Grandstream Networks, Inc.

HT818

Analog Telephone Adaptor

User Guide

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CAUTION

Changes or modifications to this product not expressly approved by Grandstream, or operation of this product in any way other than as detailed by this User Manual, could void your manufacturer warranty.

WARNING

Please do not use a different power adaptor with your devices as it may cause damage to the products and void the manufacturer warranty.

GNU GPL INFORMATION

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Grandstream GNU GPL related source code can be downloaded from Grandstream web site from: https://www.grandstream.com/support/faq/gnu-general-public-license/gnu-gpl-information-download

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DOCUMENT PURPOSE

This document describes the basic concept and tasks necessary to use and configure your HT818. It also covers the topic of connecting and configuring the HT818, making basic operations and the call features. Please visit https://www.grandstream.com/support to download the latest “HT818 Administration Guide” to have more visibility about the configurable settings of your Handy Tone.

This guide covers following topics:

- Product overview
- Getting started
- Configuration guide
- Call features
- Call operations
- Upgrade and provisioning
- Restore factory default settings

CHANGE LOG

This section documents significant changes from previous versions of admin guide for HT818. Only major new features or major document updates are listed here. Minor updates for corrections or editing are not documented here.

Firmware Version 1.0.35.4

- No major changes.

Firmware Version 1.0.33.4

- No major changes.

Firmware Version 1.0.31.1

- No major changes.

Firmware Version 1.0.29.8

- No major changes.

Firmware Version 1.0.27.2

- No Major Changes.

Firmware Version 1.0.25.5

- No Major Changes.

Firmware Version 1.0.23.5

- No Major Changes.

Firmware Version 1.0.21.4

- Added support for “Play Busy Tone When Account is unregistered”. [Placing a Phone Call]

Firmware Version 1.0.19.11

- No major changes.

Firmware Version 1.0.17.5

- No major changes.

Firmware Version 1.0.15.4

- Added support for GDMS.

Firmware Version 1.0.13.7

- Added the support to verify if configured Gateway is on the same subnet as the configured IP address.

Firmware Version 1.0.11.7

- No major changes

Firmware Version 1.0.10.6

- Added Web menu in Spanish.
- Added support to display WAN/LAN port cable status on the Web UI.

Firmware Version 1.0.9.3

- Added support for G722 (wide-band) codec. [HT818 Technical Specifications]
- Added support for FTP/FTPS for provision and firmware upgrade.[UPGRADING AND PROVISIONING]

Firmware Version 1.0.8.7

- No major changes

Firmware Version 1.0.5.18

- No major changes

Firmware Version 1.0.0.5

- This is the initial version for HT818.

WELCOME

The HT818 analog telephone adapter provide transparent connectivity for analog phones and faxes to the world of internet voice. Connecting to any analog phone, fax, or PBX, the HT818 is an effective and flexible solution for accessing internet-based telephone services and corporate intranet systems across established LAN and internet connections. This Grandstream Handy Tones are a new addition to the popular Handy Tone ATA product family. This manual will help you to learn how to operate and manage your HT818 analog telephone adaptor and make the best use of their many upgraded features including simple and quick installation, 3- way conferencing, direct IP-IP Calling, and new provisioning support among other features. The HT818 is very easy to manage and configure, and it is specifically designed to be an easy to use and affordable VoIP solution for both the residential user and the teleworker.

PRODUCT OVERVIEW

The HT818 is an 8 ports analog telephone adapter (ATA) that allow users to create a high-quality and manageable IP telephony solution for residential and office environments. Their ultra-compact size, voice quality, advanced VoIP functionality, security protection and auto provisioning options enable users to take advantage of VoIP on analog phones and enables service providers to offer high quality IP service. The HT818 is an ideal ATA for individual use and for large scale commercial IP voice deployments since it permits small and medium businesses to create integrated IP and PSTN telephony systems that efficiently manage communication costs. HT818's inclusion of an integrated NAT router and dual 10/100/1000Mbps Ethernet WAN and LAN ports enables a shared broadband connection between multiple Ethernet devices as well as the extension of VoIP services to analog phones.

Feature Highlights

The following table contains the major features of the HT818:

Table 1: HT818 Features at a Glance

HT818 	• Support dual 10/100/1000Mbps Ethernet port, 2 SIP profiles through 8 FXS ports • Support 3-way voice conferencing. • Support wide range of caller ID formats. • Support advanced telephony features, including call transfer, call forward, call-waiting, do not disturb, message waiting indication, multi-language prompts, flexible dial plan and more. • Support T.38 Fax for creating Fax-over-IP. • TLS and SRTP security encryption technology to protect calls and accounts. • Automated provisioning options include TR-069 and XML Config files. • Failover SIP server automatically switches to secondary server if main server loses connection. • Use with Grandstream's UCM series of IP PBXs for Zero Configuration provisioning. • Strong AES encryption with security certificate per unit • GR-909 Line Testing Functionalities. • Exceptional voice quality with wide-band HD codec

HT818 Technical Specifications

The following table resumes all the technical specifications including the protocols/standards supported, voice codecs, telephony features, languages, and upgrade/provisioning settings for the HT818.

Table 2: HT818 Technical Specifications

Interfaces	
Telephone Interfaces	Eight (8) RJ11 FXS ports
Network Interface	Two (2) 10/100/1000 Mbps Ethernet port (RJ45).
LED Indicators	POWER, LAN, WAN, PHONE1, PHONE2, PHONE3, PHONE4, PHONE 5, PHONE 6, PHONE 7 and PHONE 8.
Factory Reset Button	Yes.
Voice, Fax, Modem	
Telephony Features	Caller ID display or block, call waiting, flash, blind or attended transfer, forward, hold, do not disturb, 3-way conference.
Voice Codecs	G.711 with Annex I (PLC) and Annex II (VAD/CNG), G.723.1, G.729A/B, G.726, G722, iLBC, OPUS, dynamic jitter buffer, advanced line echo cancellation.
Fax over IP	T.38 compliant Group 3 Fax Relay up to 14.4kpbs and auto-switch to G.711 for Fax Pass-through.
Short/Long Haul Ring Load	2 REN, up to 1km on 24AWG line
Caller ID	Bellcore Type 1 & 2, ETSI, BT, NTT, and DTMF-based CID.
Disconnect Methods	Busy Tone, Polarity Reversal/Wink, Loop Current.
Signaling	
Network Protocols	TCP/IP/UDP, RTP/RTCP, HTTP/HTTPS, ARP/RARP, ICMP, DNS, DHCP, NTP, TFTP, SSH, STUN, SIP (RFC3261), SIP over TCP/TLS, SRTP, TR-069.
QoS	Layer 2 (802.1Q VLAN, SIP/RTP 802.1p) and Layer 3 (ToS, DiffServ, MPLS).

