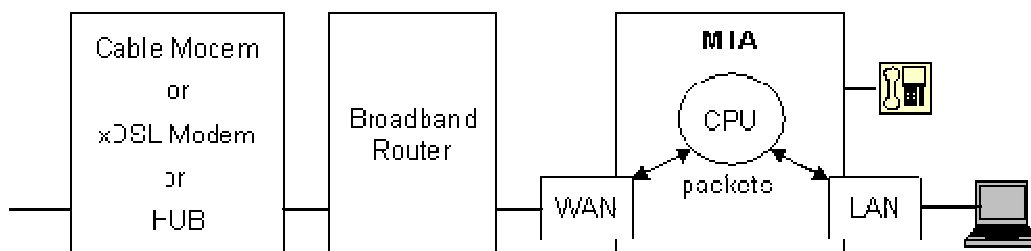
If ADSL Modem or Cable Modem supports routing function, S-MTA and PC will be Allocated private IP address. If ADSL modem or Cable Modem don't have routing function or disabled routing function, public IP address. But, this allows only when you are subscribed ISP with 2 or multiple IP services.

If only one public IP address is available and there is no routing function in other devices, then set the S-MTA to Router Mode.



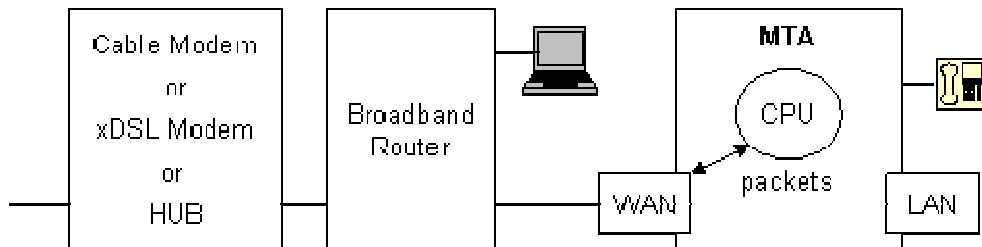
1.5.2 S-MTA is connected to BBR – PC is connected to S-MTA

In this environment, S-MTA and PC will be allocated private IP address from the DHCP server of the BBR. In Bridge mode, S-MTA does not affect any to other devices, so BBR setting does not need to be changed.



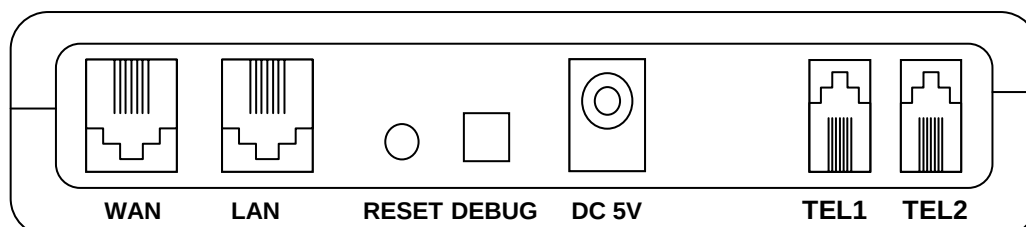
1.5.3 S-MTA is connected to BBR – PC is connected to BBR

In this environment, S-MTA and PC will be allocated private IP address from the DHCP server of the BBR. There is no difference between Bridge Mode and Router Mode in this environment.



1.6 Connectors and Switches

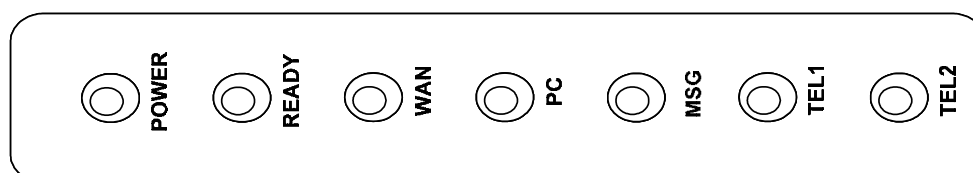
The connectors on the rear panel of HYC-G302 are shown in the picture below and the following table provides a brief description of each connector and switch.



Connectors	Type	Descriptions
WAN	RJ-45	10/100 Base-T Ethernet Connection to WAN-side networking device (ex, cable modem and xDSL, etc.)
PC	RJ-45	10/100 Base-T Ethernet Connection to PC or Hub
RESET	Button	Rebooting the S-MTA
DEBUG	4-pin	S-MTA Monitoring and Configuration
DC/ 5V	Jack	Connection to DC (5V) Power Adaptor (110V/220V).
TEL1	RJ-11	Telephone Port
TEL2	RJ-11	Telephone Port

1.7 LEDs

This S-MTA provides 7 status LEDs indicating **POWER, READY, WAN, PC, PPP, TEL 1, TEL2**, which enables users to diagnose this S-MTA's status and problems occurring during installation or in use.



LEDs	Status	Descriptions
POWER	ON	Power is On.
	OFF	Power is Off
READY	ON	The data function is enabled.
	OFF	The data function is not enabled yet.
	BLINKING	Trying to acquire S-MTA's own IP address.
WAN	ON	Internet device such as cable mode, xDSL modem, or Hub, is connected on WAN port.
	OFF	No connection on WAN port.
PC	ON	PC or notebook is connected on LAN port.
	OFF	No connection on LAN port.
MSG	ON	New voice mail Indication
	OFF	No new mail any more : IDLE status
TEL1	ON	S-MTA succeeds to register to the proxy server.
	OFF	S-MTA fails to register to the proxy server.
	BLINKING	During a call.
TEL2	ON	S-MTA succeeds to register to the proxy server.
	OFF	S-MTA fails to register to the proxy server.
	BLINKING	During a call.

2. Installing and Settings

2.1 For PPPoE user and Fixed IP user

This S-MTA provides three IP configuration modes, PPPoE mode, Dynamic IP mode, and Static IP mode under the router mode. If the IP configuration mode of S-MTA is different with your network configuration mode, S-MTA can not be initialized normally because S-MTA can not acquire an IP address correctly.

The first step is to configure the IP configuration mode of this S-MTA according to your network environment.

[NOTE] If this S-MTA should be connected with PPPoE mode because you are using xDSL modem, you should specify the PPPoE user ID and Password to receive IP address from PPP server.

The procedures to change IP configuration mode follow:

- ① Configure your PC or notebook with dynamic IP mode.
- ② Connect the Ethernet cable between PC and LAN-port on S-MTA.
- ③ Power on S-MTA.
- ④ Check whether PC receives IP address from S-MTA or not.
- ⑤ Access the web pages of S-MTA.
- ⑥ Change the IP configuration mode of S-MTA according to your network environment.

Your PC will receive the following information from S-MTA's DHCP server.

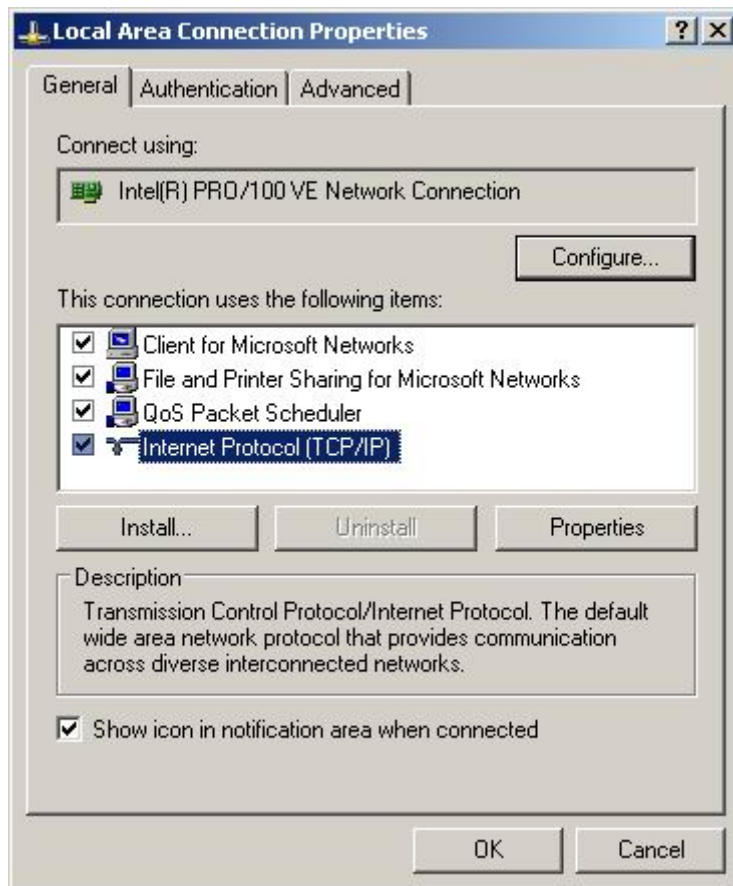
PC's address	IP	192.168.100.2 ~ 192.168.100.254
Gateway IP		192.168.100.1
Subnet Mask		255.255.255.0

2.1.1 PC Setting with Dynamic IP

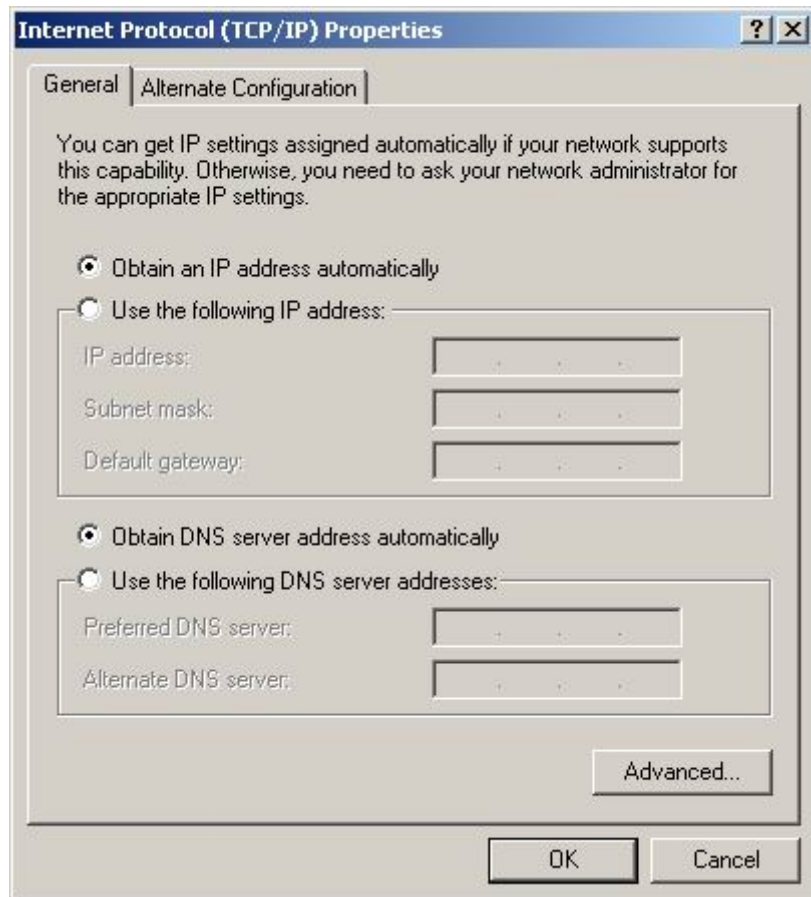
(The example pictures could be slightly different from yours because of different Windows version)

TCP/IP Settings

- ① Start Control Panel.
- ② Click Network and Internet Connections.
- ③ Click Network Connections.
- ④ Right-Click Local Area Network and select Property.
- ⑤ Select Internet Protocol (TCP/IP) and click Property.



