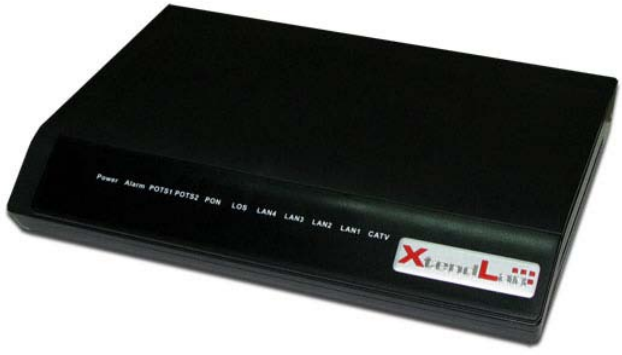
GONU14RS

GEPON ONU with CATV and VoIP FXS



User’s Guide

Contents

1 Product Introduction

The GONU14RS is a GEPON ONU terminal, which complies with the IEEE 802.3ah standard and the CTC2.0 standard. The device provides one EPON interface, four 10/100BASE-T Ethernet interfaces, one CATV RF connector, and two FXS VoIP interfaces. The EPON interface provides passive Ethernet access and 1.25G symmetrical broadband data transmission. Each Ethernet interface provides 100M Ethernet data service. The CATV connector provides community antenna television (CATV) service. The FXS interfaces provide two channels of VoIP service. In this way, the GONU14RS integrates data network, video network, and voice network.

1.1 Application Scenario

The device applies to building or home (indoor) networks, and commercial (office, department, hotel, and warehouse) networks, in which FTTB/FTTH is established. Various service interfaces meet different requirements of customers.

1.2 Features

The device supports the following features:

- IEEE802.3ah-2004 and IEEE802.3u
- DBA algorithms, FEC codec
- OAM control compliant with EPON standards
- Up to 8 logical link IDs (LLIDs)
- 40 configurable queues
- VoIP management based on Web
- IEEE802.1p/q, highly flexible 802.1q VLAN
- IEEE802.1D QoS and STP
- IEEE802.3X flow control
- IGMP Snooping
- IPv6
- SC/APC interface
- Triple churning decryption key
- 47 MHz~870 MHz CATV RF bandwidth
- SIP RFC3261/3262/3263/3264/3265

- G.711, G.726, G.729 voice coding
- RFC2833 DTMF
- T.38, G711 FAX transparent pass-through mode
- Special service of VoIP
- UART CONSOLE port

1.3 LED Indicators and Interfaces

Front Panel

Figure 1 Front panel

LED	Color	Status	Description
Power	Green	On	The device is powered on.
		Off	The device is powered off.
Alarm	Green	On	A system alarm occurs.
		Off	The system is running normally.
CATV	Green	On	The CATV port detects the signal.
		Off	The system is powered off, or no CATV service exists.
LAN4/3/2/1	Green	On	The Ethernet interface is connected, but no data is being transmitted.
		Blinks	Data is being transmitted through the Ethernet interface.
		Off	The device is powered off or the Ethernet interface is not connected to the terminal.
PON_LINK	Green	On	EPON connection is normal.
		Blinks	The system is trying to establish EPON connection.
		Off	EPON connection is not established.

LED	Color	Status	Description
PON_LOS	Red	Blinks	The receiving optical power of the ONU is lower than the sensitivity of the optical receiver.
		Off	The receiving optical power of the ONU is normal.
PHONE_2/1	Green	On	The phone is registered to the SIP Server.
		Blinks slowly	The phone is hooked off.
		Blinks quickly	The phone is ringing.
		Off	The phone fails to register to the SIP Server.

Rear Panel

Figure 2 Rear panel

Interface/Button	Description
PON	1 x SC/APC optical module interface
LAN1/2/3/4	4 x RJ45 10/100BASE-T Ethernet interfaces
CONSOLE	1 x RJ45 UART interface
CATV	1 x metric RF connector
Pnone1/2	2 x RJ11 interfaces
Power	Connect to an external adapter, with output of 12 V DC
on/off	The power switch

Interface/Button	Description
Reset	Hardware reset

1.4 Product Specifications

Item	Parameters	Specifications
Optical interface	Uplink/downlink transmission rate	1.25 Gbps
	Central wavelength	● Uplink: 1310 nm ● Downlink: 1490 nm ● CATV: 1550 nm
	Transmission distance	Maximum: 20 km
	Maximum number of connected ONUs	32 ONUs within 20 km
CATV interface	RF bandwidth	47 MHz~870 MHz
	RF output	22 dBmV
	Carrier to noise ratio (CNR)	> = 46 dB
	Carrier to composite second order beat ratio (C/CSO)	58 dB
	Carrier to composite triple beat ratio (C/CTB)	58 dB
Electrical specifications	Consumption	10 W
	Adapter input voltage	100 V ~ 240 V AC, 50 Hz/60 Hz
	Adapter output voltage	12 V ± 10%
EMC and Safety	Electromagnetic compatibility	● FCC Part 5 Class B5 ● EN55022 Class B (CISPR 22B) ● VCCI Class B
	ESD protection	● IEC 61000-4-2 ● GR-1089-CORE

Item	Parameters	Specifications
	Laser eye safety	● FDA 21CFR 1040.10 and 1040.11 ● EN (IEC) 60825-1 ● EN (IEC) 60825-2
	Green standard	RoHS
Physical specifications	Physical dimension	L x W x H: 218 mm x 172 mm x 41 mm
	Weight	580 g

1.5 System Requirements

Refer to the following instructions to ensure normal running of the ONU:

- The FTTB/FTTH service and the fiber connector must be available.
- Use the original adapter that is included in the product package. The power must meet the requirement.
- Use the single-mode fiber of the SC/APC connector for connection.
- Use the coaxial-cable that matches metric RF connector for TV connection.
- Use the original Console serial cable to connect the RJ45 serial interface.