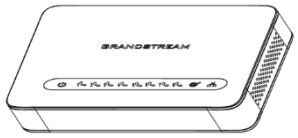
DTMF Methods	In-audio, RFC2833 and/or SIP INFO.
Provisioning and Control	HTTP, HTTPS, SSH, TFTP, TR-069, secure and automated provisioning using TR069, syslog.
Security	
Media	SRTP.
Control	TLS/SIPS/HTTPS.
Management	Syslog support, SSH, remote management using web browser.
Physical	
Universal Power Supply	Input: 100-240VAC, 50-60Hz Output: 12V/1.5A.
Environmental	Operational: 32º – 104ºF or 0º – 40ºC. Storage: 14º – 140ºF or -10º – 60ºC. Humidity: 10 – 90% Non-condensing.
Dimensions and Weight	Dimension : 36 x 120 x 180 mm (H x W x D) Weight: 356g
Compliance	
Compliance	FCC/CE/RCM.

GETTING STARTED

This chapter provides basic installation instructions including the list of the packaging contents and also information for obtaining the best performance with the HT818.

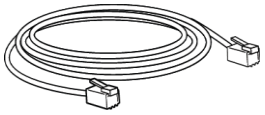
Equipment Packaging

The HT818 ATA package contains

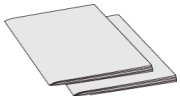


1x HT818

1x 12V Power Adapter



1x Ethernet Cable



1x Quick Installation Guide

1x GPL Statement

Figure 1: HT818 Package Contents

Note: Check the package before installation. If you find anything missing, contact your system administrator.

HT818 Ports Description

The following figure describes the different ports on the back panel of the HT818.

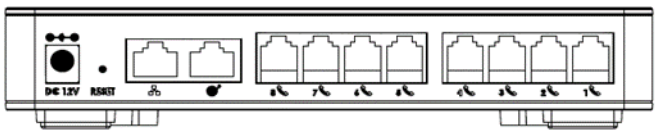


Figure 2: HT818 Back Panel

Table 3: Definition of the HT818 Connectors

Phone 1- 8 (HT818)	Connects the analog phones / fax machines to the phone adapter using an RJ-11 telephone cable.
WAN	Connects the phone adapter to your router, switch or modem using an Ethernet RJ45 network cable.
LAN	Connects the phone adapter to your PC or switch using an Ethernet RJ45 network cable.
DC Power	Connects the phone adapter to PSU (12V – 1.5A).
Reset	Factory reset button. Press for 7 seconds to reset factory default settings.

Connecting HT818

The HT818 is designed for easy configuration and easy installation, to connect your HT818, please follow the steps below:

Scenario 1: Connecting the HT818 using WAN Port

When connecting HT818 using the WAN port, it will act as simple DHCP Client.

1. Insert a standard RJ11 telephone cable into the phone ports and connect the other end of the telephone cable to a standard touch-tone analog telephone.
2. Connect the WAN port of the HT818 to a router, switch or modem using an Ethernet cable.
3. Insert the power adapter into the HT818 and connect it to a wall outlet and make sure to respect the technical specifications of the power adapter used.
4. Power, WAN and Phone LEDs will be solidly lit when the HT818 is ready for use.

Scenario 2: Connecting the HT818 using LAN Port

When connecting the HT818 using the LAN port, it will act as a router and DHCP serving addresses, the devices connected with HT818 LAN will pull DHCP addresses from your HT818.

1. Insert a standard RJ11 telephone cable into the phone ports and connect the other end of the telephone cable to a standard touch-tone analog telephone.
2. Connect a computer or switch to the LAN port of the HT818 using an Ethernet Cable.
3. Insert the power adapter into the HT818 and connect it to a wall outlet and make sure to respect the technical specifications of the power adapter used.
4. Power, LAN, and Phone LEDs will be solidly lit when the HT818 is ready for use.

Note: Please make sure to enable NAT Router under Web GUI → Basic Settings →Device Mode.

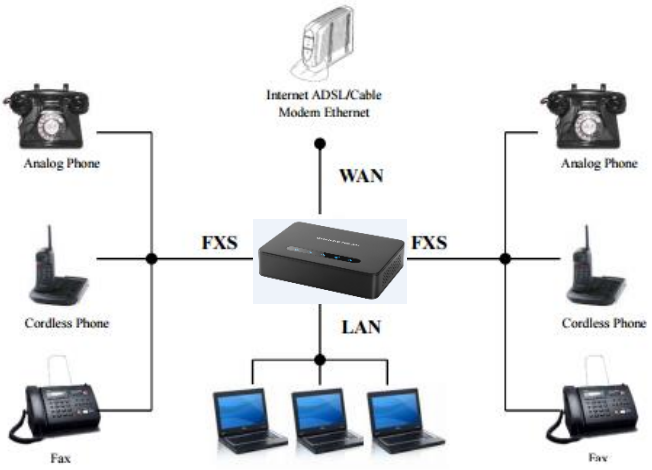


Figure 3: Connecting the HT818

HT818 LEDs Pattern

There are four (4) LED types that help you manage the status of your HT818.

Figure 4: HT818 LEDs Pattern

Table 4: HT818 LEDs Pattern Description

LED Lights	Status
Power LED	The Power LED lights up when The HT818 is powered on and it flashes when the HT818 is booting up
WAN LED	The WAN LED lights up when The HT818 is connected to your network through the WAN port.
LAN LED	The LAN LED lights up when The HT818 is connected to your network through the LAN port.

Phone LED 1- 8	The phone LEDs indicate status of the respective FXS port-phone on the back panel • **OFF** - Unregistered • **ON (Solid Blue)** - Registered and Available • **Blinking every 500 ms** - Off-Hook / Busy • **Slow blinking** - FXS LEDs indicates voicemail

CONFIGURATION GUIDE

The HT818 can be configured via one of two ways:

- The IVR voice prompt menu.
- The Web GUI embedded on the HT818 using PC's web browser.

Obtain HT818 IP Address via Connected Analogue Phone

HT818 are by default configured to obtain the IP address from DHCP server where the unit is located. In order to know which IP address is assigned to your HT818, you should access to the "Interactive Voice Response Menu" of your adapter via the connected phone and check its IP address mode.

Please refer to the steps below to access the interactive voice response menu:

1. Use a telephone connected to phone ports (FXS) of your HT818.
2. Press *** (press the star key three times) to access the IVR menu and wait until you hear "Enter the menu option ".
3. Press 02 and the current IP address will be announced.

Understanding HT818 Interactive Voice Prompt Response Menu

The HT818 has a built-in voice prompt menu for simple device configuration which lists actions, commands, menu choices, and descriptions. The IVR menu works with any phone connected to the HT818. Pick up the handset and dial "***" to use the IVR menu.

Table 5: Voice Prompt Menu

Menu	Voice Prompt	Options
Main Menu	"Enter a Menu Option"	Press "*****" for the next menu option Press "**#**" to return to the main menu Enter 01-05, 07,10, 12-17,47 or 99 menu options
01	"DHCP Mode", "Static IP Mode" "PPPoE Mode"	Press "**9**" to toggle the selection If using "Static IP Mode", configure the IP address information using menus 02 to 05. If using "Dynamic IP Mode", all IP address information comes from the DHCP server automatically after reboot. If using "PPPoE Mode", configure PPPoE Username and Password from web GUI to get IP from your ISP.