- ⑥ Select "Obtain an IP Address automatically" and "Obtain DNS server address automatically"
- ⑦ Select OK button



2.1.2 Hardware Connection

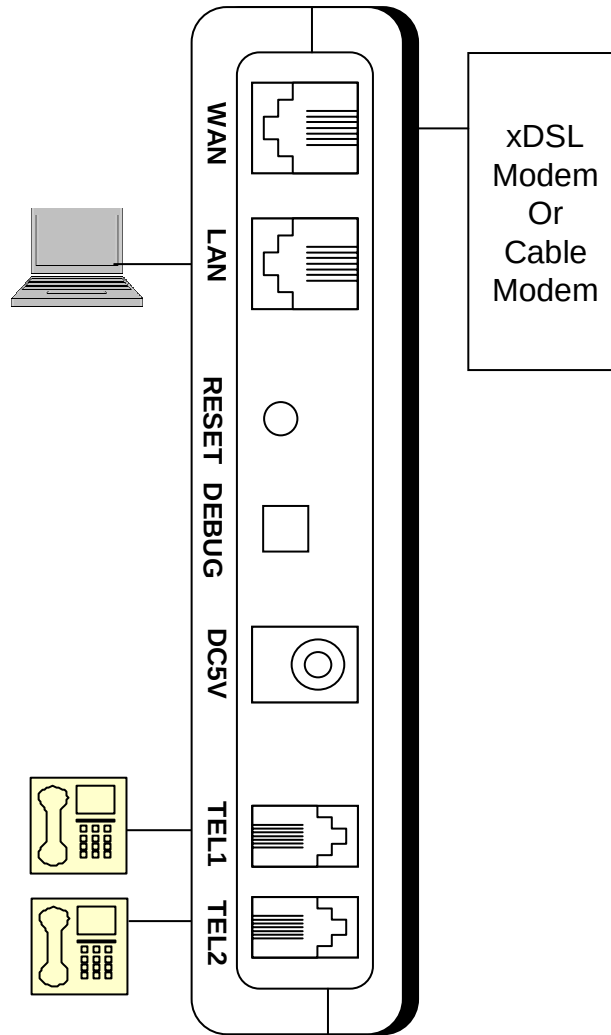
The procedures for the hardware configuration follow:

- ① Please connect the Ethernet cable between PC and LAN-port of S-MTA to get the IP address from S-MTA and to access to S-MTA's web pages.
- ② Power on the S-MTA.

2.1.3 Confirm IP Address

On the DOS command prompt, type **"ipconfig"**, then you can see the IP address 192.168.100.X on Ethernet adapter Local Area Connection.

With lower version of Windows, use **"winipcfg"** command. With Mac OS, check TCP/IP setting window.



```
C:\WINDOWS\System32\cmd.exe

C:\Documents and Settings>ipconfig /all

Windows IP Configuration

    Host Name . . . . . : mercedes
    Primary Dns Suffix . . . . . :
    Node Type . . . . . : Hybrid
    IP Routing Enabled. . . . . : No
    WINS Proxy Enabled. . . . . : No

Ethernet adapter Wireless:

    Media State . . . . . : Media disconnected
    Description . . . . . : Toshiba Wireless LAN Mini PCI Card
    Physical Address. . . . . : 00-02-2D-87-56-6A

Ethernet adapter Local Area Connection:

    Connection-specific DNS Suffix . :
    Description . . . . . : Realtek RTL8139/810x Family Fast Eth
ernet NIC
    Physical Address. . . . . : 00-02-3F-7E-B3-80
    Dhcp Enabled. . . . . : Yes
    Autoconfiguration Enabled . . . . : Yes
    IP Address. . . . . : 192.168.100.3
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . : 192.168.100.1
    DHCP Server . . . . . : 192.168.100.1
    DNS Servers . . . . . : 192.168.100.1
                           172.19.1.9
                           172.19.1.30
    Lease Obtained. . . . . : Sunday, October 19, 2003 1:42:18 PM
    Lease Expires . . . . . : Wednesday, October 22, 2003 1:42:18 PM

C:\Documents and Settings>
```

2.1.4 Change of IP configuration mode using Web in router mode

To see the web pages of S-MTA, please type “<http://192.168.100.1>” at the location field of your web browser, then the main menu will be displayed.

Please select “**WAN/IP**” menu at the left-side menu frame, then the following page will be displayed. On this page, please select your IP configuration mode according to your network environment.

To user PPPoE mode, you should specify your user ID and password of PPP.

S-MTA Main Page - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Home Search Favorites Media Print Mail

Address <http://192.168.200.1> Go Links

Network

- WAN Configuration**
- LAN Configuration
- NAT Configuration
- VPN/Filters
- Port Forwarding
- Port Triggering
- QoS

VoIP Phone

- Phone Configuration
- SIP Configuration

System Information

- System Information
- Provisioning Server

Etc

- Set Factory Default
- Reboot

F/W Upgrade

- B/L Upgrade
- F/W 1 Upgrade
- F/W 2 Upgrade

WAN Configuration

WAN Access Interface	☐ PPPoE ☒ Ethernet
PPPoE User Name	
PPPoE User Password	(write only)
Host name (Required by some ISPs)	
Domain (Required by some ISPs)	

IP Configuration

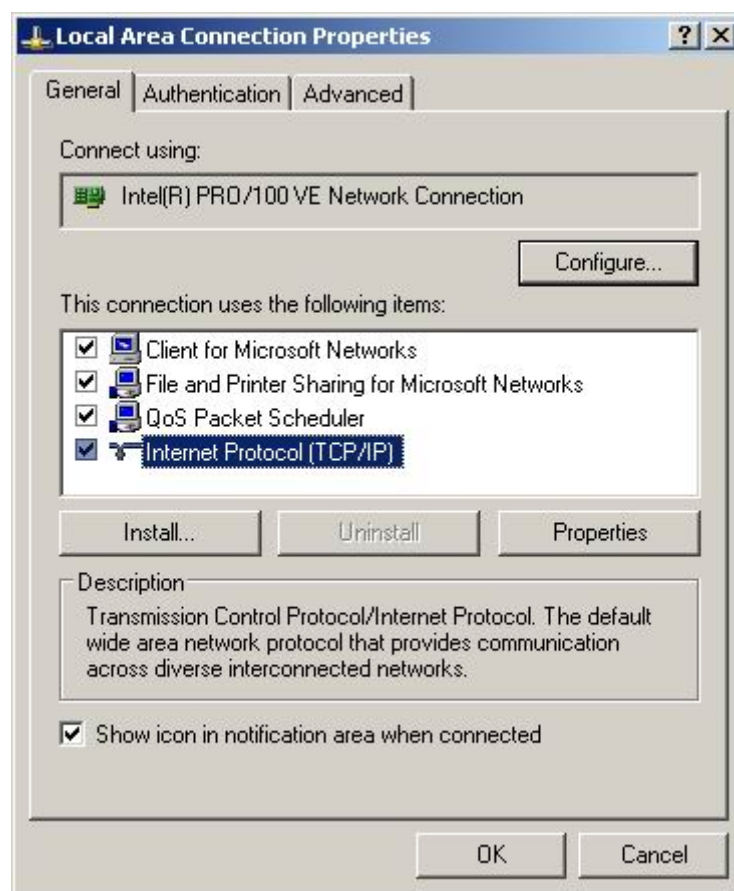
IP Type	☒ Dynamic IP ☐ Static IP
IP Address	211.205.69.74
Gateway IP	211.205.69.65
Subnet Mask	255.255.255.192
DNS Server Configuration	☒ Automatic ☐ Manual
Primary DNS IP	168.126.63.1
Secondary DNS IP	168.126.63.2
Mac Cloning	☒ Original Mac Address ☐ Cloning Mac Address 00-03-58-26-0B-04
NTP	☒ Enable ☐ Disable

<http://192.168.200.1/network.html> Internet

2.1.5 Change of IP configuration mode using Web in bridge mode

If S-MTA is for Bridge Mode where there is no DHCP server operation, IP address of the PC should be set to 192.168.100.***. To access web pages in Bridge Mode, please follow the following steps.

- ① Start Control Panel.
- ② Click Network and Internet Connections.
- ③ Click Network Connections.
- ④ Right-Click Local Area Network and select Property.
- ⑤ Select Internet Protocol (TCP/IP) and click Property.



- ⑥ Select "Use the following IP address" and "Obtain DNS server address automatically". The IP address is 192.168.100.xxx. The range of xxx is 2 ~ 254. Type Subnet Mask for 255.255.255.0.
- ⑦ Select OK button

To see the web pages of S-MTA, please type "<http://192.168.100.1>" at the location field of your web browser, then the main menu will be displayed.