1.6 Environment Requirements

Item	Specifications
Operating temperature	0ºC~40ºC
Storage temperature	-40ºC~75ºC
Operating humidity	10%~90%, non-condensing
Storage humidity	5%~95%, non-condensing
Power	Power adapter output: 10.8 V~13.2 V DC

1.7 Safety Precautions

Refer to the following instructions to protect the device from risks and damage caused by fire and electric power:

- Use volume labels to mark the type of the power.
- Use the original adapter that is included in the product package.
- Pay attention to the power load of the outlet or prolonged lines. An overburden power outlet or damaged lines or plugs may cause electric shock or fire accident. Check the power cable regularly. If you find any damage, replace the power cable at once.
- Keep proper grounding at the grounding end of the power outlet, to avoid any damage to the device caused by lightning.
- Keep proper space for heat dissipation, to avoid any damage to the device caused by overheating. The thin holes on the shell are designed for heat dissipation, to ensure that the device works normally. Do not cover the heat dissipation holes.
- Do not put this device close to a place where a heat source exits or high temperature occurs. Avoid the device from direct sunshine.
- Do not put this device close to a place where is too damp or watery. Do not spill any fluid on this device.
- Do not connect this device to any electronic product, unless our customer engineer or your broadband provider instructs you to do this, because any incorrect connection may cause power or fire risk.
- Do not place this device on an unstable surface or support.

1.8 Standard Compatibility and Compliance

- CCCA standard
- IEEE802.3ah-2004
- IEEE802.3u
- IEEE802.1Q
- IEEE802.1D
- IPv6
- SNMP V1/V2
- SIP RFC3261/3262/3263/3264/3265
- G.711, G.726, G.729 voice coding
- RFC2833 DTMF
- T.38, G711 FAX pass-through mode

2 Hardware Installation

2.1 Power Interface

The GONU14RS uses special external power adapter of 12 V DC.

2.2 PON Interface

The optical interface of the GONU14RS is an SC/APC interface and is on the right of the rear panel. During setup, remove the plastic dust cap of the SC/APC interface and keep it well for future usage. Clean the SC/APC connector of the fiber line with absolute alcohol and insert the SC/APC connector into the SC/APC interface. If there is a clear "da" sound, the connection is correct. Otherwise, remove the fiber connector and try again.

Perform the preceding operations at the PON interface every time you use the ONU. If the ONU is not in use, cover the optical interface of the ONU with the plastic dust cap, to prevent dust or other waste from falling into the optical interface, which may cause ONU failure.

Caution:

The ONU has invisible internal laser, which may cause harm to eyes. During setup, avoid direct eye exposure to the optical interface of the ONU, the fiber connector of the fiber line, or the uncovered area of the fiber.

2.3 Ethernet Interface

The GONU14RS provides four channels of general Ethernet service interfaces of standard RJ45 connectors.

The general Ethernet service interface is of MDI/MDI-X self-adaptation. You can use either crossover cable or straight-through cable. Figure 3 shows the line order of the Ethernet cables.

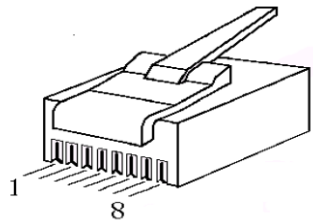


Figure 3 Line order of Ethernet cable

Straight-through cable: Refer to Table 1 for the line order of both ends of the cable.

Crossover cable: Table 1 shows the line order of one end of the cable and Table 2 shows the line order of the other end.

Table 1 Pinout of straight-through cable at Ethernet RJ-45 port

No.	Definition	Color
1	TXD+	Orange and white
2	TXD-	Orange
3	RXD+	Green and white
4	Null	Blue
5	Null	Blue and white
6	RXD-	Green
7	Null	Brown and white

No.	Definition	Color
8	Null	Brown

Table 2 Pinout of crossover cable at Ethernet RJ-45 port

No.	Definition	Color
1	RXD+	Green and white
2	RXD-	Green
3	TXD+	Orange and white
4	Null	Blue
5	Null	Blue and white
6	TXD-	Orange
7	Null	Brown and white
8	Null	Brown

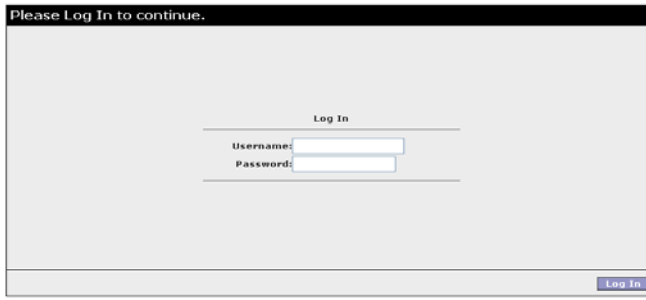
3 Web Configuration

Before configuring on the Web user interface, ensure that the IP range of PC network card is **172.24.107.xxx** and that the subnet mask is 255.255.0.0.

3.1 Login

Step 1 Open the Web browser and enter the IP address of the VoIP configuration interface. The default IP address is **172.24.107.246**.

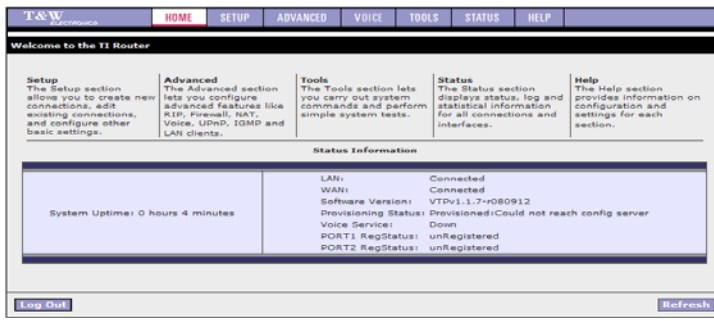
Step 2 Enter the user name and password and press the **Enter** key or click **Log In** to log in to the **HOME** page.



- Username: **Admin**
- Password: **Admin**

3.2 Home Page

The **HOME** page is as follows.