02	"IP Address " + IP address	The current WAN IP address is announced If using "Static IP Mode", enter 12-digit new IP address. **You need to reboot your HT818 for the new IP address to take Effect.**
03	"Subnet " + IP address	Same as menu 02
04	"Gateway " + IP address	Same as menu 02
05	"DNS Server " + IP address	Same as menu 02
07	Preferred Vocoder	Press "**9**" to move to the next selection in the list: • PCM U / PCM A • iLBC • G-726 • G-723 • G-729 • OPUS • G722
10	"MAC Address"	Announces the MAC address of the unit. **Note**: The device has two MAC addresses. One for the WAN port and one for the LAN port. The device MAC address announced is the address of LAN port.
12	WAN Port Web Access	Press "**9**" to toggle between **enable** / **disable**. Default is disabled.
13	Firmware Server IP Address	Announces current Firmware Server IP address. Enter 12-digit new IP address.
14	Configuration Server IP Address	Announces current Config Server Path IP address. Enter 12-digit new IP address.
15	Upgrade Protocol	Upgrade protocol for firmware and configuration update. Press "**9**" to toggle between **TFTP / HTTP / HTTPS / FTP / FTPS**
16	Firmware Version	Announces Firmware version information.
17	Firmware Upgrade	Firmware upgrade mode. Press "**9**" to toggle among the following three options: • Always check • Check when pre/suffix changes • Never upgrade

47	"Direct IP Calling"	Enter the target IP address to make a direct IP call, after dial tone.
86	Voice Mail	Access to your voice mails messages.
99	"RESET"	Press "**9**" to reboot the device Enter MAC address to restore factory default setting (See **Restore Factory Default Setting** section)
701-708	Phone calls between different ports of the same HT818	HT818 supports inter-port calling from voice menu. 70X (X is the port number)
	"Invalid Entry"	Automatically returns to main menu
	"Device not registered"	This prompt will be played immediately after off hook If the device is not registered, and the option "Outgoing Call without Registration" is in NO

Five success tips when using the voice prompt

- "*" shifts down to the next menu option and "**#**" returns to the main menu
- "9" functions as the ENTER key in many cases to confirm or toggle an option.
- All entered digit sequences have known lengths - 2 digits for menu option and 12 digits for IP address. For IP address, add 0 before the digits if the digits are less than 3 (i.e. - 192.168.0.26 should be key in like 192168000026. No decimal is needed).
- Key entry cannot be deleted but the phone may prompt error once it is detected.

Note: Please make sure to reboot the device after changing network settings (IP Address, Gateway, Subnet…) to apply the new configuration.

Configuration via Web Browser

The HT818 embedded Web server responds to HTTP GET/POST requests. Embedded HTML pages allow a user to configure the HT818 through a web browser such as Google Chrome, Mozilla Firefox, and Microsoft's IE.

- **Microsoft Internet Explorer:** version 10 or higher.
- **Google Chrome**: version 58.0.3 or higher.
- **Mozilla Firefox**: version 53.0.2 or higher.
- **Safari**: version 5.1.4 or higher.
- **Opera**: version 44.0.2 or higher.

Accessing the Web UI

- **Via WAN port**

For the initial setup, the Web access is by default enabled when the device is using private IP and disabled when using public IP, and you cannot access the Web UI of your HT818 until it's enabled, the following steps will show you how to enable it via IVR.

1. Power your HT818 using PSU with the right specifications.
2. Connect your analog phone to phone ports (FXS) of your HT818.
3. Press *** (press the star key three times) to access the IVR menu and wait until you hear "Enter the menu option ".
4. Press 12, the IVR menu will announce that the web access is disabled, press 9 to enable it.
5. Reboot your HT818 to apply the new settings.

Please refer to steps below if your HT818 is connected via WAN port:

1. You may check your HT818 IP address using the IVR on the connected phone.

   Please see Obtain the HT818 IP address via the connected analogue phone
2. Open the web browser on your computer.
3. Enter the HT818's IP address in the address bar of the browser.
4. Enter the administrator's password to access the Web Configuration Menu.

Note: The computer must be connected to the same sub-network as the HT818. This can be easily done by connecting the computer to the same hub or switch as the HT818.

- **Via LAN port**

Please refer to steps below if your HT818 is connected via LAN port:

1. Power your HT818 using PSU with the right specifications.
2. Connect your computer or switch directly to your HT818 LAN port.
3. Open the web browser on your computer.
4. Enter the default LAN IP address (192.168.2.1) in the address bar of the browser.
5. Enter the administrator's password to access the Web Configuration Menu.
6. Make sure to reboot your device after changing your settings to apply the new configuration.

Note: Please make sure that your computer has a valid IP address on the range 192.168.2.x so you can access the web GUI of your HT818.

Web UI Access Level Management

There are three default passwords for the login page:

User Level	Username	Password	Web Pages Allowed
End User Level	User	123	Only Status and Basic Settings
Administrator Level	Admin	admin	All pages

Viewer Level	Viewer	viewer	View all pages. No changes allowed.

The password is case sensitive with maximum length of 25 characters. When changing any settings, always submit them by pressing **Update** or **Apply** button on the bottom of the page. After submitting the changes in all the Web GUI pages, if a reboot is required, the web page will prompt the user to reboot by offering a reboot button on the web page.

Saving the Configuration Changes

After users make changes to the configuration, pressing **Update** button will save but not apply the changes until **Apply** button is clicked. Users can instead directly press **Apply** button. When a reboot is required to apply changes, the web page will prompt the user to reboot by offering a reboot button on the web page.

Changing Admin Level Password

1. Access your HT818 web UI by entering its IP address in your favorite browser.
2. Enter your admin password (default: admin).
3. Press **Login** to access your settings.
4. Go to **Advanced Settings → New Admin Password** and enter the new admin password.
5. Confirm the new admin password.
6. Press **Apply** at the bottom of the page to save your new settings.

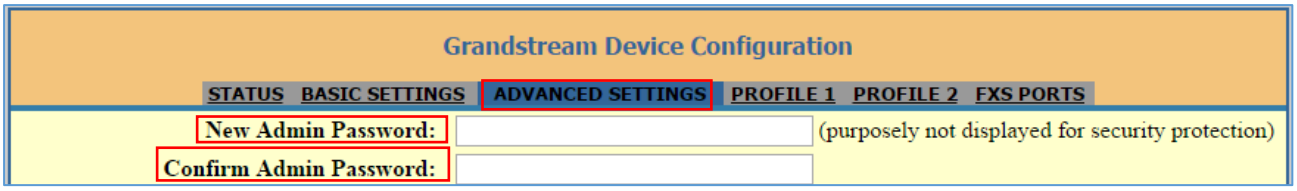


Figure 5: Admin Level Password

Changing User Level Password

1. Access your HT818 web UI by entering its IP address in your favorite browser.
2. Enter your admin password (default: admin).
3. Press **Login** to access your settings.
4. Go to **Basic Settings → New End User Password** and **e**nter the new end-user password.
5. Confirm the new end-user password.
6. Press **Apply** at the bottom of the page to save your new settings.