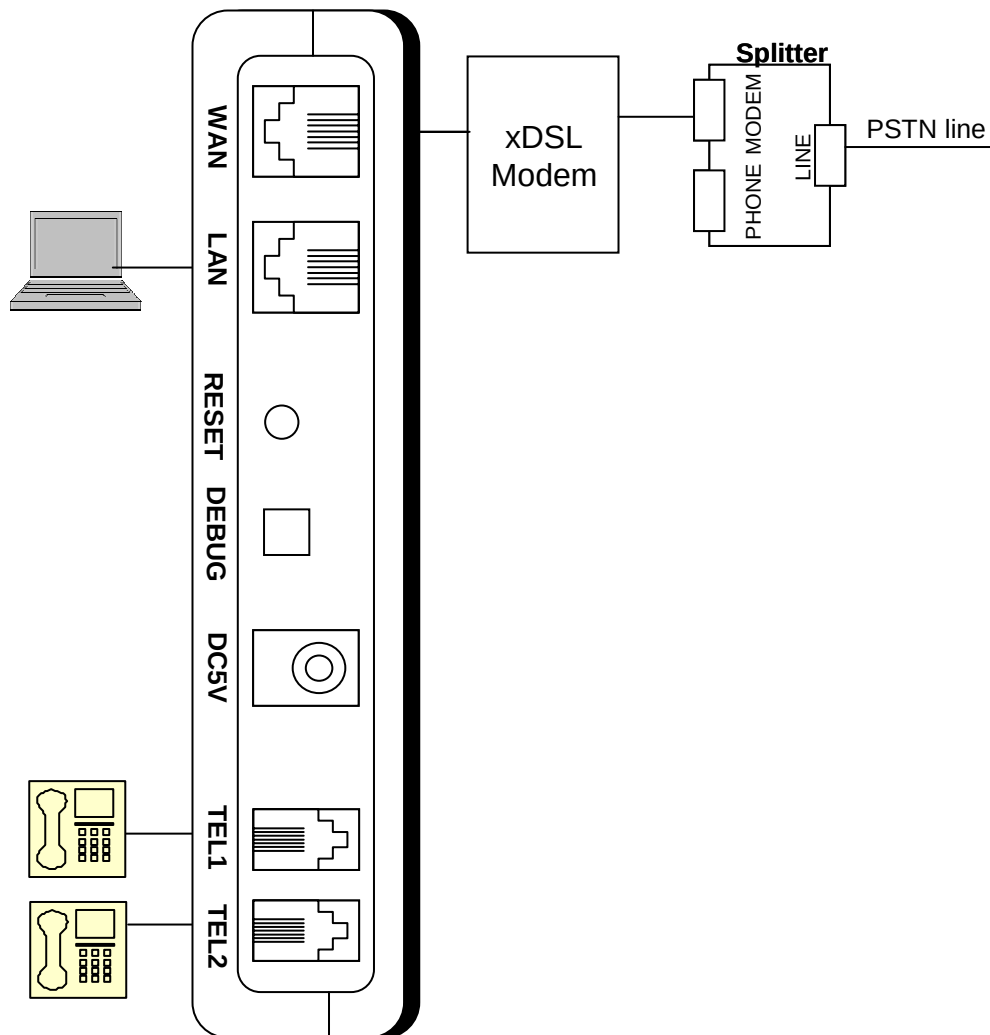
Please select "**WAN/IP**" menu at the left-side menu frame, then the following page will be displayed. On this page, please select your IP configuration mode according to your network environment.

2.2 Normal Installation Procedure

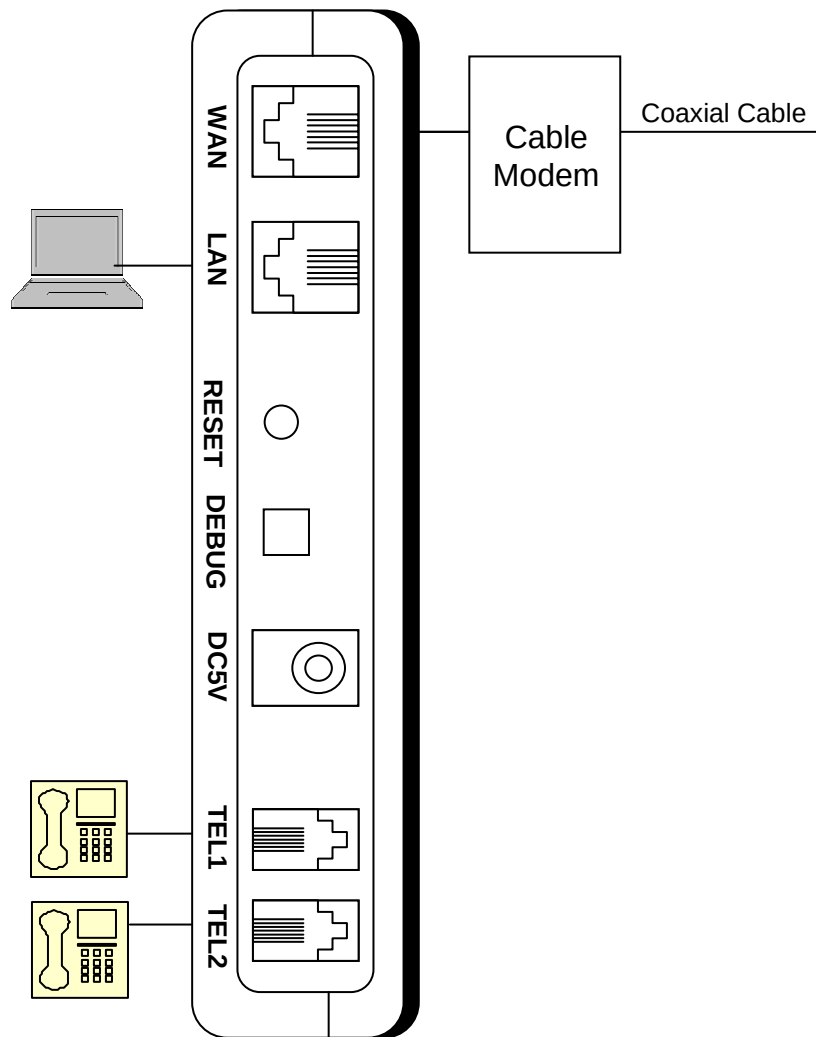
The table below shows the procedures to install S-MTA. There are slight differences for installation depending on the networking device such as xDSL modem and cable modem.

- STEP 1** In order to establish connection with WAN-side networking device such as Cable Modem or xDSL modem, one end of RJ-45 Ethernet Cable should be connected to the Ethernet Port on WAN-side networking device, and the other end to WAN Port on S-MTA.
- STEP 2** In case Ethernet Interface is used between S-MTA and user's PC, one end of Ethernet cable should be connected to PC port on S-MTA, and the other end to Ethernet port on Ethernet card installed in user's PC.
- STEP 3** For the telephony service, one end of a RJ-11 Telephony cable should be connected to RJ-11 port of ordinary telephone, and the other end to TEL port on S-MTA.
- STEP 4** Connect Power Adaptor to DC/12V power jack of the S-MTA.
- STEP 5** Turn on the PC and Modem.
- STEP 6** Push the On/Off Switch Button on the rear panel of S-MTA for power.
- STEP 7** After S-MTA is booting, you can change the default configuration of S-MTA by using S-MTA's embedded web pages.

2.2.1 Installation with xDSL modem



2.2.2 Installation with cable modem



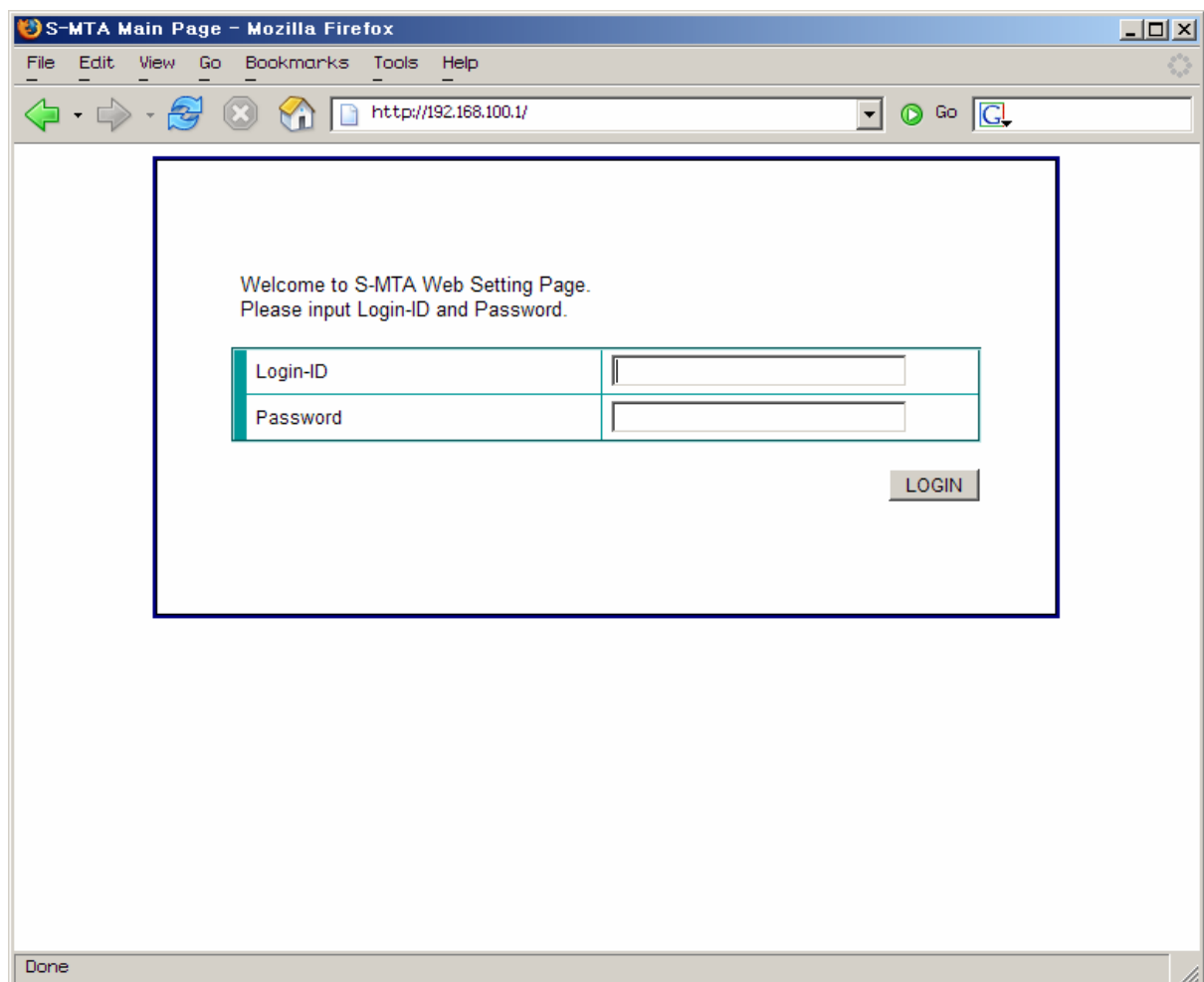
3. Web Pages

3.1 Login Page

This is a login page. If you type "<http://192.168.100.1>" at the location field of your web browser, this login page will be appeared.

ID and password : ***root/wakeup***

After that, when you click the "Login" button, the web browser will be redirected to the main menu page automatically.



3.2 Main Page

This is a default page when you click the “LOGIN” button at login page. This page only shows system information and system status.

System Information

This frame shows the working firmware information.

Current Date	Displays the current date if got from NTP server
Current Firmware Name	Displays the working firmware name
Firmware Version	Displays the version of the working firmware.
Firmware Build Date	Displays the build time of the working firmware.
MAC Address	Displays the MAC address of this S-MTA.

System Status

Telephone Port 1	We provide the following status information for VoIP port.	
and	- Out of Service : VoIP service is not available.	
	- Ready : It is possible to call or to receive a call.	
Telephone Port 2	- Dialing : A user is dialing now.	
	- Wait Answer : Wait for a response for INVITE message.	
	- Ringing : The phone is ringing.	
	- Talk : The phone is under conversion.	
	- Wait onhook : The call has completed and wait for onhook.	
WAN Mode	- Call wait talk : The call is under conversion and S-MTA receives a new call.	
	DHCP Client Mode	S-MTA is working with DHCP client mode.
	PPPoE Mode	S-MTA is working with PPPoE mode.