Parameters in this page are described as follows:

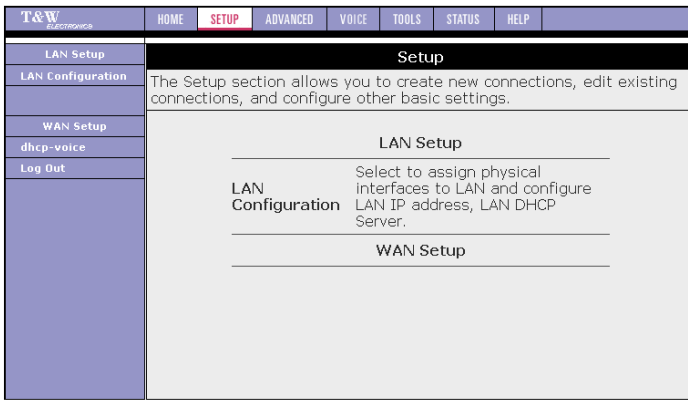
Field	Description
System Uptime	The interval since the last system start-up.
LAN	Connection status of the LAN interface. In this case, it is the connection status of the VoIP interface.
WAN	Connection status of the WAN interface. It is usually in the **Connected** state, unless the hardware becomes faulty.
Software Version	Current version of the software.

Field	Description
Provisioning Status	Connection status of the Provision.
Voice Service	Whether the voice service is started. If at least one phone is registered to the SIP Server, the value of this field is **UP**. Otherwise, it is **DOWN**.
PORT1 RegStatus	Whether Phone1 is registered to the SIP Server.
PORT2 RegStatus	Whether Phone2 is registered to the SIP Server.

3.3 Basic Configuration of Network Interface

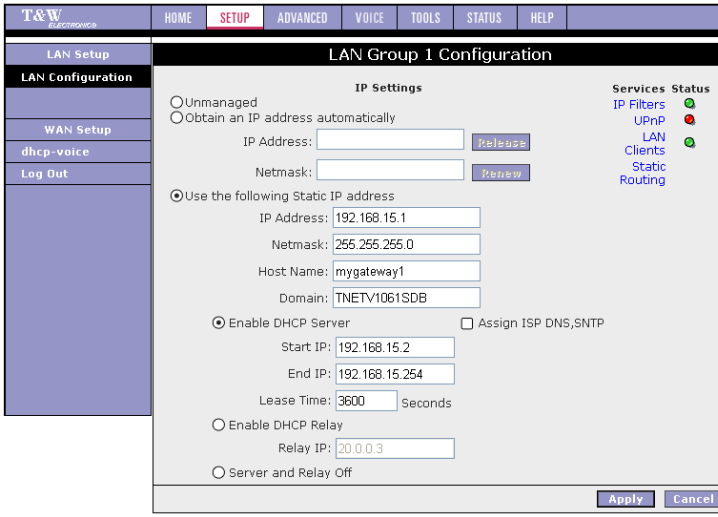
3.3.1 Main User Interface

Click **SETUP** at the top of the home page and the main configuration page shown as follows appears:



3.3.2 LAN Configuration

Click **LAN Configuration** in the left pane and the following page appears:



IP Settings

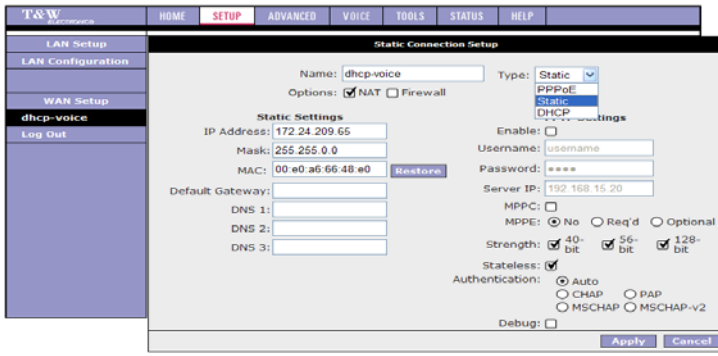
- **Unmanaged**: Do not configure the IP address information of the LAN interface.
- **Obtain an IP address automatically**: Obtain an IP address through DHCP from LAN side.
  - **IP Address**: The IP address obtained by DHCP.
  - **Netmask**: The subnet mask obtained by DHCP.
  - **Release**: Release the current IP address.
  - **Renew**: Obtain an IP address again.
- **Use the following Static IP address**: Configure the static IP address.
  - **IP Address**: Set the IP address of LAN interface.
  - **Netmask**: Set the Netmask of LAN interface.
  - **Host Name**: The name of the host.
  - **Domain**: The name of the domain.
- **Enable DHCP Server**: Enable DHCP Serve on the LAN side.
  - **Assign ISP DNS,SNTP**: Whether to enable assigning ISP DNS and SNTP when DHCP Server is enabled.
  - **Start IP**: The started IP address of DHCP Server.
  - **End IP**: The end IP address of DHCP Server.

- **Lease Time**: The lease time of DHCP Server.

- **Enable DHCP Relay**: Enable DHCP proxy function.
  Relay IP: The IP address of DHCP proxy.
- **Server and Relay Off**: Disable DHCP Server and DHCP proxy on the LAN side.
- **Service Status**
  - **IP Filter**: The status of the IP filter function. You can configure it in the **ADVANCED** page. Green means enabled and red means disabled.
  - **UPnP**: The status of the UPnP function. You can configure it in the **ADVANCED** page. Green means enabled and red means disabled.
  - **LAN Clients**: The status of the LAN clients function. You can configure it in the **ADVANCED** page. Green means enabled and red means disabled.
  - **Static Routing**: Link to the **ADVANCED** page for corresponding configuration.

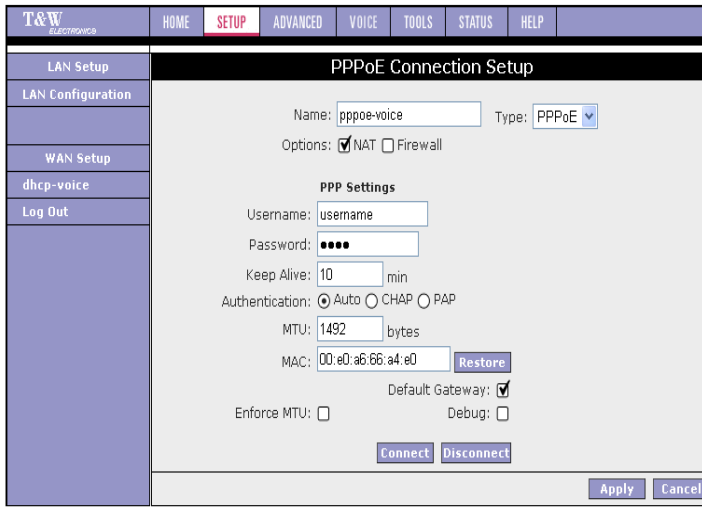
3.3.3 WAN Connection Configuration

Choose **WAN Setup** > **dhcp-voice** and the following page appears:



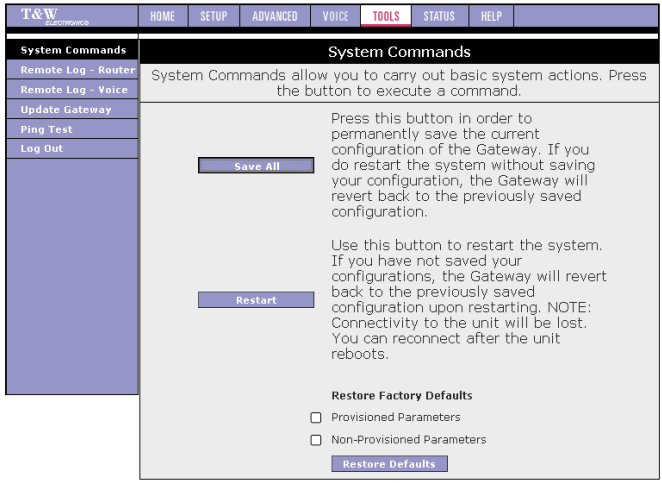
- **Type**: Select PPPoE.
- **Name**: The name of the connection. You can modify it.
- **Options**: Enable NAT and firewall. To access the Web page through the optical interface, deselect the **Firewall** check box.

The following page displays the function of obtaining IP address through PPPoE.

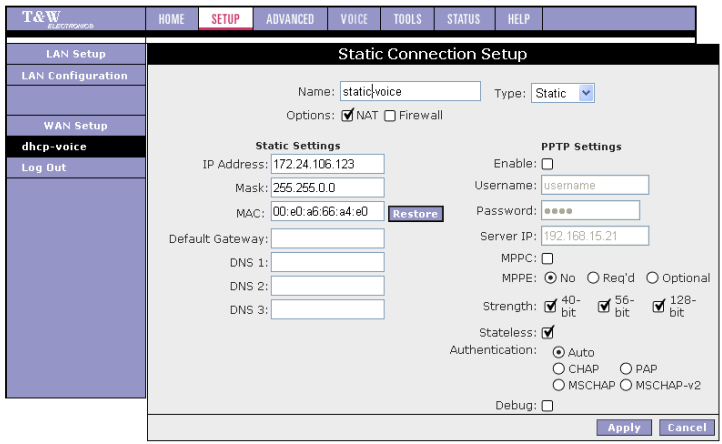


- **PPP Settings**:
  - **Username**: User name of PPPoE
  - **Password:** Password of PPPoE
  - **Keep Alive:** Keep alive time of PPPoE.
  - **Authentication**: Select the authentication mode of PPPoE.
  - **MTU**: Maximum transmission unit of PPPoE
  - **MAC**: Ethernet address of the WAN interface
  - **Restore**: Restore the default Ethernet address.
  - **Default Gateway**: Whether to set it to the default gateway.

After setting the parameters, click **Apply** to apply the settings immediately. Because the configuration is lost if the IAD is powered off, you must click **Save All** in the **System Command** page from the **Tools** menu. See the following figure:

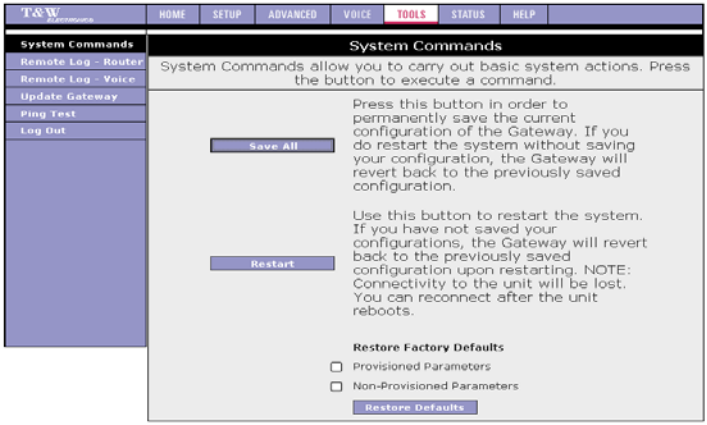


For setting the static IP address, see the following figure:

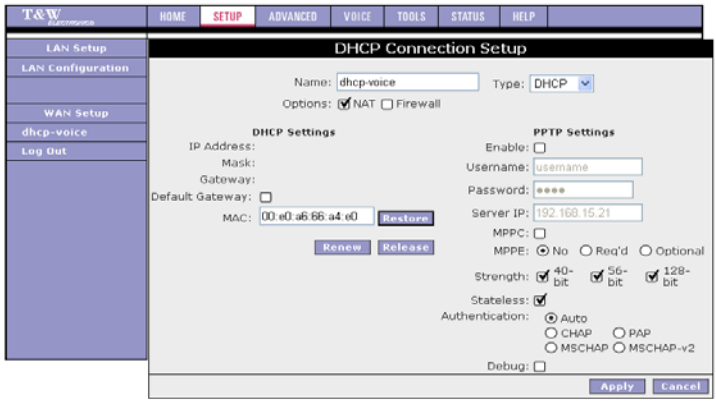


- **Static Settings**
  - **IP Address**: Set the IP address.
  - **Mask**: Set the subnet mask.
  - **MAC**: Ethernet address
  - **Restore**: Restore the default Ethernet address.