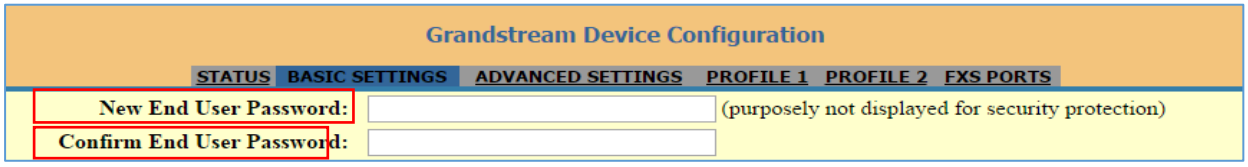


Figure 6: User Level Password

Changing Viewer Password

1. Access your HT818 web UI by entering its IP address in your favorite browser.
2. Enter your admin password (default: admin).
3. Press **Login** to access your settings.
4. Go to **Basic Settings → New Viewer Password** and **e**nter the new viewer password.
5. Confirm the new viewer password.
6. Press **Apply** at the bottom of the page to save your new settings.

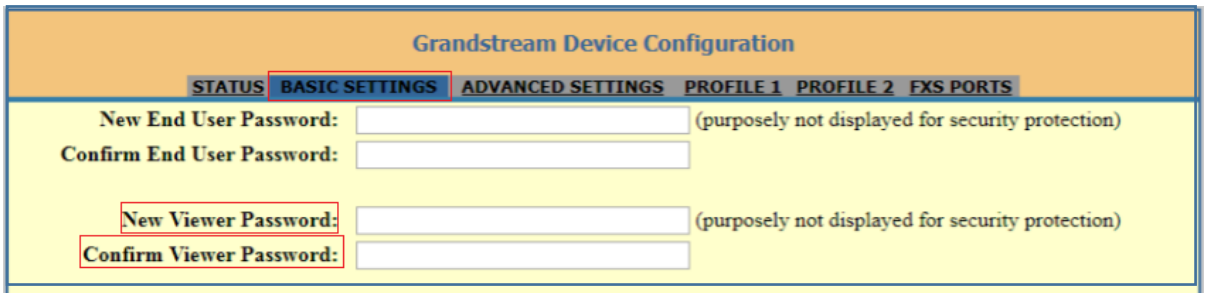


Figure 7: Viewer Level Password

Changing HTTP Web Port

1. Access your HT818 web UI by entering its IP address in your favorite browser.
2. Enter your admin password (default: admin).
3. Press **Login** to access your settings.
4. Go to **Basic Settings → HTTP Web Port.**
5. Make sure that the **Web Access Mode** is set to **HTTP**.
6. Change the current port to your desired/new HTTP port. Ports accepted are in range [1-65535].
7. Press **Apply** at the bottom of the page to save your new settings

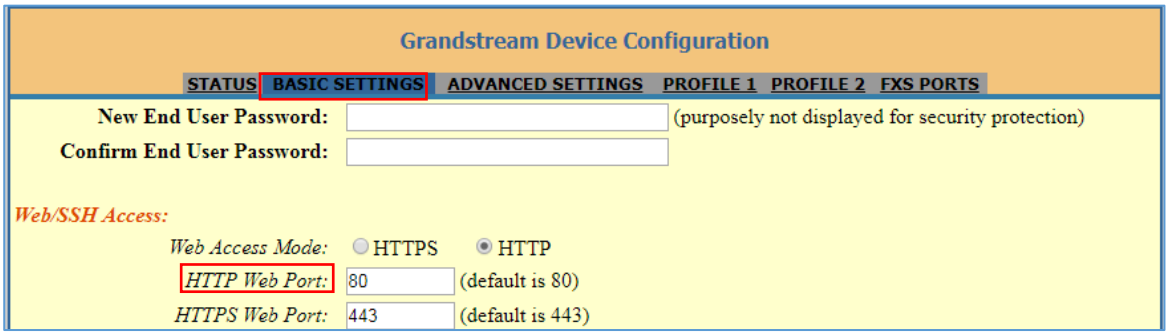


Figure 8: Web HTTP Port

Configuring HT818 through Voice Prompts

As mentioned previously, The HT818 has a built-in voice prompt menu for simple device configuration.

Please refer to "Understanding HT818 Interactive Voice Prompt Response Menu" for more information about IVR and how to access its menu.

- **DHCP MODE**

Select voice menu option 01 to enable HT818 to use DHCP.

- **STATIC IP MODE**

Select voice menu option 01 to enable HT818 to use STATIC IP mode, then use option 02, 03, 04, 05 to set up IP address, Subnet Mask, Gateway, and DNS server respectively.

- **PPPOE MODE**

Select voice menu option 01 to allow the HT818 to enable the PPPoE mode. PPPoE Username and Password should be configured from web GUI.

- **FIRMWARE SERVER IP ADDRESS**

Select voice menu option 13 to configure the IP address of the firmware server.

- **CONFIGURATION SERVER IP ADDRESS**

Select voice menu option 14 to configure the IP address of the configuration server.

- **UPGRADE PROTOCOL**

Select the menu option 15 to choose firmware and configuration upgrade protocol between TFTP, HTTP, HTTPS, FTP and FTPS.

- **FIRMWARE UPGRADE MODE**

Select voice menu option 17 to choose firmware upgrade mode among the following three options: 1) Always check, 2) check when pre/suffix changes, and 3) never upgrade.

- **WAN PORT WEB ACCESS**

Select voice menu option 12 to enable/disable web access from WAN port. Press 9 in this menu to toggle between enable / disable. Default is disabled.

Register a SIP Account

The HT818 support 2 profiles which can be configured with 2 SIP accounts. Please refer to the following steps to register your accounts via web user interface

1. Access your HT818 web UI by entering its IP address in your favorite browser.
2. Enter your admin password (default: admin).
3. Press **Login** to access your settings.
4. Go to **Profile (1** or **2)** pages.
5. In **Profile** tab, set the following:
    a. **Account Active** to **Yes.**
    b. **Primary SIP Server** field with your SIP server IP address or FQDN.
    c. **Failover SIP Server** with your Failover SIP Server IP address or FQDN. Leave empty if not available.
    d. **Prefer Primary SIP Server** to **No** or **Yes** depending on your configuration. Set to **No** if no Failover SIP Server is defined. If "**Yes"**, account will register to Primary SIP Server when failover registration expires.
    e. **Outbound Proxy:** Set your Outbound Proxy IP Address or FQDN. Leave empty if not available.
6. After configuring the SIP server and activating the profiles, you should access to **FXS Ports** page to register your accounts. In **FXS Ports** tab, set the following:
    a. **SIP User ID**: User account information, provided by VoIP service provider (ITSP). Usually in the form of digit similar to phone number or actually a phone number.
    b. **Authenticate ID**: SIP service subscriber's Authenticate ID used for authentication. Can be identical to or different from SIP User ID.
    c. **Authenticate Password**: SIP service subscriber's account password to register to SIP server of ITSP. For security reasons, the password will field will be shown as empty.
    d. **Name**: Any name to identify this specific user.
    e. Set **Enable Port** to **Yes.**
7. Press **Apply** at the bottom of the page to save your configuration.