Static IP
Assignment Mode

S-MTA is working with static or fixed
IP mode.

UPnP IGD Status

Enabled

UPnP IGD function is enabled and
IGD function works well.

disabled

UPnP IGD function is not enabled.

UPnP CP Status

Enabled

UPnP CP function is enabled and CP
functions works well.

disabled

UPnP CP function is not enabled.

S-MTA Main Page - Mozilla Firefox

File Edit View Go Bookmarks Tools Help

http://192.168.100.1/login.html

Network
WAN Configuration
LAN Configuration
NAT Configuration
VPN/Filters
Port Forwarding
Port Triggering
QoS

VoIP Phone
Phone Configuration
SIP Configuration

System Information
System Information
Provisioning Server

Etc
Set Factory Default
Reboot

F/W Upgrade
Bootloader
Backup F/W
Main F/W

System Information

Current Date	WED JAN 01 00:00:42 2003
Current Firmware Name	G302SF2GV1136M.lz
Current Firmware Version	Ver 1.136
Current Firmware Build Date	WED JAN 11 12:54:24 2006
MAC Address	00-03-58-DF-00-FF

System Status

Telephone Port 1	Out of Service
Telephone Port 2	Out of Service
WAN Mode	DHCP Client Mode
UPnP IGD Status	Disabled
UPnP CP Status	Disabled
STUN Status	Disabled

Done

3.3 WAN/IP Page

WAN Configuration

This TA supports PPPoE and Ethernet mode as a connection mode. If you are using xDSL modem, you should select “PPPoE” and if you are using Cable Modem or HUB, you should select “Ethernet” as a connection mode.

WAN Access Interface	PPPoE : S-MTA is connected to the xDSL modem, and try to get the IP address with a PPPoE mode. Ethernet : You should choose whether you will use dynamic mode or static mode.
PPPoE User Name	This field will be enabled if you select PPPoE as a WAN Access Interface and allow maximum 32 characters with printable character string.
PPPoE User Password	This field will be enabled if you select PPPoE as a WAN Access Interface and allow maximum 32 characters with printable character string.
Host name	This field shows the name of this device. This entry is necessary for some ISPs.
Domain	This entry is necessary for some ISPs.

IP Configuration

The data items related with “**IP configuration**” will be enabled only you select “Ethernet” mode. If you select “PPPoE”, you don’t need to configure these data items.

Static IP

If you are using fixed or static IP address, please select “Static IP” as IP type, and fill the necessary fields such as IP Address, Gateway IP, Subnet Mask, and DNS information.

IP Address	Fill the fixed IP address.
Gateway IP	Fill the gateway IP address.
Subnet Mask	Fill the subnet mask of your network.
DNS Server Configuration	You should select Manual mode, and should fill the Primary DNS IP address, and the Secondary DNS IP if it is necessary.
Primary DNS IP	Fill the DNS IP address. This is a mandatory.
Secondary DNS IP	Fill the secondary DNS IP address, this is a optional field.

Dynamic IP

If you should use dynamic IP, then select “Dynamic IP” as IP type. In “Dynamic IP”, you can only set the DSN information if you want to.

IP Address	The IP address received from the DHCP server will be displayed.
Gateway IP	The gateway IP address received from the DHCP server will be displayed.
Subnet Mask	The gateway IP address received from the DHCP server will be displayed.
DNS Server Configuration	If you select Manual mode, then you should fill the Primary DNS IP field with your known DNS IP address. If you select Automatic mode, the DNS IP addresses received from DHCP server will be displayed.
Primary DNS IP	The Primary DNS IP address will be displayed
Secondary DNS IP	The Secondary DNS IP address will be displayed

Mac Address Cloning

Local addresses of each user computers are unique and can be identified in network. This is the user PC's MAC (Media Access Control) address.

Normally, Original Mac Address is being used and selected by default.

Specially, when ISP requires MAC authentication, Custom Mac Address of MTA should be selected and MAC address of the user PC should be typed in. That is, the MAC address of user PC can be cloned. In this way, MTA's MAC address can be shown as a user PC MAC address.

The format of the MAC address is XX-XX-XX-XX-XX-XX.

If Original MAC Address is selected, the MTA can be reconfigured with its own original MAC address. That is, MAC address of MTA can be restored.

MTU Size

In most Ethernet environment, the MTU(Maximum Transmit Unit) is 1500 byte. But, in some cases for certain ISP, the MTU should be less than 1500 byte. This happens rare. So, the MTU should not be changed unless it has to be.

HTTP Port

To access web browser, the standard HTTP service port 80 is used. But, to increase web security, this service port can be changed. The range is between 1024 ~ 65534. Once the port number is chosen, this port should not be using by other service.

S-MTA Main Page - Mozilla Firefox

File Edit View Go Bookmarks Tools Help

http://192.168.100.1/login.html

Go

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Set Factory Default

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Backup F/W

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WAN Configuration

WAN Access Interface	☐ PPPoE ☒ Ethernet
PPPoE User Name	
PPPoE User Password	(write only)
Host name (Required by some ISPs)	
Domain (Required by some ISPs)	

IP Configuration

IP Type	☒ Dynamic IP ☐ Static IP
IP Address	0.0.0.0
Gateway IP	0.0.0.0
Subnet Mask	0.0.0.0
DNS Server Configuration	☒ Automatic ☐ Manual
Primary DNS IP	0.0.0.0
Secondary DNS IP	0.0.0.0
DHCP Primary DNS IP	0.0.0.0

http://192.168.100.1/network.html

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Network

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Main F/W

IP Configuration

IP Type	☒ Dynamic IP ☐ Static IP
IP Address	0.0.0.0
Gateway IP	0.0.0.0
Subnet Mask	0.0.0.0
DNS Server Configuration	☒ Automatic ☐ Manual
Primary DNS IP	0.0.0.0
Secondary DNS IP	0.0.0.0
DHCP Primary DNS IP	0.0.0.0
DHCP Secondary DNS IP	0.0.0.0
Mac Cloning	☒ Original Mac Address ☐ Cloning Mac Address 00-03-58-DF-00-FF
NTP	☒ Enable ☐ Disable
Primary NTP Server Address	time.nist.gov
Secondary NTP Server Address	clock.fmt.he.net
TIME Zone (+Hr/Min or -Hr/Min)	-05/00
MTU size	☒ Automatic ☐ Manual 0
MDI/MDIX mode (Ethernet port connection type)	☒ Auto ☐ Direct cable only (MDI) ☐ Cross cable only (MDIX)
ARP timeout	20 minute(s)

Submit

- You must reboot the system for changes to take effect.

Done

LAN/IP Configuration

S-MTA could be operating in two modes: Router Mode or Bridge Mode. If Bridge Mode is selected, Router function does not work. Bridge Mode can be used when router function of the ADSL Modem, Cable Modem or Broadband Router is used. In Bridge Mode, DHCP Server, NAT and UPnP do not work.

Router Mode is set to by default mode. DHCP Server, NAT work together.

DHCP Server : DHCP Server works only when Router Mode is set.

You can change the IP address of LAN-side. When you connect this S-MTA to a broadband router, and if this S-MTA and a broadband router use the same class of IP address, please change this S-MTA's LAN-side address.

LAN Side IP Address	Please fill the LAN-port IP address. (default value : 192.168.100.1)
Local Subnet Mask	Fill the subnet mask of LAN-port. (default value : 255.255.255.0)

DHCP Server Configuration

Server IP	Fill the DHCP server IP address. (default value : 192.168.100.1)
Server Subnet Mask	Fill the subnet mask of IP pool. (default value : 255.255.255.0)
Gateway IP	Fill the gateway IP address. (default value : 192.168.100.1)
Start IP	Fill the start IP address of IP pool that DHCP server manages. (default value : 192.168.100.2)

End IP

Fill the end IP address of IP pool that DHCP server manages. (default value : 192.168.100.254)

Lease Time(sec)

Fill the lease time of IP address by seconds. (default value : 86400 seconds)

DHCP Active IP Table

This table shows the current DHCP client information. You can protect users by deleting their lease information. To delete lease information, press DEL button. This information is stored in NVRAM.

The screenshot shows the S-MTA Main Page in Mozilla Firefox. The browser address bar shows <http://192.168.100.1/login.html>. The page has a left sidebar with navigation links and a main content area with configuration sections.

Network

- WAN Configuration
- LAN Configuration
- NAT Configuration
- VPN/Filters
- Port Forwarding
- Port Triggering
- QoS

VoIP Phone

- Phone Configuration
- SIP Configuration

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- System Information
- Provisioning Server

Etc

- Set Factory Default
- Reboot

F/W Upgrade

- Bootloader
- Backup F/W
- Main F/W

LAN Configuration

Network mode	☐ Bridge mode ☒ Router mode
DHCP Server	☒ Enable ☐ Disable
LAN Side IP Address	192.168.100.1
Local Subnet Mask	255.255.255.0

DHCP Server Configuration

Server IP	192.168.100.1
Server Subnet Mask	255.255.255.0
Gateway IP	192.168.100.1
Start IP	192.168.100.2
End IP	192.168.100.254
Lease Time (sec)	259200

DHCP Active IP Table

	Mac Address	IP Address	Lease Time (sec)
DEL	00-0E-E8-8A-C8-D9	192.168.100.3	250

Done

3.5 NAT/Conf

UPnP Configuration

This S-MTA supports both UPnP IGD and CP functions, but these two functions can be selected only one function, that is to say, these two functions are mutually exclusive.

UPnP IGD	Enables UPnP IGD (Internet Gateway Device) Function. When you don't use a broadband router, and this S-MTA receives a public IP address, then please enable this UPnP IGD function.
UPnP CP	Enables UPnP CP(Control Point) Function. When this S-MTA is connected to a broadband router supporting UPnP IGD, you should enable this UPnP CP function to enable VoIP service.

STUN Configuration

STUN	This feature allows MTA to connect to the Proxy server in NAT environment. To enable this feature, click on Enable, and click Submit button. To disable this feature, click on Disable.
Primary STUN Server IP	Enter the IP address you wish to connect to the STUN server.
Secondary STUN Server IP	Enter the STUN server Port.
STUN Information	STUN client Displays the status after it communicating with STUN server (Open Internet, Full-Cone NAT, IP Restrict NAT, Port Restrict NAT, Symmetric NAT, Symmetric Firewall STUN server unreachable)
Current STUN Server	Displays the current server
MTA Public IP	Displays the public IP of Brodband Router in front of TA

Remote Management

Remote HTTP

This feature allows you to manage the MTA from a remote location, via the Internet. To enable this feature, click on Enable, and click Submit button. Remote Management must be activated before you can manage the MTA from a remote location. If you wish to use this feature on the browser, enter http://Public IP address:8080. To disable this feature, click on Disable.

HTTP Port

To access web browser, the standard HTTP service port 80 is used. But, to increase web security, this service port can be changed. The range is between 1024 ~ 65534. Once the port number is chosen, this port should not be using by other service.