After setting the parameters, click **Apply** to apply the settings immediately. Because the configuration is lost if the IAD is powered off, you must click **Save All** in the **System Command** page from the **Tools** menu. See the following figure:

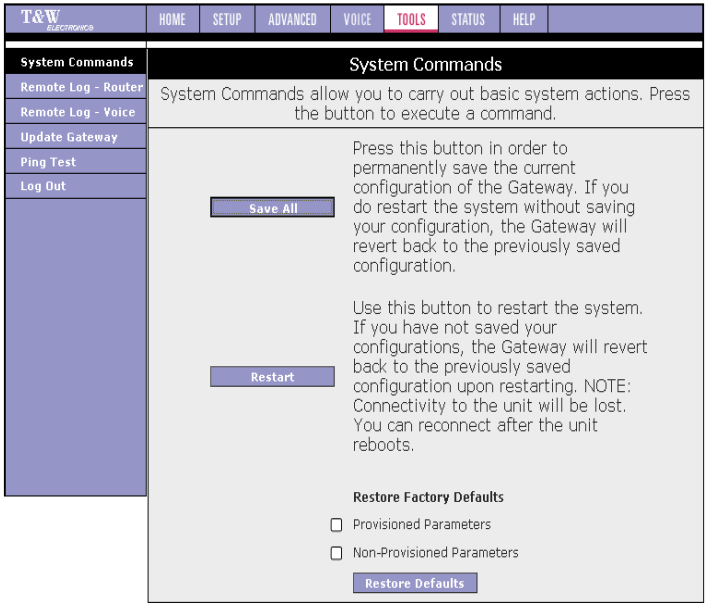


For obtaining IP address through DHCP, see the following figure:



- **DHCP Settings**
  - **Default Gateway**: Whether to set it to the default gateway.
  - **Restore**: Restore the default Ethernet address.
  - **Renew/Release**: Renew or release the IP address.

After setting the parameters, click **Apply** to apply the settings immediately. Because the configuration is lost if the IAD is powered off, you must click **Save All** in the **System Command** page from the **Tools** menu. See the following figure:

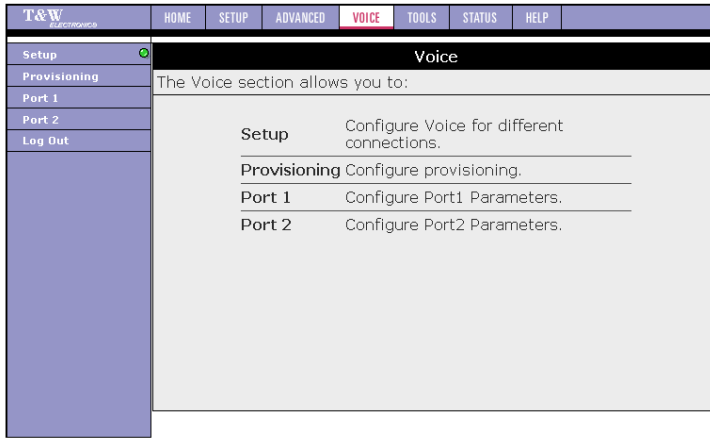


3.4 Advanced Configuration of Network Interface

Omitted.

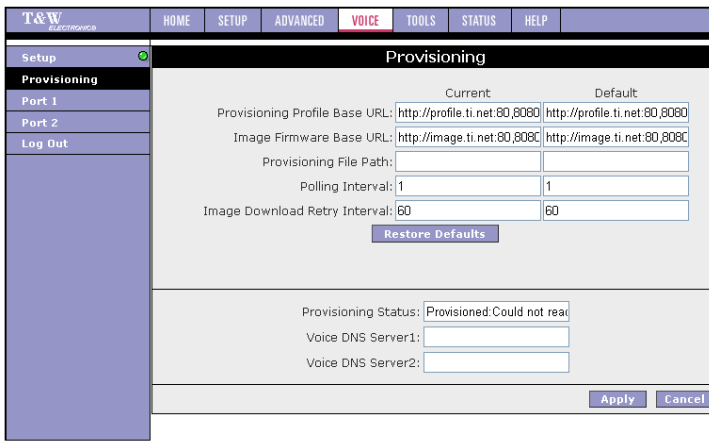
3.5 Voice Configuration

Click **VOICE** in the top menu and the main configuration page appears:



3.5.1 Provision Configuration

With the provision function, the IAD can automatically upgrade configuration files and system IMAGE in the specified address. Click **Provisioning** in the left pane and the **Provision Configuration** page appears:



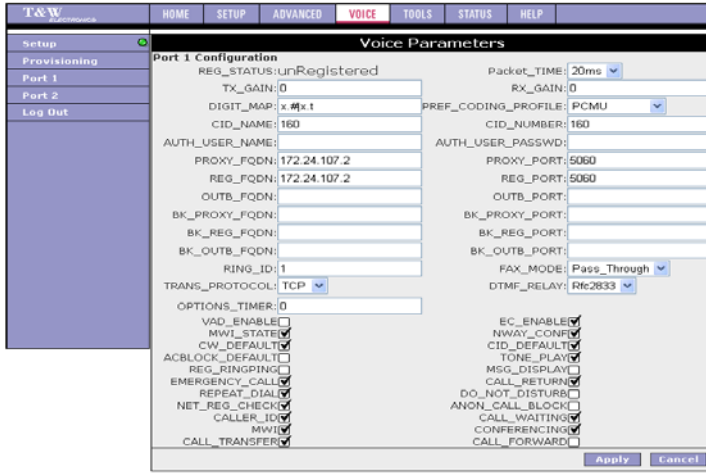
Parameters are described as follows:

Field	Description

Field	Description
Provisioning Profile Base URL	Storage path of the configuration file for upgrade. The value of this field can be HTTP or TFTP address.
Image Firmware Base URL	Storage path of the Image file for upgrade. The value of this field can be HTTP or TFTP address.
Polling Interval	Interval for polling, the unit is minute. After the interval is overtime, the IAD queries the configuration file. If configuration file updates, IAD downloads the file and updates it.
Image Download Retry Interval	The time of Image querying, After overtime, the IAD queries the Image file. If Image file updates, IAD downloads the file and updates it.
Provisioning Status	Connection status of the Provision, read only.
Voice DNS Server1	IP address of the primary voice DNS server.
Voice DNS Server2	IP address of the secondary voice DNS server.