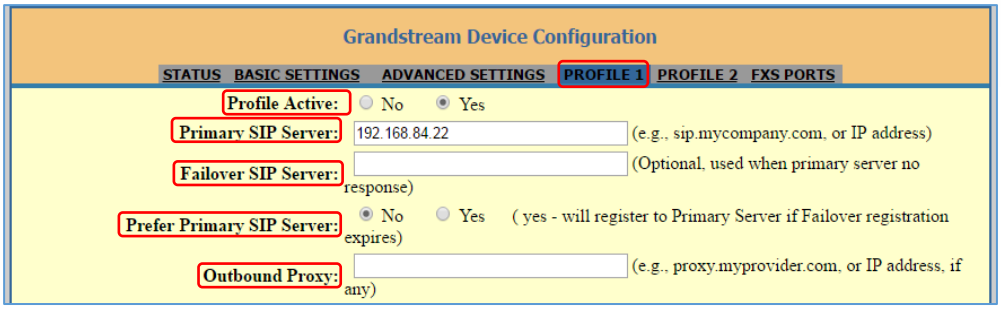


Figure 9: SIP Profiles Settings

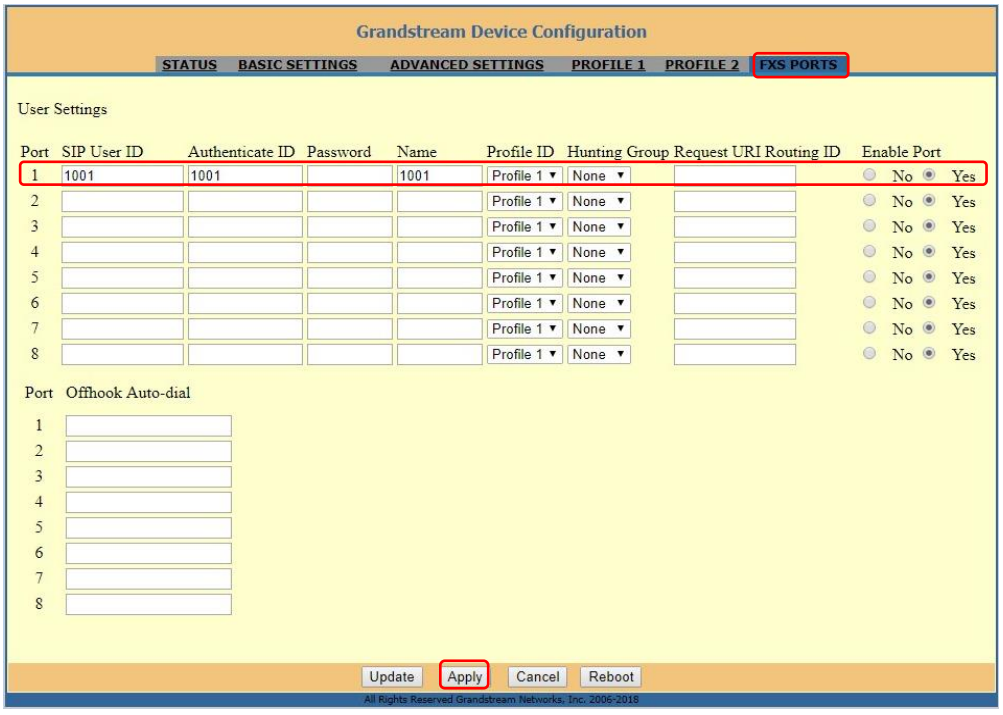
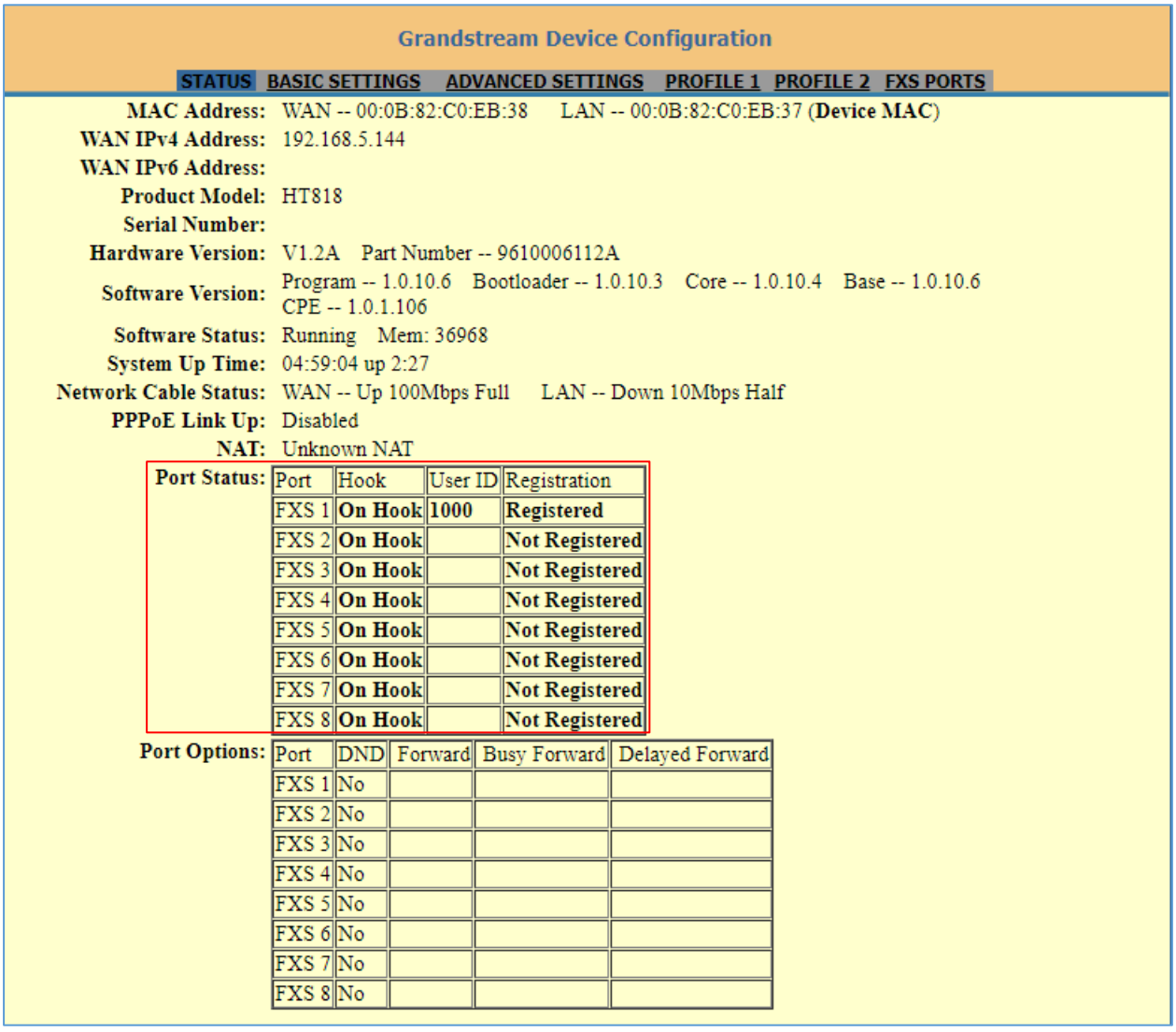


Figure 10: SIP Accounts settings

After applying your configuration, your account will register to your SIP Server, you can verify if it has been correctly registered with your SIP server from your HT818 web interface under **Status → Port Status → Registration** (If it displays **Registered**, it means that your account is fully registered, otherwise it will display **Not Registered** so in this case you must double check the settings or contact your provider).