DMZ Host Configuration

DMZ Host

DMZ Host setting allows one local user to be exposed to the Internet to use a special-purpose service such as Internet gaming or Video-conferencing.

DMZ Host IP

To expose one computer, click on Enable, and enter the computer's IP address. Inactivate DMZ by click on Disable.

S-MTA Main Page - Mozilla Firefox

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http://192.168.100.1/login.html

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UPnP Configuration

UPnP IGD	☐ Enable ☒ Disable
UPnP CP	☐ Enable ☒ Disable

STUN Configuration

STUN	☐ Enable ☒ Disable
Primary Stun Server	0.0.0.0
Secondary Stun Server	0.0.0.0
STUN Information	
Current STUN Server	None
MTA Public IP	0.0.0.0

Web Port Management

Remote HTTP	☐ Enable ☒ Disable
HTTP Port	80

DMZ Host Configuration

DMZ Host	☐ Enable ☒ Disable
DMZ Host IP	192.168.100.0

Submit

- [UPnP Configuration](#) change does not need "reboot".
- [Other Configuration](#) change needs "reboot".

http://192.168.100.1/natconf.html

3.6 VPN/Filters

Filter Setting

Private IP Range	Enter the IP addresses you wish to filter into the Private IP Range fields. The users who have these IP addresses will not be able to access the Internet.
Private Port Range	You can also filter users by entering their source port number. Users who are connected to the MTA will no longer be able to any port number listed here.
Private Mac Address	Enter the MAC addresses you wish to filter into the Private Mac Address fields. The users who have these MAC addresses will not be able to access the Internet.

VPN Pass-through Setting

This S-MTA supports pass-through function for IP-Sec packets and PPTP packets. The default mode is to enable for both IP-Sec pass-through and PPTP pass-through function. You can change the option for the pass-through function at the web page above.

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Filter Setting

Private IP Range	Private Port Range
192.168.100. ~	TCP ~
192.168.100. ~	TCP ~
192.168.100. ~	TCP ~
192.168.100. ~	TCP ~
192.168.100. ~	TCP ~

Private Mac Address	ex) 00-03-58-16-70-32
Mac0	Mac5
Mac1	Mac6
Mac2	Mac7
Mac3	Mac8
Mac4	Mac9

VPN Pass-through Setting

IPSec Pass-Through	☒ Enable ☐ Disable
PPTP Pass-Through	☒ Enable ☐ Disable
Block Wan Request	☐ Enable ☒ Disable
Multicast Pass-Through	☐ Enable ☒ Disable

Submit

Done

3.7 Port Forwarding

The following figure shows the web page to set the Port Forwarding. If you want to route the incoming packets having a fixed port to your PC attached to this S-MTA, you should insert a new record for the static routing.

Service Name The name of service being added

IP Address(PC) The target IP address of your PC that should be routed the incoming packets.

Protocol Specify the protocol, TCP or UDP.

Well-Known Port If you want to redirect packets having a well-known port, please select one among the list of well-known ports.

Port Number If you want to use general port, not a well-known port, please fill the number of port for the static routing.

The screenshot shows a web browser window titled "S-MTA Main Page - Mozilla Firefox". The address bar shows "http://192.168.100.1/login.html". The left sidebar contains a menu with categories: Network, VoIP Phone, System Information, Etc, and F/W Upgrade. Under "Network", "Port Forwarding" is highlighted. The main content area is titled "Port Forwarding" and contains a table with the following fields:

Application Name	
IP Address	192.168.100.
Protocol	TCP
Well-known Port	Well-known Port
Port Range	~

Below the table are two buttons: "ADD" and "APPLY". A note below the buttons states: "- You must press the APPLY button for changes to take effect permanently."

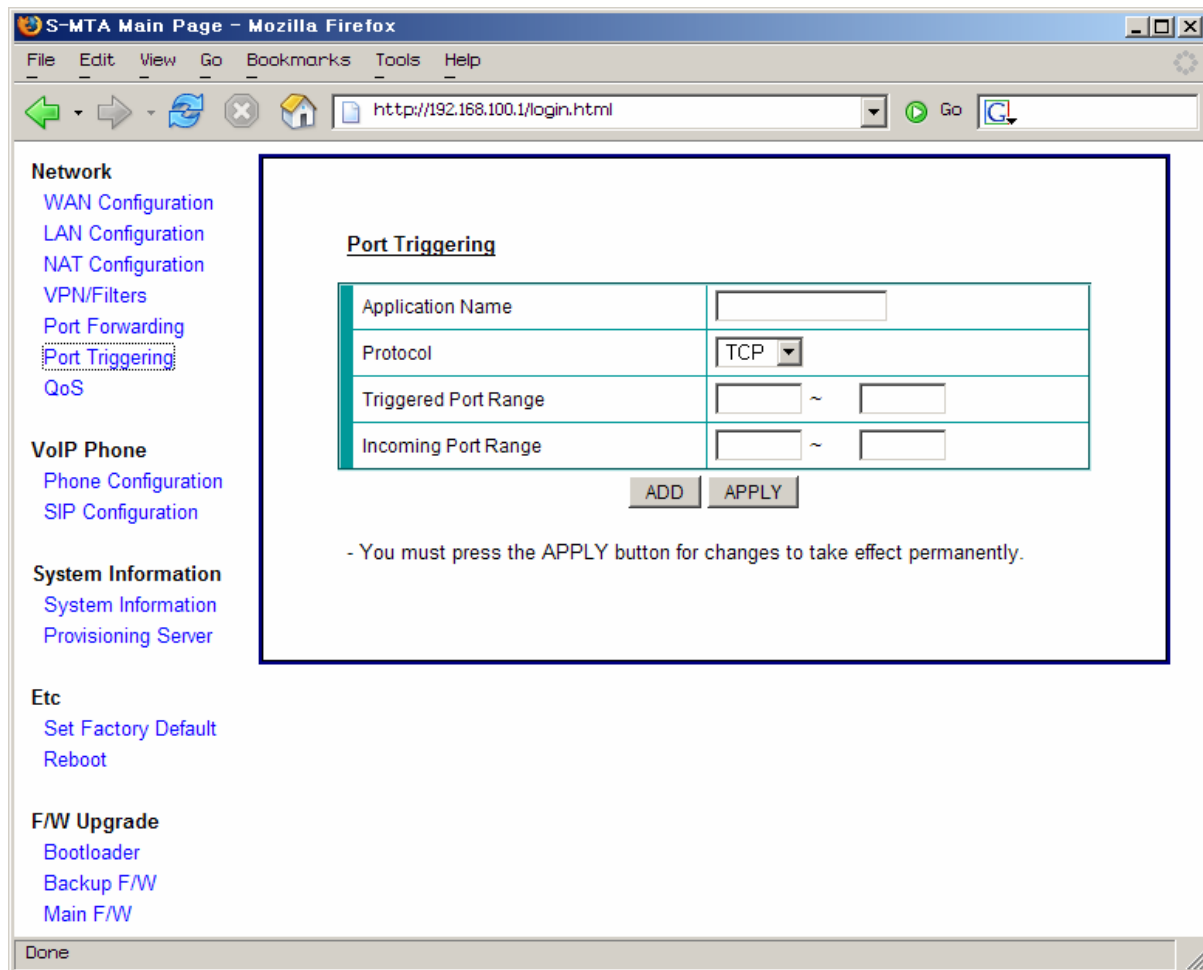
The **ADD** button means that the added or inserted record is saved in the volatile memory like SDRAM, so this record remains temporarily, not permanently. Please click the **Save** button to save your modifications into a flash memory with a permanent use.

The figure above shows the reserved port information for the static routing by the static IP masquerade and UPnP CP running on your PC if your PC supports UPnP CP function like Windows XP.

3.8 Port Triggering

The following figure shows the web page to set the Port Triggering. The IP address of the computer that sends the matching data is remembered by the Router, so that when the requested data returns through the Router, the data is pulled back to the proper computer by way of IP address and port mapping rules.

Application Name	Enter the application name of the trigger.
Protocol	Select protocol of the triggered port and Incoming port. You can select TCP, UDP or Both.
Trigger Port Range	For each application, list the triggered port number range. Check with the application documentation for the port number needed.
Incoming Port Range	For each application, list the forwarded port number range. Check with the application documentation for the port number needed. When finished making your changes on this tab. click the Save button to save these changes



3.9 QoS

QoS Parameter Setting

- QoS function** To use QoS features, click on Enable or Disable. In QoS mode, QoS Mss and Gap Time parameters will be calculated automatically.
- QoS Mss** qos_mss parameter express TCP connection's Maximum Segment Size (MSS) value. It's an upper limit is 1460 bytes.
If the TA detects voice activity then while a TCP connection is being set up it should interfere and request the TCP MSS value to be set to qos_mss.
- Gap Time** If the TA detects voice activity then it should impose a gap of at least gap_time ms between the transfer of successive data packets to the output queue. parameter gap_time expressed in milliseconds.

Bandwidth

Bandwidth expressed in kbps. Enter the upstream bandwidth of the MTA.

Packet Threshold

Packet (Size) Threshold, expressed in Bytes. Data packets that are shorter than this threshold should be given a higher priority compared to those that are not. Packet Size Threshold (PST), expressed in Bytes.

The screenshot shows the S-MTA Main Page in Mozilla Firefox. The browser's address bar displays `http://192.168.100.1/login.html`. The left sidebar contains a navigation menu with the following sections:

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 - NAT Configuration
 - VPN/Filters
 - Port Forwarding
 - Port Triggering
 - QoS**
- VoIP Phone**
 - Phone Configuration
 - SIP Configuration
- System Information**
 - System Information
 - Provisioning Server
- Etc**
 - Set Factory Default
 - Reboot
- F/W Upgrade**
 - Bootloader
 - Backup F/W
 - Main F/W

The main content area is titled **QoS Setting** and contains a table with the following fields:

QoS function	☒ Enable ☐ Disable
QoS Mss	1460
Gap Time	2 ms
Bandwidth	1024 Kbps
Packet Threshold	250
	☒ Type of Service ☐ Diffserv
SIP Tos	0x00
RTP Tos	0x00
DATA Tos	0x00
Diffserv Voice	0x00
Diffserv Data	0x00