3.5.2 Port 1 Configuration (SIP)

Click **Port 1** in the left pane and the **Port 1 Configuration** page appears:



Parameters are described as follows:

Field	Description
REG_STATUS	Register status of the channel. That is, whether the channel is registered to the SIP Server.
Packet_TIME	Time of RTP packaging. The value can be 10 ms, 20 ms, or 30 ms. The default value is 20 ms. You need not modify it.
TX_GAIN	DSP transmit gain. The value range is -14 dB~6 dB.
RX_GAIN	DSP receive gain. The value range is -14 dB~6 dB.
DIGIT_MAP	System dialup rules. You need not configure it.
PREF_CODING_PROFILE	Preferential coding.
CID_NAME	User name. It is the Display Name.
CID_NUMBER	Set the caller number. It must be a number of 0~9.
AUTH_USER_NAME	Set the user name of authentication.
AUTH_USER_PASSWD	Set the password of authentication.

Field	Description
PROXY_FQDN	IP address or domain name of the SIP proxy.
PROXY_PORT	Port number of the SIP proxy.
REG_FQDN	IP address or domain name of the SIP registered server.
REG_PORT	Port number of the SIP registered server.
OUTB_FQDN	IP address or domain name of the Outbound server.
OUTB_PORT	Port number of the Outbound server.
BK_PROXY_FQDN	IP address or domain name of the standby SIP proxy.
BK_PROXY_PORT	Port number of the standby SIP proxy.
BK_REG_FQDN	IP address or domain name of the standby SIP registered server.
BK_REG_PORT	Port number of the standby SIP registered server.
BK_OUTB_FQDN	IP address or domain name of the standby Outbound server.
BK_OUTB_PORT	Port number of the standby Outbound server.
RING_ID	Set the type of ring cadence. The value can be an integer of 0~7. 0 indicates to ring for one second and pause for four seconds. 1 indicates to ring for two seconds and pause for four seconds.
FAX_MODE	Set the FAX mode, that is, T.38 or transparent pass-through.
TRANS_PROTOCOL	SIP carrying protocol. The value can be UDP, TCP, or TLS.
DTMF_RELAY	DTMF relay mode.
OPTIONS_TIMER	Set the time interval for sending the OPTIONS message. The value of 0 indicates to disable this function. A value greater than 6 indicates to enable this

Field	Description
	function, and the value indicates the specific time interval.
VAD_ENABLE	Enable voice activity detection (VAD).
EC_ENABLE	Enable echo cancellation.
MWI_STATE	The status of MWI.
NWAY_CONF	Enable multi-way conference. This function is not supported.
CW_DEFAULT	Enable call waiting, when working with CALL_WAITING.
CID_DEFAULT	Enable outgoing call with a hidden ID, when working with CALLER_ID.
ACBLOCK_DEFAULT	Enable refusing incoming call with a hidden ID, when working with ANON_CALL_BLOCK.
TONE_PLAY	Work with NET_REG_CHECK. When the VoIP service is unavailable, a prompt tone is played. The default prompt tone is busy tone.
REG_RINGPING	If this function is enabled and the VoIP service is available, ring once.
MSG_DISPLAY	This function is not supported.
EMERGENCY_CALL	Enable emergency call. The default number of the emergency call is 110.
CALL_RETURN	Enable call return.
REPEAT_DIAL	Enable re-dial when busy.
DO_NOT_DISTURB	Enable do not disturb.
NET_REG_CHECK	Work with TONE_PLAY. When the VoIP service is unavailable, a beep tone is played. The default is busy tone.
ANON_CALL_BLOCK	Enable refusing incoming call with a hidden ID, when working with ACBLOCK_DEFAULT.
CALLER_ID	Enable outgoing call with a hidden ID, when working with CID_DEFAUL.

Field	Description
CALL_WAITING	Enable call waiting when working with **CW_DEFAULT**.
MWI	If this service is enabled and a NOTIFY message is received in the voice mailbox, you can hear intermittent dialing tone after picking up the receiver. Otherwise, you hear the normal dialing tone.
CONFERENCING	Enable three-way conference.
CALL_TRANSFER	Enable call transfer.
CALL_FORWARD	Enable call forward.

Click **Apply** and the settings of voice port take effect immediately. You need not click **Save All** in the **TOOLs** menu.

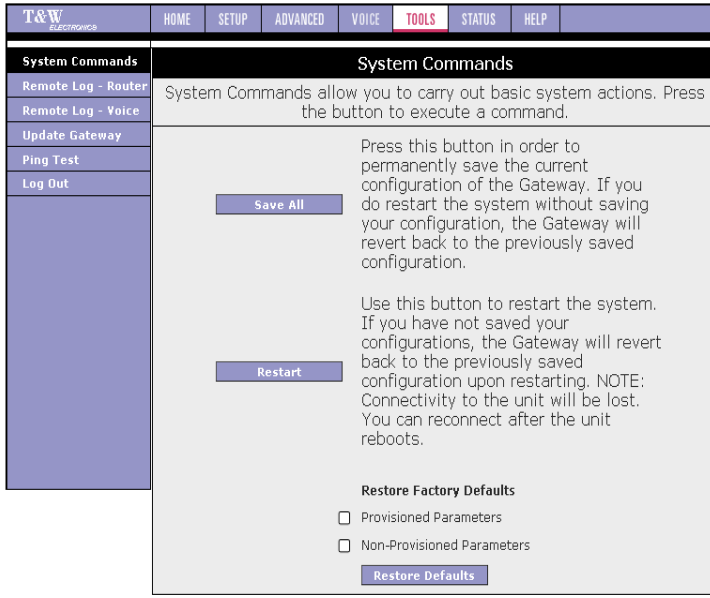
3.5.3 Port 2 Configuration

Refer to section 4.5.2 "Port 1 Configuration".

3.6 Saving all Configurations and Restoring Default Configurations

3.6.1 Saving Configuration

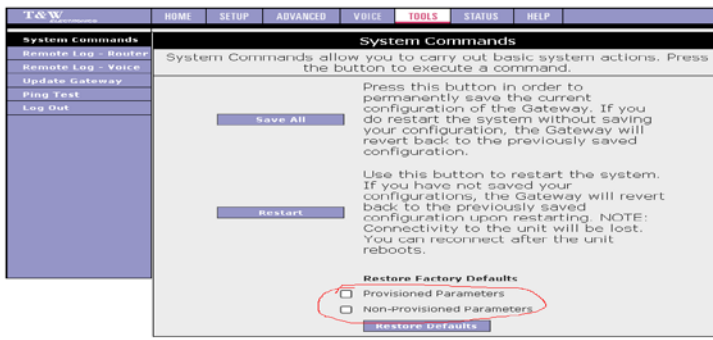
Click **System Commands > TOOLS** and the following page appears:



Click **Save All** to save all configurations.