Grandstream Device Configuration

STATUS | BASIC SETTINGS | ADVANCED SETTINGS | PROFILE 1 | PROFILE 2 | FXS PORTS

MAC Address: WAN -- 00:0B:82:C0:EB:38 LAN -- 00:0B:82:C0:EB:37 (**Device MAC**)
WAN IPv4 Address: 192.168.5.144
WAN IPv6 Address:
Product Model: HT818
Serial Number:
Hardware Version: V1.2A Part Number -- 9610006112A
Software Version: Program -- 1.0.10.6 Bootloader -- 1.0.10.3 Core -- 1.0.10.4 Base -- 1.0.10.6
CPE -- 1.0.1.106
Software Status: Running Mem: 36968
System Up Time: 04:59:04 up 2:27
Network Cable Status: WAN -- Up 100Mbps Full LAN -- Down 10Mbps Half
PPPoE Link Up: Disabled
NAT: Unknown NAT

Port Status:

Port	Hook	User ID	Registration
FXS 1	**On Hook**	**1000**	**Registered**
FXS 2	**On Hook**		**Not Registered**
FXS 3	**On Hook**		**Not Registered**
FXS 4	**On Hook**		**Not Registered**
FXS 5	**On Hook**		**Not Registered**
FXS 6	**On Hook**		**Not Registered**
FXS 7	**On Hook**		**Not Registered**
FXS 8	**On Hook**		**Not Registered**

Port Options:

Port	DND	Forward	Busy Forward	Delayed Forward
FXS 1	No			
FXS 2	No			
FXS 3	No			
FXS 4	No			
FXS 5	No			
FXS 6	No			
FXS 7	No			
FXS 8	No			

Figure 11: Accounts Status

Note: When all the FXS ports are registered, the simultaneous ring will have one second delay between each ring on each phone.

Rebooting HT818 from Remote

Press the “Reboot” button at the bottom of the configuration menu to reboot the ATA remotely. The web browser will then display a message window to confirm that reboot is underway. Wait 30 seconds to log in again

CALL FEATURES

The HT818 support all the traditional and advanced telephony features.

Table 6: HT818 Call Features

Key	Call features
***02**	**Forcing a Codec** (per call) *027110 (PCMU), *027111 (PCMA), *02723 (G723), *02729 (G729), *027201 (iLBC). *02722 (G722)
***03**	**Disable LEC** (per call) Dial "*03" +" number". **No** dial tone is played in the middle.
***16**	**Enable SRTP**
***17**	**Disable SRTP**
***30**	**Block Caller ID** (for all subsequent calls)
***31**	**Send Caller ID** (for all subsequent calls)
***47**	**Direct IP Calling**. Dial "*47" + "IP address". **No** dial tone is played in the middle.
***50**	**Disable Call Waiting** (for all subsequent calls)
***51**	**Enable Call Waiting** (for all subsequent calls)
***67**	**Block Caller ID (per call)**. Dial "*67" +" number". **No** dial tone is played in the middle.
***82**	**Send Caller ID (per call)**. Dial "*82" +" number". **No** dial tone is played in the middle.
***69**	**Call Return Service:** Dial *69 and the phone will dial the last incoming phone number received.
***70**	**Disable Call Waiting (per call).** Dial "*70" +" number". **No** dial tone is played in the middle.
***71**	**Enable Call Waiting (per call).** Dial "*71" +" number". **No** dial tone is played in the middle
***72**	**Unconditional Call Forward:** Dial "*72" and then the forwarding number followed by "#". Wait for dial tone and hang up. (dial tone indicates successful forward)
***73**	**Cancel Unconditional Call Forward**. To cancel "Unconditional Call Forward", dial "*73", wait for dial tone, then hang up.
***74**	**Enable Paging Call**: Dial "*74" and then the destination phone number you want to page.
***78**	**Enable Do Not Disturb (DND):** When enabled all incoming calls are rejected.
***79**	**Disable Do Not Disturb (DND):** When disabled, incoming calls are accepted.

***87**	**Blind Transfer**
***90**	**Busy Call Forward:** Dial "*90" and then the forwarding number followed by "#". Wait for dial tone then hang up.
***91**	**Cancel Busy Call Forward**. To cancel "Busy Call Forward", dial "*91", wait for dial tone, then hang up.
***92**	**Delayed Call Forward.** Dial "*92" and then the forwarding number followed by "#". Wait for dial tone then hang up.
***93**	**Cancel Delayed Call Forward.** To cancel Delayed Call Forward, dial "*93", wait for dial tone, then hang up
Flash/ Hook	Toggles between active call and incoming call (call waiting tone). If not in conversation, flash/hook will switch to a new channel for a new call.
#	Pressing pound sign will serve as Re-Dial key.

CALL OPERATIONS

Placing a Phone Call

To make the outgoing calls using your HT818

1. Pick up the handset of the connected phone.
2. Dial the number directly and wait for 4 seconds (Default "No Key Entry Timeout"); or
3. Dial the number directly and press # (Use # as dial key" must be configured in web configuration).

Examples:

1. Dial an extension directly on the same proxy, (e.g., 1008), and then press the # or wait for 4 seconds.
2. Dial an outside number (e.g. (626) 666-7890), first enter the prefix number (usually 1+ or international code) followed by the phone number. Press # or wait for 4 seconds. Check with your VoIP service provider for further details on prefix numbers.

Note:

When placing the analog phone that is connected to the FXS port off hook, the dial tone will be played even if the sip account is not registered. If users prefer the busy tone to be played instead, the following configuration need to be made:

- **"Play Busy Tone When Account is unregistered"** need to be set to **YES** under **advanced settings**.
- **"Outgoing call without registration"** need to be set to **NO** under **Profile x** settings.

Direct IP Calls

Direct IP calling allows two parties, that is, a FXS Port with an analog phone and another VoIP Device, to talk to each other in an ad hoc fashion without a SIP proxy.

Elements necessary to completing a Direct IP Call:

- Both HT818 and other VoIP Device, have public IP addresses, or
- Both HT818 and other VoIP Device are on the same LAN using private IP addresses, or
- Both HT818 and other VoIP Device can be connected through a router using public or private IP addresses (with necessary port forwarding or DMZ).

The HT818 support two ways to make Direct IP Calling:

Using IVR

1. Pick up the analog phone then access the voice menu prompt by dialing "***"
2. Dial "47" to access the direct IP call menu
3. Enter the IP address after the dial tone and voice prompt "Direct IP Calling"

Using Star Code

1. Pick up the analog phone then dial "*47"
2. Enter the target IP address.

Note: No dial tone will be played between step 1 and 2 and destination ports can be specified using "*" (encoding for ":") followed by the port number.