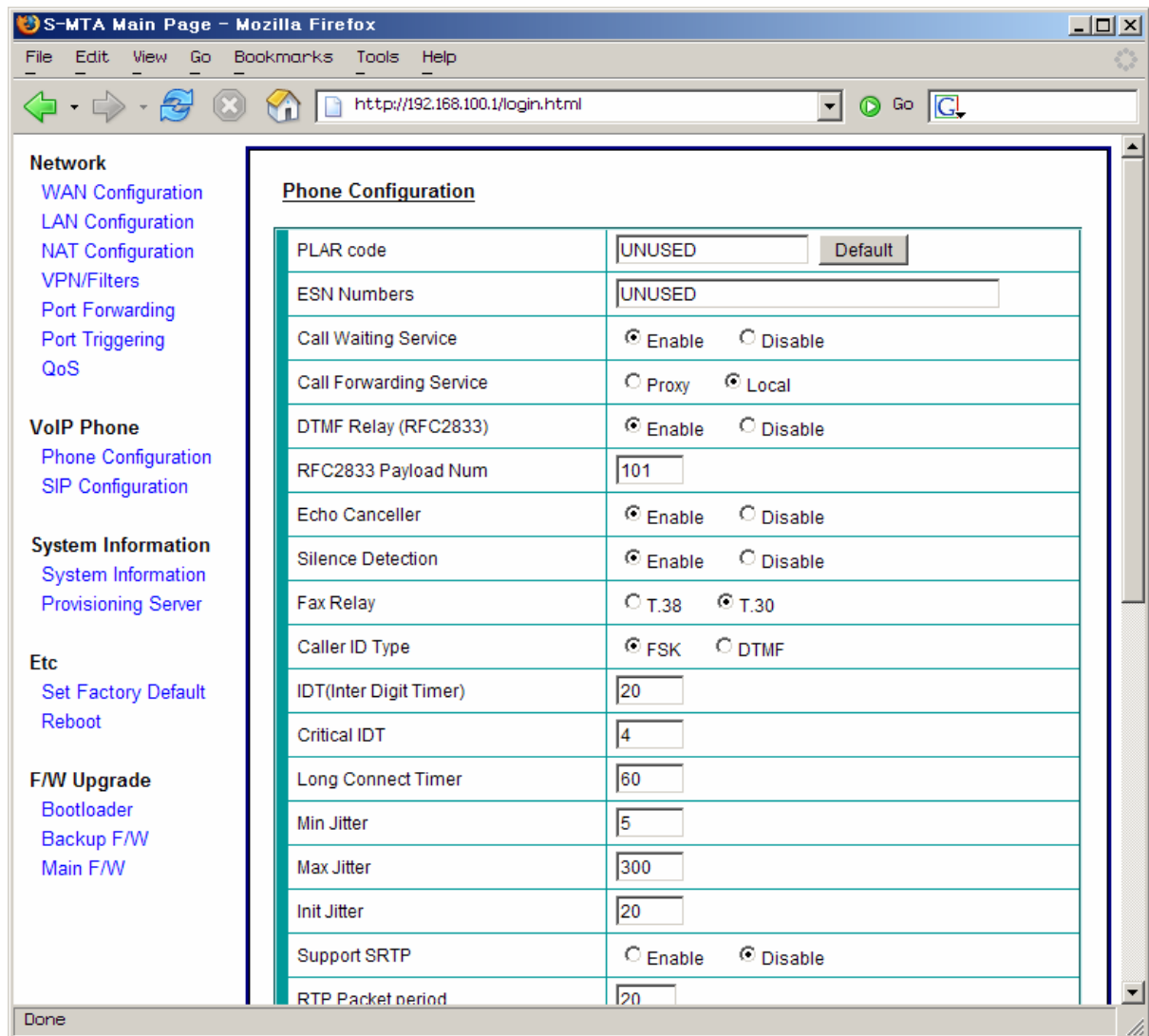
A **Submit** button is located at the bottom right of the table.

3.10 IP Phone Page

At this page, you can change options supported in this S-MTA. Please change options according to your environments.

PLAR Code	Input the PLAR code
ESN Numbers	Emergency service numbers (numbers saperated by commas “,”) (ex, 123,456,789,012)
Call Waiting Service	Option for call waiting service.
Call Forwarding Service	Option for call forwarding service
DTMF Relay (RFC 2833)	Option for DTMF relay using RFC 2833.
Echo Canceller	Option for echo cancellation enable or disable. If you disable echo cancellation, you can hear echo of your voice.
Silence Detection	Option for silence detection. If you enable this option, this TA will enable VAD and CNG functions.
Fax Relay	Option for FAX Relay mode
IDT (Inter Digit Timer)	Inter-digit timer.
Critical IDT	Refers to the inter-digit timer when T is specified in the digit map
Long Connect Timer	Total time to respond to the softswitch when collecting digits
Min Jitter	Minimum jitter buffer size
Max Jitter	Maximum jitter buffer size
Init Jitter	Initial jitter buffer size
Support SRTP	Option for support SRTP

RTP Packet period	Packet period by milli seconds
Change Polarity	If MTA determines polarity reversed or not when call is established.
Tx Gain	You can adjust the volume level of transmit signal. If you select higher value for this option, the remote party will hear more loud sound. This S-MTA provides 11 levels for this option.
Rx Gain	You can adjust the volume level of receiving signal. If you select higher value for this option, you will hear more loud sound. This S-MTA provides 11 levels for this option.
Hook Flash Duration	Hook flash duration by milli seconds
Port 1 Preferred Codec	Selection of the preferred codec priority for Port 1 G.711 PCMU / G.711 PCMA / G.729 / G.723 / G.726
Port 2 Preferred Codec	Selection of the preferred codec priority for Port 1 G.711 PCMU / G.711 PCMA / G.729 / G.723 / G.726
Digit Map	You can change the digit map string according to your dialing policy. The current default digit maps are "X.T"



S-MTA Main Page - Mozilla Firefox

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http://192.168.100.1/login.html

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Max Jitter	300
Init Jitter	20
Support SRTP	☐ Enable ☒ Disable
RTP Packet period	20
Change Polarity	☐ Forward ☒ Reverse
TX GAIN	-5
RX GAIN	-5
Hook Flash Duration	280 (90~1000 acceptable, 100~500 recommended)
Port 1 Preferred Codec	G.711_PCMU 3rd
	G.711_PCMA 4th
	G.729 1st
	G.726 disabled
	G.723 2nd
Port 2 Preferred Codec	G.711_PCMU 3rd
	G.711_PCMA 4th
	G.729 1st
	G.726 disabled
	G.723 2nd
Digit Map	X.T

Submit

- You must reboot the system for changes to take effect.

Done

3.11 SIP Settings Page

To enable VoIP function, this S-MTA should be registered to the proxy server of ISP. At this page, you can configure most of information needed to register to the proxy server.

[NOTE] *In case PC is connected to this S-MTA and you want to use PC's client program using SIP protocol such as UBP phone, you should change "Local SIP port" and "Local RTP Start Port" of this S-MTA with different value that are used in your PC's client program.*

Proxy Server IP (or Domain)	Fill the Proxy Server IP Address or FQDN.
Proxy Server Port	Fill the port number of Proxy Server. The default value is 5060. (Use outbound proxy only if the outbound proxy is used)
Primary outbound proxy	Primary outbound proxy server (Use proxy as registrar If proxy is equal to register server)
Register Server IP (or Domain)	Fill the Register Server IP Address or FQDN. If Register Server is the same with Proxy Server, please fill the same address with Proxy Server.
Register Server Port	Fill the port number of Register Server. The default value is 5060.
re-Register Interval	Fill the re-Registration interval.
Session Expires	The session is expired
Local SIP Port	The local SIP port number of S-MTA. This is a receiving port number of SIP messages.
Local RTP Start Port	This S-MTA uses 4 RTP/RTCP port number starting from this value. If your PC program uses the same value with this S-MTA, please change this value.

User ID1	Type the User ID for the first VoIP port, which is needed to register to CA or Register Server.
Password1	Type the password for the first VoIP port, which is needed to register to CA or Register Server.
IP Telephone Number1	Please fill the first VoIP Telephone number.
User ID2	Type the User ID for the second VoIP port, which is needed to register to CA or Register Server.
Password2	Type the password for the second VoIP port, which is needed to register to CA or Register Server.
IP Telephone Number2	Please fill the second VoIP Telephone number.

When you click the “Set Default” button, all items of this page will be set with default values.

S-MTA Main Page - Mozilla Firefox

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http://192.168.100.1/login.html

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SIP Configuration

SIP SCHEME	☒ SIP ☐ SIPS
Proxy Server IP (or Domain)	0.0.0.0 Default
Proxy Server Port	5060 Default
☒ Use Outbound Proxy	
☐ Use Outbound Proxy within Dialog	
Outbound Proxy	0.0.0.0 Default
Outbound Proxy Server Port	5060 Default
☒ Use proxy as registrar	
Register Server IP (or Domain)	0.0.0.0 Default
Register Server Port	5060 Default
Register Interval	300 sec Default
Retry Interval	10 sec Default
Session Expires	0 sec Default
Local SIP Port	5060 Default
Local RTP Start Port	5090 Default
User ID 1	UNUSED Default
Password 1	(write only)
IP Telephone Number 1	UNUSED Default
Displayname 1	UNUSED Default
User ID 2	UNUSED Default
Password 2	(write only)
IP Telephone Number 2	UNUSED Default
Displayname 2	UNUSED Default
☐ Synchronize Date and Time	

Set Default Submit

- You must reboot the system for changes to take effect.

http://192.168.100.1/sip.html

3.12 Provisioning

For the provision, you can choose Provision Type in either HTTPS, HTTP or TFTP. By default, HTTP is used for the Provision Type. If you want to use other Provision Server, please change the Provisioning Server address or FQDN.

The screenshot shows the 'S-MTA Main Page' in a Mozilla Firefox browser window. The address bar displays 'http://192.168.100.1/login.html'. The left sidebar contains a navigation menu with the following sections:

- Network**
 - WAN Configuration
 - LAN Configuration
 - NAT Configuration
 - VPN/Filters
 - Port Forwarding
 - Port Triggering
 - QoS
- VoIP Phone**
 - Phone Configuration
 - SIP Configuration
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The main content area is titled 'Provisioning Server' and contains a configuration table:

Provision	☐ Enable ☒ Disable
Provision Server	HTTP :// 0.0.0.0
Retry Interval	6 second
Provisioning Interval	1440 minute
Authentication Key	(write only)

Below the table are three buttons: 'Set Default', 'Submit', and 'Clear Key'. A note at the bottom states: '- To reflect configurations changed, You must reboot system.'