3.6.2 Restoring Default Configuration

Click **System Commands > TOOLS** and the following page appears:

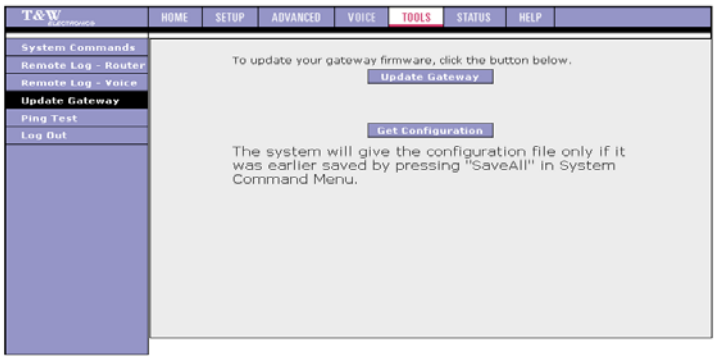


Parameters are described as follows.

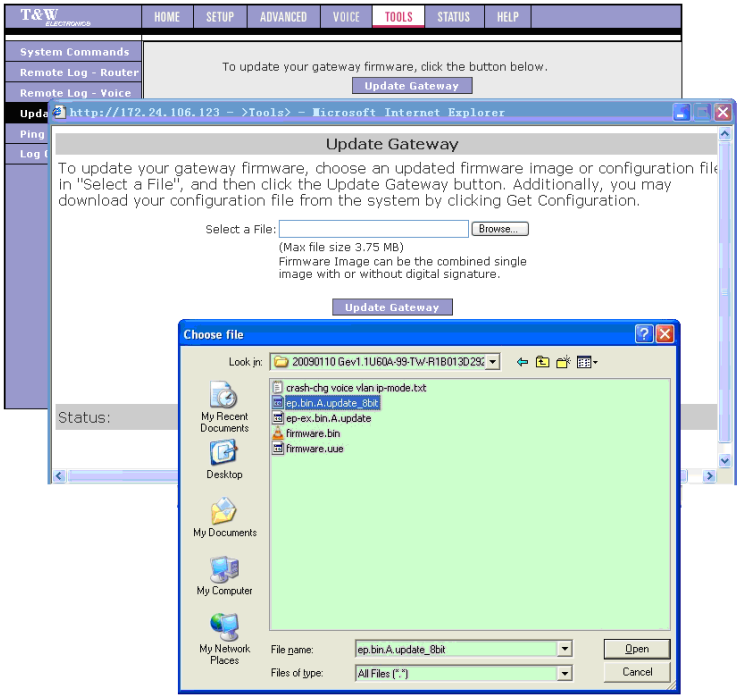
Field/Button	Description
Provisioned Parameters	Relevant voice configuration.
Non-Provisioned Parameters	Other configuration parameters.
Restore Defaults	Restore the selected configuration to factory default configuration.

3.7 Online Update of Image/Configuration

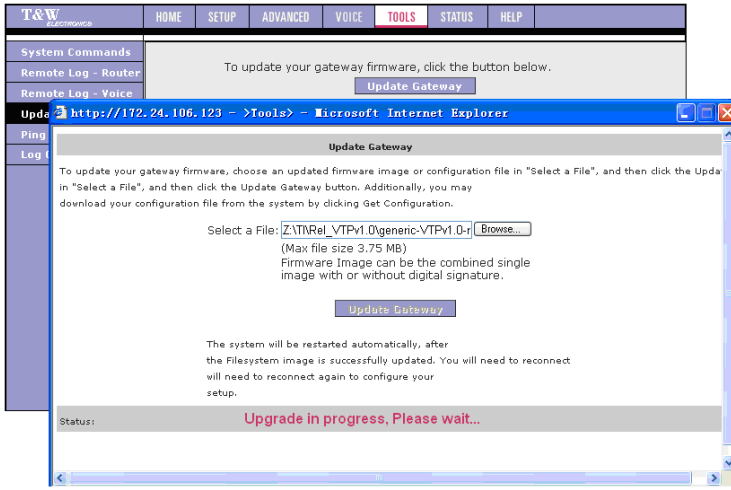
Choose **TOOLS** > **Update Gateway** and the following page appears:



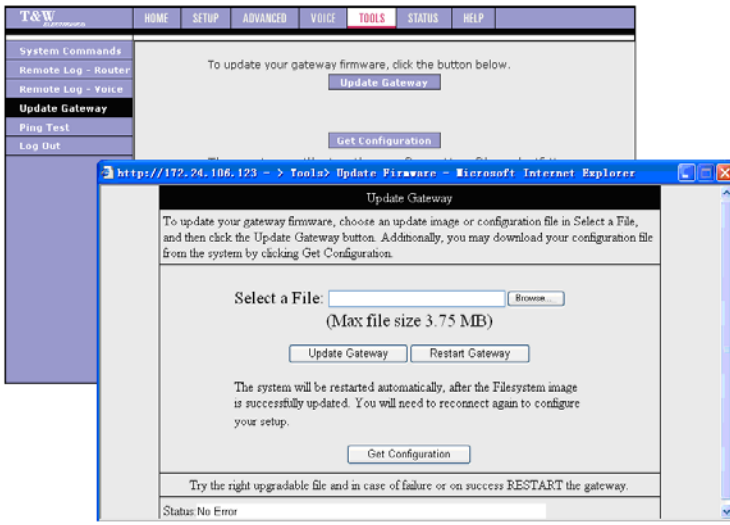
Click **Browse** and the following page appears:



Select the Image file or configuration file for update and click **Update Gateway**. The update process is as shown in the following page:



After the upgrade is complete, the page shown in the following figure appears:



If you update the Image file, the system automatically reboots after the update is complete. If you update the configuration file, you need to manually reboot the system.