Examples of Direct IP Calls:

a) If the target IP address is 192.168.0.160, the dialing convention **is *47 or Voice Prompt with option 47, then 192*168*0*160**, followed by pressing the "#" key if it is configured as a send key or wait 4 seconds. In this case, the default destination port 5060 is used if no port is specified

b) If the target IP address/port is 192.168.1.20:5062, then the dialing convention would be: ***47 or Voice Prompt with option 47, then 192*168*0*160*5062** followed by pressing the "#" key if it is configured as a send key or wait for 4 seconds.

Note: When completing direct IP call, the "**Use Random SIP/RTP Port**" should set to "NO".

Call Hold

You can place a call on hold by pressing the "flash" button on the analog phone (if the phone has that button).

Press the "flash" button again to release the previously held Caller and resume conversation. If no "flash" button is available, use "hook flash" (toggle on-off hook quickly). You may drop a call using hook flash.

Call Waiting

The call waiting tone (3 short beeps) indicates an incoming call, if the call waiting feature is enabled.

To toggle between incoming call and current call, you need to press the "flash" button the first call is placed on hold.

Press the "flash" button to toggle between the active calls.

Call Transfer

Blind Transfer

Assume that the call is established between phone A and B are in conversation. The phone A wants to *blind transfer* phone B to phone C:

1. On the phone A presses FLASH to hear the dial tone.
2. The phone A dials *87 then dials caller C's number, and then # (or wait for 4 seconds)
3. The phone A will hear the dial tone. Then, A can hang up.

Note: "Enable Call Feature" must be set to "Yes" in web configuration page.

Attended Transfer

Assume that the call is established between phone A and B are in conversation. The phone A wants to *attend transfer* phone B to phone C:

1. On the phone A presses FLASH to hear the dial tone.
2. Phone A dials the phone C's number followed by # (or wait for 4 seconds).
3. If phone C answers the call, phones A and C are in conversation. Then A can hang up to complete transfer.
4. If phone C does not answer the call, phone A can press "flash" to resume call with phone B.

Note: When attended transfer fails and A hangs up, the HT818 will ring back user A to remind A that B is still on the call. A can pick up the phone to resume conversation with B.

3-Way conferencing

The HT818 support Bellcore style 3-way Conference. To perform the 3-way conference, we assume that the call is established between phone A and B are in conversation. Phone A (HT818) wants to bring third phone C into conference:

1. Phone A presses FLASH (on the analog phone, or Hook Flash for old model phones) to get a dial tone.
2. Phone A dials C's number then # (or wait for 4 seconds).
3. If phone C answers the call, then A presses FLASH to bring B, C in the conference.
4. If phone C does not answer the call, phone A can press FLASH back to talk to phone B.
5. If phone A presses FLASH during conference, the phone C will be dropped out.
6. If phone A hangs up, the conference will be terminated for all three parties when configuration "Transfer on Conference Hang up" is set to "No". If the configuration is set to "Yes", A will transfer B to C so that B and C can continue the conversation.

Call Return

In order to call back to the latest incoming number.

1. Pick up the handset of the connected phone (Off-hook).
2. After hearing the dial tone, input "*69".
3. Your phone will automatically call back to the latest incoming number.

Note: All star codes (*XX) related features mentioned above are supported by ATA default settings. If your service provider provides different feature codes, please contact them for instructions.

Inter-Port Calling

In some cases, a user may want to make phone calls between the phones connected to multiple ports of the same HT818 when it is used as a standalone unit, without the use of a SIP server. In such cases, users still will be able to make inter-port calls by using the IVR feature.

On the HT818 inter-port calling is achieved by dialing ***70X (X is the port number). For example, the user connected to port 1 can be reached by dialing *** and 701.

Voice Mail

VM Notification

The HT818 indicates new voice mail messages using Phone LEDs and Stutter Tone.
The Phone LEDs on HT818 will start blinking slowly when a new voice mail message is available on corresponding account.
A stutter tone will be played at first few seconds followed by dial tone when picking up the handset.

Note: New VM messages can be also indicated by LED blink, screen display, etc.… if they are supported on connected analog phones.

Accessing VM

To retrieve the new voice mail messages received, please refer to following steps:

1. Pick up the handset of the connected phone (stutter tone will be played).
2. Press *** (press the star key three times) to access the IVR menu and wait until you hear “Enter the menu option “.
3. Press 86 and enter your configured password (if exist) to access your voice mail menu.

Flash Digit Control

If the option “Flash Digit Control” is enabled on web UI, call operations will require different steps as follows:

- **Call Hold:**
  Assume that the call is established between phone A and B.
  The phone A received a call from C, then it held B to answer C.
  Press the “Flash + 1” to hang up the current call (A – C) and resume call on hold (B).
  Or press “Flash + 2” to hold current call (A – C) and resume call on hold (B).
- **Attended transfer:**

Assume that the call is established between phone A and B. The phone A wants to attend transfer phone B to phone C:

1. On the phone A presses FLASH to hear the dial tone.
2. Phone A dials the phone C's number followed by # (or wait for 4 seconds).
3. If phone C answers the call, phones A and C are in conversation. Then A can press "Flash + 4" to complete transfer.

- **3-Way Conferencing:**
  Assume that the call is established, and phone A and B are in conversation. Phone A(HT801/HT802) wants to bring third phone C into conference:

  1. Phone A presses Flash (on the analog phone, or Hook Flash for old model phones) to get a dial tone.
  2. Phone A dials C's number then # (or wait for 4 seconds).
  3. When phone C answers the call, then A can press "Flash +3" to bring B, C in the conference.

NAT Settings

If you plan to keep the HT818 within a private network behind a firewall, we recommend using STUN Server. The following three settings are useful in the STUN Server scenario:

1. STUN Server (under advanced settings webpage) Enter a STUN server IP (or FQDN) that you may have, or look up a free public STUN Server on the internet and enter it on this field. If using Public IP, keep this field blank.
2. Use Random SIP/RTP Ports (under advanced settings webpage) This setting depends on your network settings. Generally, if you have multiple IP devices under the same network, it should be set to Yes. If using a public IP address, set this parameter to No.
3. NAT traversal (under the FXS web page), set this to Yes when gateway is behind firewall on a private network.

DTMF Methods

The HT818 support the following DTMF mode:

- DTMF in-audio
- DTMF via RTP (RFC2833)
- DTMF via SIP INFO

Set priority of DTMF methods according to your preference. This setting should be based on your server DTMF setting.

Preferred Vocoder (Codec)

The HT818 support following voice codecs. On Profile pages, choose the order of your favorite codecs:

- PCMU/A (or G711μ/a)
- G729 A/B
- G723.1
- G726
- iLBC
- OPUS
- G722

UPGRADING AND PROVISIONING

The HT818 can be upgraded via TFTP/HTTP/HTTPS/FTP/FTPS by configuring the URL/IP Address for the TFTP/HTTP/HTTPS/FTP/FTPS server and selecting a download method. Configure a valid URL for TFTP, HTTP/HTTPS or FTP/FTPS; the server name can be FQDN or IP address.