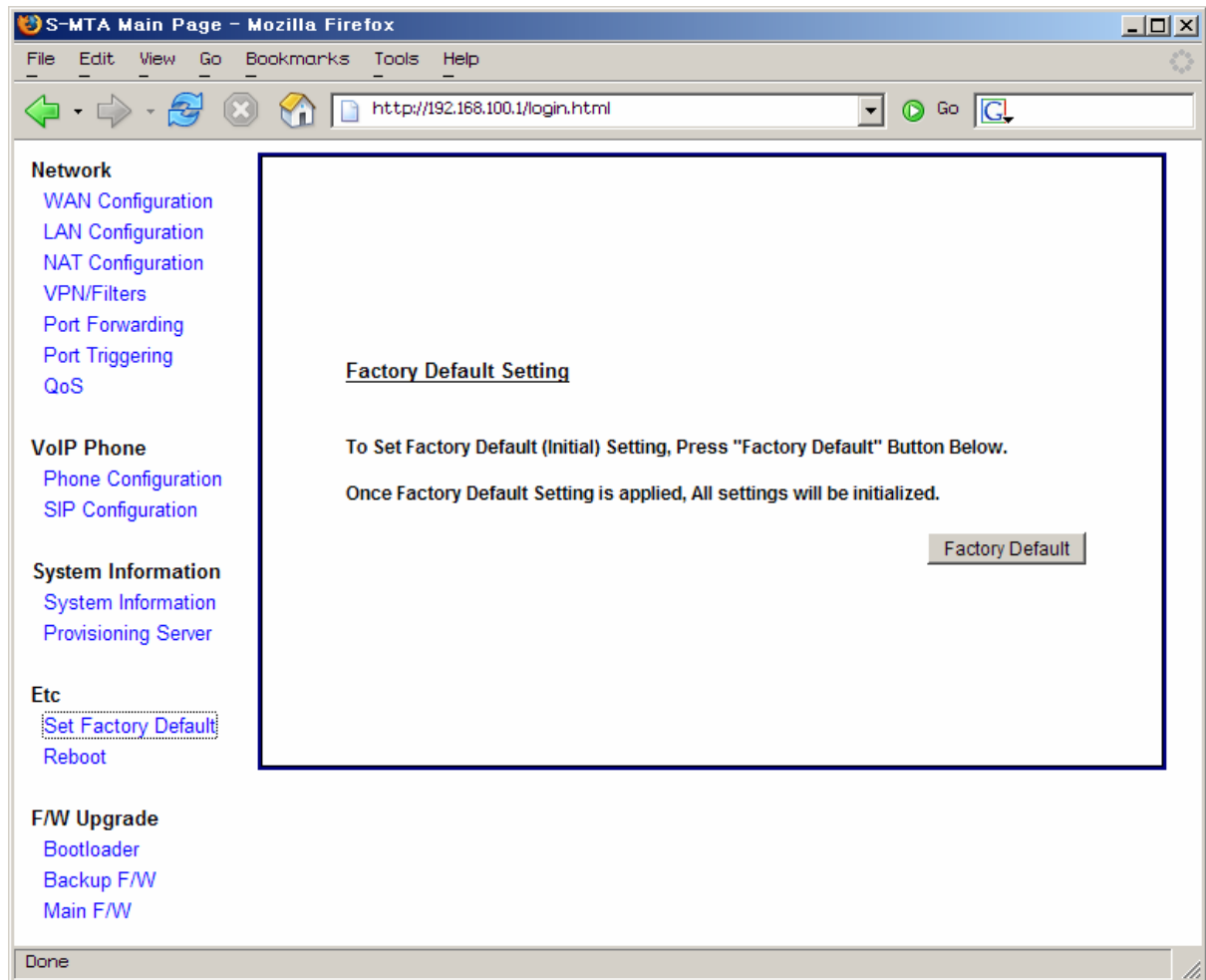
- 1) For HTTPS type : https:// IP or FQDN
- 2) For HTTP type : http:// IP or FQDN
- 3) For TFTP type : tftp:// IP or FQDN

3.13 System Information

Please see descriptions for MAIN page.

3.14 Factory Default Page

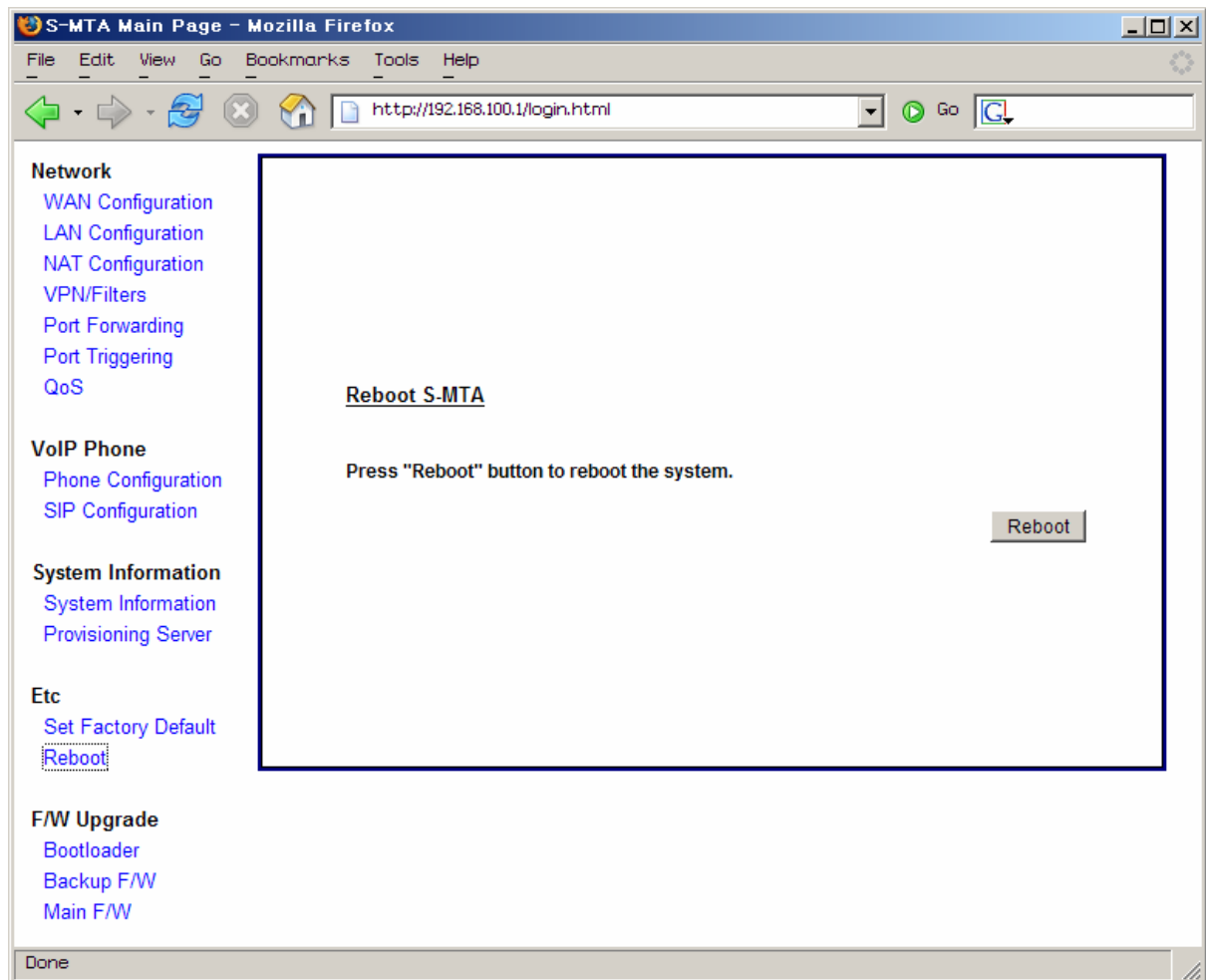
This is a factory default page. You can make this S-MTA's configuration with factory default configuration using this page. Please click **“Factory Default”** button, then S-MTA will clear all configuration values, and re-configure with default values.



3.15 Reboot Page

This is a reboot page. If you want to software reboot, please use this page. When you click the “REBOOT” button, S-MTA will reboot automatically.

After you changed the configuration of S-MTA or you upgrade with a new firmware, you should reboot this S-MTA to apply new configurations or firmware.



3.16 Firmware Upgrade Page

This is a firmware upgrade page. After you select a new firmware by clicking the “Browser”, please click “**Upgrade**” button, then S-MTA will download the specified new firmware from the server. If S-MTA fails to download, S-MTA will generate error messages.

After you upgrade with a new firmware, please reboot this S-MTA to apply a new firmware in Reboot page.

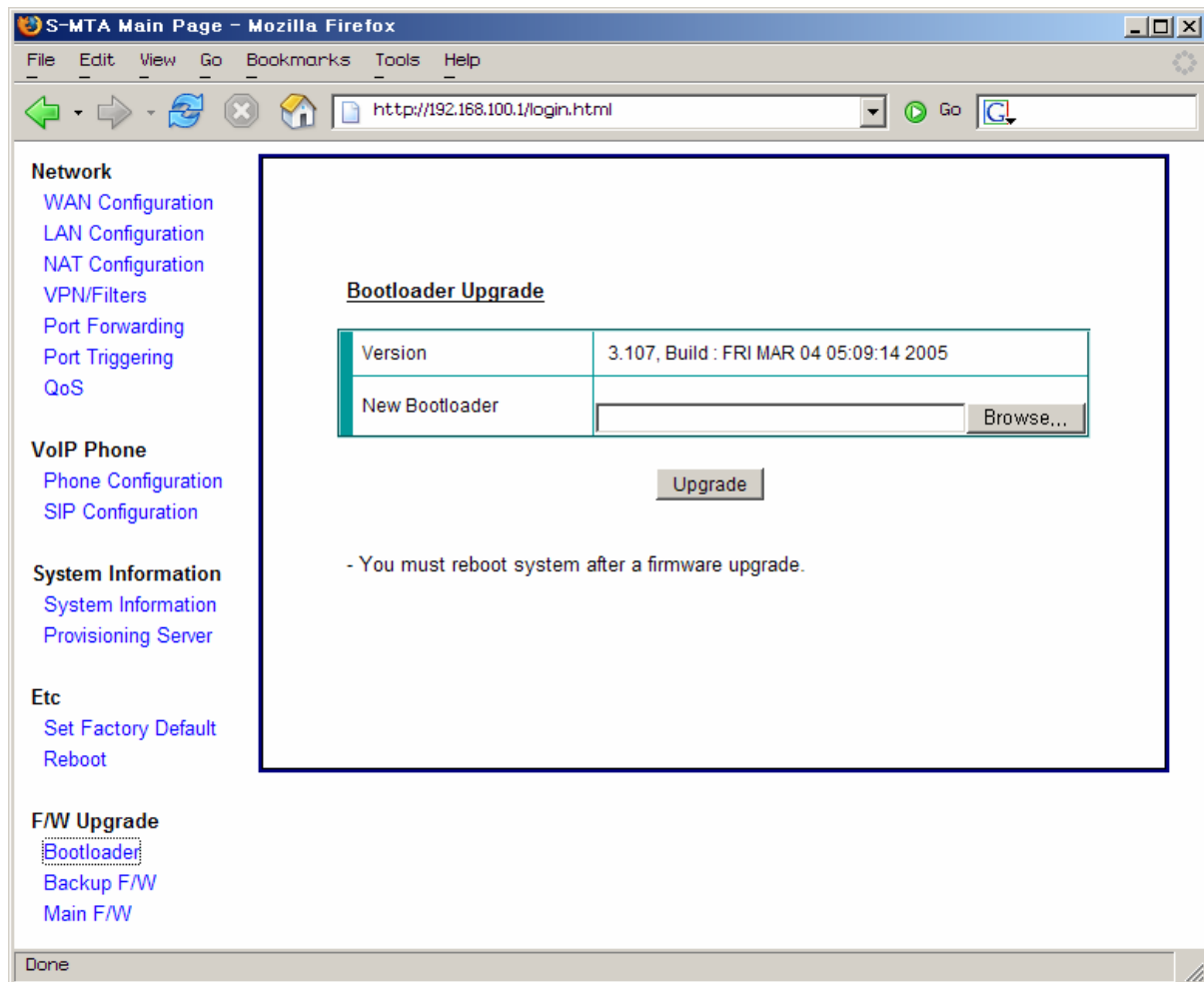
3.15.1 Bootloader Upgrade

Version

Shows the first bootram version.