4 VoIP – Supplementary Services

Feature codes of the supplementary services are as follows:

Supplementary Service Type		Feature Code
Call transfer with no consultation		#90
Call transfer with third-party consultation		#91
Three-way conferencing		-
Call return		*69
Redial when busy		#5
Cancel call waiting		*70
Call forwarding	Unconditional	*72
	When busy	*74
	No reply	*75
	Cancellation	*73
Do not disturb		*78
Anonymous call block	Enable	*77
	Cancel	*87
Anonymous outgoing call		*67

4.1 Call Holding

- Description:
  Hold the two parties of a conversation. It is part of call waiting, call transfer, and three-way conferencing services.
- Operation:
  In the conversation, press the cradle or the flash key.

4.2 Call Transfer with No Consultation

- Description:
  A and B are in a conversation. A presses the Flash key to hold the conversation with B, and dials a feature code to call C. After A gets through C, B and C start a conversation, and A quits.
- Operation:

(1) In the **Voice Parameters** page, enable **CALL_TRANSFER**.
(2) In the conversation, press the cradle to hold B.
(3) Press <**#90**>+<**transferred number**> to transfer the call.

4.3 Call Transfer with Third-Party Consultation

- Description:
  A and B are in a conversation. A presses the Flash key to hold the conversation with B, and dials a feature code to call C. After A gets through C, A hangs up the phone to quit. B and C start a conversation.
- Operation:
  (1) In the **Voice Parameters** page, enable **CALL_TRANSFER**.
  (2) In the conversation, press the cradle to hold B.
  (3) Press <**#91**>+<**transferred number**> to transfer the call.

4.4 Three-Way Conferencing

- Description:
  A and B are in a conversation. A calls C, to let A, B and C be in a conversation.
- Operation:
  (1) In the **Voice Parameters** page, enable **CONFERENCING**.
  (2) In the conversation, press the cradle and press <**third-party number**> to call the third-party.
  (3) Press the cradle to start the three-way conference.

4.5 Call Return

- Description:
  Call the number of the last incoming call, no matter whether the call is received.
- Operation:
  (1) In the **Voice Parameters** page, enable **CALL_RETURN**.
  (2) Press <***69**>.

4.6 Redial when Busy

- Description:
  A calls B, B is busy, A hangs up, and waits for some time, and automatically calls B.
- Operation:
  (1) In the **Voice Parameters** page, enable **REPEAT_DIAL**.
  (2) Perform an outgoing call and the other party is busy. Press <**#5**> and hang up.

4.7 Call Waiting

- Description:
  This function enables you to receive an incoming call from the third party in a conversation.
- Operation:
  (1) In the **Voice Parameters** page, enable **CALL_WAITING** and **CW_DEFAULT**.
  (2) If you do not want to use call waiting, press <***70**>. The service is cancelled in this conversation. If you do not press <***70**>, you hear a beep tone when a third-party calls. At this time, you can press the cradle to switch the party in the conversation.

4.8 Call Forwarding

4.8.1 Unconditional Call Forwarding

- Description:
  This function forwards all incoming calls to a preset number.
- Operation:
  (1) In the **Voice Parameters** page, enable **CALL_FORWARD**.
  (2) Pick up the phone and press <***72**>+<**forwarding number**>, to activate unconditional call forwarding. All incoming calls are forwarded to the set forwarding number.

4.8.2 Call Forwarding when Busy

- Description:
  This function forwards incoming calls to a preset number when the local party is busy.
- Operation:
  (1) In the **Voice Parameters** page, enable **Call forwarding**.
  (2) Pick up the phone and press <***74**>+<**forwarding number**>, to activate call forwarding when busy. When the local party is busy, incoming calls are forwarded to the set forwarding number.

4.8.3 Call Forwarding No Reply

- Description:
  This function forwards incoming calls to a preset number when the local party does not reply.
- Operation:
  (1) In the **Voice Parameters** page, enable **CALL_FORWARD**.
  (2) Pick up the phone and press <***75**>+<**forwarding number**>, to activate call forwarding no reply. When the local party does not reply an incoming call, the incoming call is forwarded to the set forwarding number.

4.8.4 Call Forwarding Cancellation

- Description:
  This function cancels the call forwarding function.
- Operation:
  Pick up the phone and press <***73**> to cancel call forwarding.

4.8.5 Do Not Disturb

- Description:
  This function prevents the local party from receiving incoming calls.
- Operation:

(1) In the **Voice Parameters** page, enable **DO_NOT_DISTURB**.
(2) Pick up the phone and press <***78**>, to activate the do not disturb function.
(3) Pick up the phone and hang up, to deactivate the do not disturb function.

4.9 Anonymous Call Block

- Description:
  This function blocks anonymous incoming calls.
- Operation:
  (1) In the **Voice Parameters** page, enable **ANON_CALL_BLOCK** and **ACBLOCK_DEFAULT**.
  (2) Pick up the phone and press <***77**>, to activate the anonymous call block function.
  (3) Pick up the phone and press <***87**>, to deactivate the anonymous call block function.

4.10 Anonymous Outgoing Call

- Description:
  This function enables anonymous outgoing call, which is applicable to some special cases.
- Operation:
  (1) In the **Voice Parameters** page, enable **CALLER_ID** and **CID_DEFAULT**.
  (2) Pick up the phone and press <**call number**>. The outgoing call is with the number of the caller.
  (3) Pick up the phone and press <***67**>+<**call number**>. The outgoing call is anonymous.

Appendix A Acronyms and Abbreviations

CATV	Community Antenna Television
EPON	Ethernet Passive Optical Network
DBA	Dynamic Bandwidth Allocation
FEC	Forward Error Correction
FTTB	Fiber to The Building
FTTH	Fiber To The Home
IGMP	Internet Group Management Protocol
OLT	Optical Line Terminal
ONU	Optical Network Unit
PON	Passive Optical Network
QoS	Quality of Service
SLIC	Subscriber Line Interface Controller
UNI	User Network Interfaces
VLAN	Virtual LAN
VoIP	Voice over Internet Protocol
DHCP	Dynamic Host Configuration Protocol
DNS	Domain Name Server
DoS	denial-of-service
EPON	Ethernet Passive Optical Network
FTTB	Fiber To The Building
FTTH	Fiber To The Home
ISP	Internet Service Provider
MAC	Media Access Control
ONU	Optic Network Unit
VCI	Virtual Channel Identifier
VPI	Virtual Path Identifier