New Bootloader

Please select a new bootram by clicking “Browser” button.



3. 15. 2 Backup Firmware Upgrade

Backup Firmware

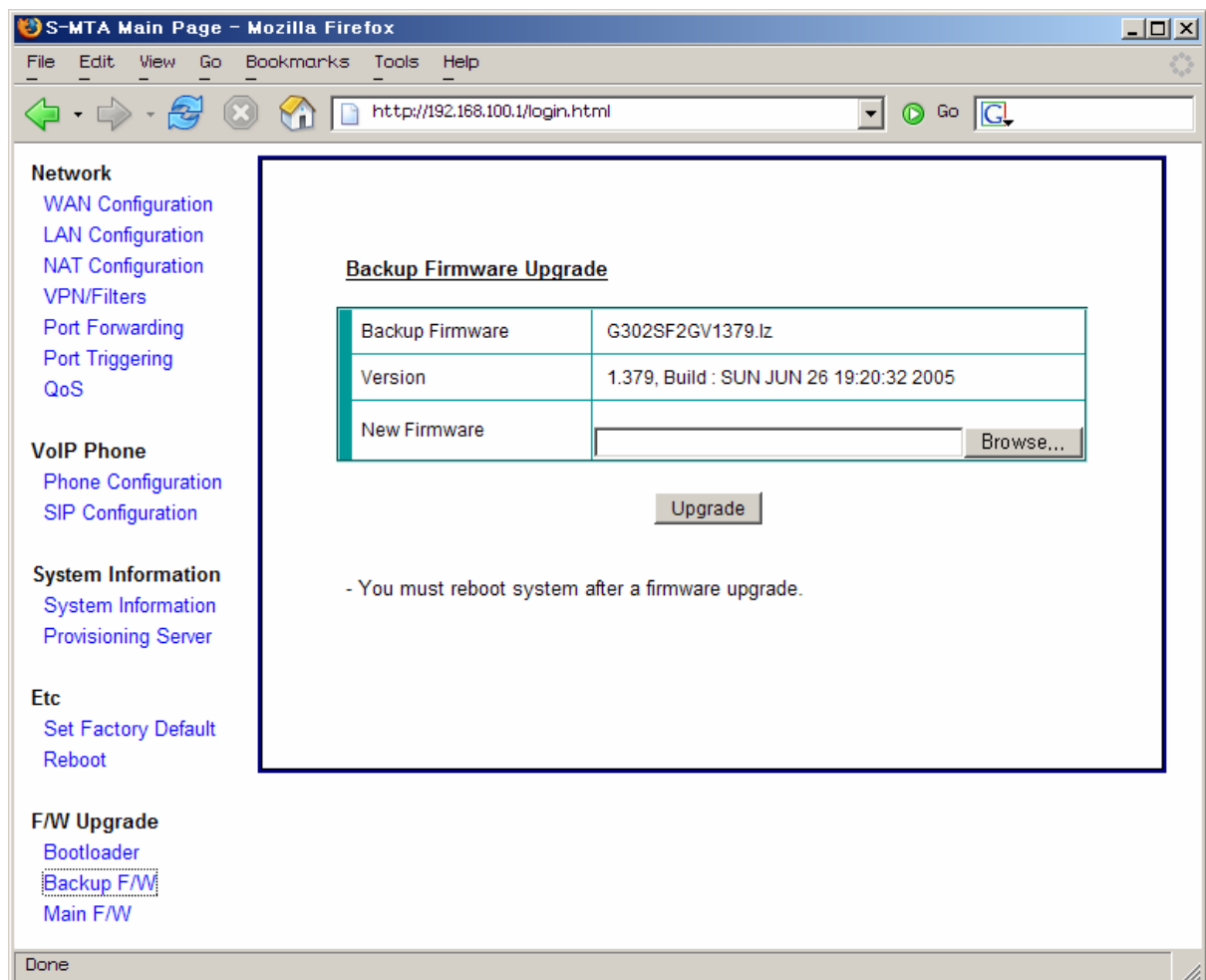
Displays the first bank firmware's name.

Version

Shows the first bank firmware's version.

New Firmware

Please select a new firmware by clicking "Browse" button.



3. 15. 2 Main Firmware (Currently running image)Upgrade

Main Firmware

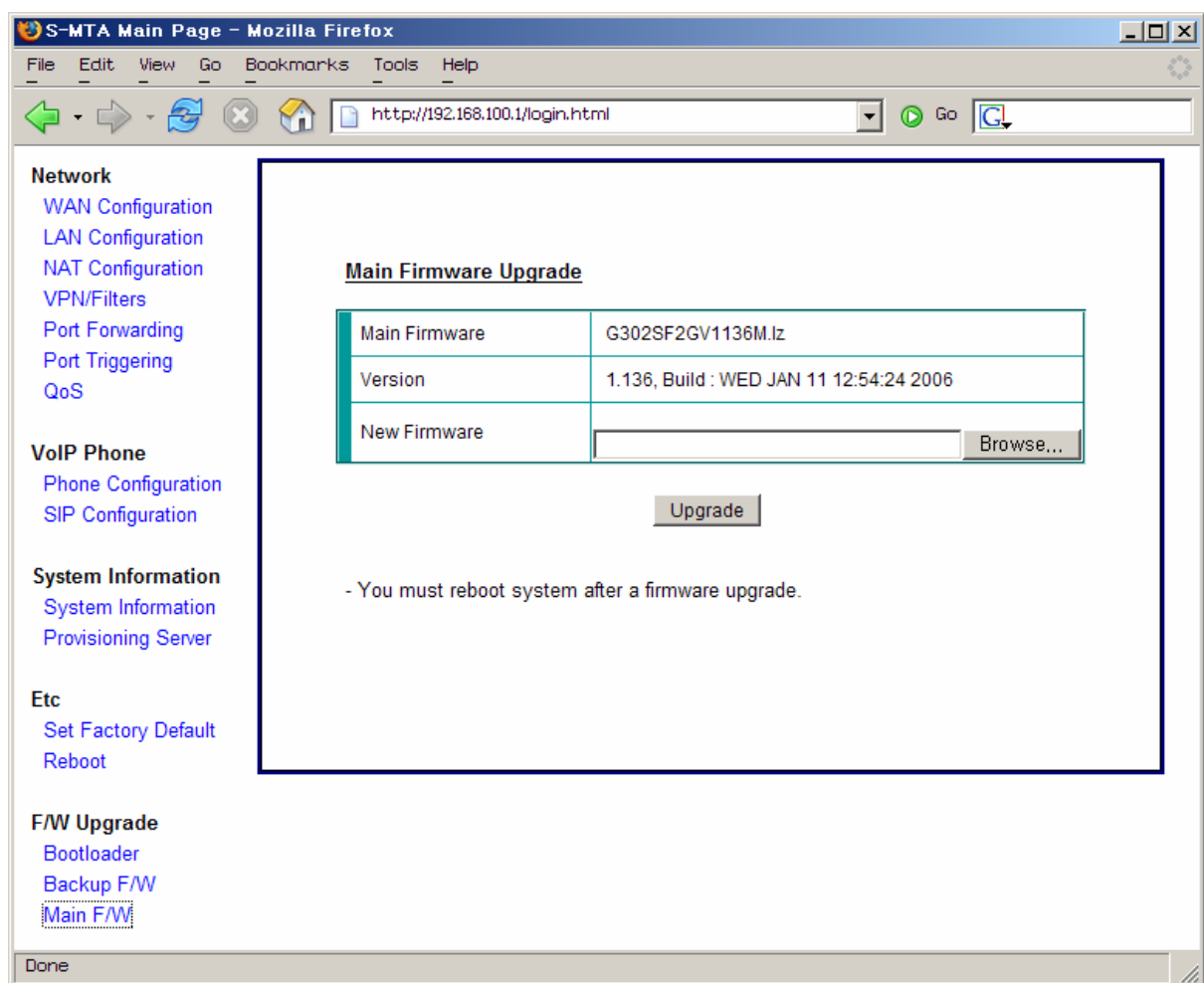
Displays the first bank firmware's name.

Version

Shows the first bank firmware's version.

New Firmware

Please select a new firmware by clicking "Browser" button.



4. Features of HYC-G302

4.1 IP & Data Functions

PPPoE support for xDSL modem
IP Address assignment via DHCP client
Fixed or Static IP assignment

DHCP server function
NAT (Network Address Transaction) function

UPnP (Universal Plug and Play) CP (Control Point)
UPnP (Universal Plug and Play) IGD (Internet Gateway Device) support

Proxy DNS support
Embedded Web server support

Provisioning

MAC Address Cloning

STUN

PPTP Pass-Through

IP/Port/MAC filters

Port Forwarding / Triggering

4.2 Voice Functions

PROTOCOL

RFC 3261 SIP (Session Initiation Protocol) compliant

CODECS

G.729AB, G.711 (u-law, a-law), G.723.1, G.726

DSP FEATURES

G.168 Echo Cancellation – 16ms tail length
Silence Suppression and Voice Activity Detection functions
Comfort Noise Generation
DTMF detection and generation
Caller ID generation with North American Standard
Adaptive Jitter Buffer
Packet loss recovery/concealment
RFC 2833 DTMF
T.30 FAX with G.711 and T.38

SIP SUPPLEMENTARY FUNCTIONS

Call Waiting
Three-way Conference Calling
Call Hold
Call Transfer – (Blind and consultative)
Call Forwarding – (All / Busy / No Answer)

4.3 Operating Environments

Power Adapter	Input	AC 100V~240V, 50Hz/60Hz
	Output	DC+5V/ 2A
Consumptions	Max	11W
Size	130mm(D) x 140mm(W) x 30mm(H)	
Weight	314 g	
Temperature	0 ~ 40℃	
Humidity	10 ~ 90%	

FCC NOTICE

THIS DEVICE COMPLIES WITH PART 15 OF THE FCC RULES.
OPERATION IS SUBJECT TO THE FOLLOWING TWO CONDITION:
(1) THIS DEVICE MAY NOT CAUSE HARMFUL INTERFERENCE, AND
(2) THIS DEVICE MUST ACCEPT ANY INTERFERENCE RECEIVED,
INCLUDING INTERFERENCE THAT MAY CAUSE UNDERSIRED
OPERATION.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communication. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures :

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer of an experienced radio/TV technician for help.

NOTE : The manufacturer is not responsible for any radio or TV interference caused by unauthorized modifications to this equipment. Such modifications could void the user's authority to operate the equipment.