Examples of valid URLs:

firmware.grandstream.com

fw.ipvideotalk.com/gs

Firmware Upgrade procedure

Please follow below steps in order to upgrade the firmware version of your HT818:

1. Access your HT818 UI by entering its IP address in your favorite browser.
2. Enter your admin password (default: admin).
3. Press **Login** to access your settings.
4. Go to **Advanced Settings → Firmware Upgrade and Provisioning** page and enter the IP address or the FQDN for the upgrade server in "**Firmware Server Path**" field and choose to upgrade via **TFTP, HTTP/HTTPS or FTP/FTPS**.
5. Make sure to check "**Always Check for New Firmware**".
6. Update the change by clicking the "Apply" button at the bottom of the page. Then "**Reboot**" or power cycle the HT818 to update the new firmware.

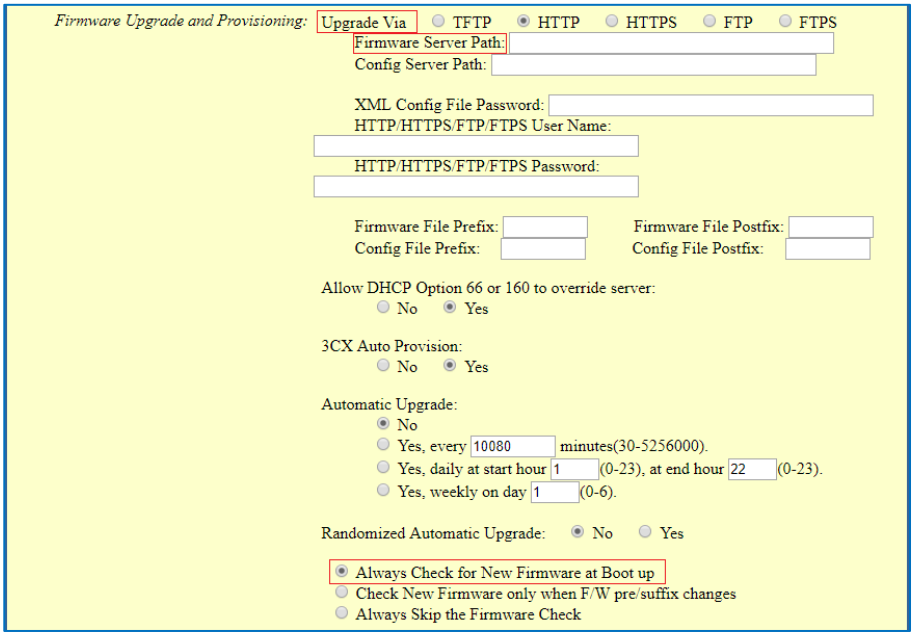


Figure 12: Firmware Upgrade Page

Upgrading via Local Directory

1. Download the firmware file from Grandstream web site
2. Unzip it and copy the file in to a folder in your PC
3. From the HT818 web interface (Advanced Settings page) you can browse your hard drive and select the folder you previously saved the file (HT8xfw.bin)
4. Click “Upload Firmware” and wait few minutes until the new program is loaded.

Note: Always check the status page to see that the program version has changed.

Upgrading via Local TFTP/HTTP Servers

For users that would like to use remote upgrading without a local TFTP/HTTP/FTP server, Grandstream offers a NAT-friendly HTTP server. This enables users to download the latest software upgrades for their devices via this server. Please refer to the webpage:
https://www.grandstream.com/support/firmware

Alternatively, users can download a free TFTP, HTTP or FTP server and conduct a local firmware upgrade. A free window version TFTP server is available for download from:
http://www.solarwinds.com/products/freetools/free_tftp_server.aspx
http://tftpd32.jounin.net/.

Instructions for local firmware upgrade via TFTP:

1. Unzip the firmware files and put all of them in the root directory of the TFTP server.
2. Connect the PC running the TFTP server and the phone to the same LAN segment.
3. Launch the TFTP server and go to the File menu->Configure->Security to change the TFTP server's default setting from "**Receive Only**" to "**Transmit Only**" for the firmware upgrade.
4. Start the TFTP server and configure the TFTP server in the phone’s web configuration interface.
5. Configure the Firmware Server Path to the IP address of the PC.
6. Save and Apply the changes and reboot the HT818.

End users can also choose to download a free HTTP server from http://httpd.apache.org/ or use Microsoft IIS web server.

Also, users can download a free FTP server from https://filezilla-project.org/.

Firmware and Configuration File Prefix and Postfix

Firmware Prefix and Postfix allows device to download the firmware name with the matching Prefix and Postfix. This makes it the possible to store all of the firmware with different version in one single directory. Similarly, Config File Prefix and Postfix allows device to download the configuration file with the matching Prefix and Postfix. Thus, multiple configuration files for the same device can be stored in one directory. In

addition, when the field “Check New Firmware only when F/W pre/suffix changes” is set to “Yes”, the device will only issue firmware upgrade request if there are changes in the firmware Prefix or Postfix.

Managing Firmware and Configuration File Download

When “Automatic Upgrade” is set “**Yes, every**” the auto check will be done in the minute specified in this field. If set to “**daily at hour (0-23)”**, Service Provider can use P193 (Auto Check Interval) to have the devices do a daily check at the hour set in this field with either Firmware Server or Config Server. If set to “**weekly on day (0-6)”** the auto check will be done on the day specified in this field. This allows the device periodically to check if there are any new changes need to be taken on a scheduled time. By defining different intervals in P193 for different devices, Server Provider can spread the Firmware or Configuration File download in minutes to reduce the Firmware or Provisioning Server load at any given time

Configuration File Download

Grandstream SIP Devices can be configured via the Web Interface as well as via a Configuration File (binary or XML) through TFTP, HTTP/HTTPS or FTP/FTPS. The **Config Server Path** is the TFTP, HTTP/HTTPS or FTP/FTPS server path for the configuration file. It needs to be set to a valid URL, either in FQDN or IP address format. The **Config Server Path** can be the same or different from the **Firmware Server Path**.

A configuration parameter is associated with each particular field in the web configuration page. A parameter consists of a Capital letter P and 2 to 3 (Could be extended to 4 in the future) digit numeric numbers. i.e., P2 is associated with the "New Password" in the Web GUI->Maintenance->Web/SSH Access page->Admin Password. For a detailed parameter list, please refer to the corresponding firmware release configuration template.

When the HT818 boots up or reboots, it will send a request to download a file named "cfgxxxxxxxxxxxx” followed by a configuration XML file named "cfgxxxxxxxxxxxx.xml", where "xxxxxxxxxxxx" is the MAC address of the phone, i.e., "cfg000b820102ab" and "cfg000b820102ab.xml". If the download of "cfgxxxxxxxxxxxx.xml" file is not successful, the provision program will download a generic cfg.xml file. The configuration file name should be in lower case letters.

For more details on XML provisioning, please refer to:
https://www.grandstream.com/sites/default/files/Resources/gs_provisioning_guide.pdf

Note:

1. The Only acceptable Config file formats to be used when provisioning are XML or binary.
2. Make sure the MAC header on the Config file is the provisioned device’s MAC address or you can remove the header completely.

RESTORE FACTORY DEFAULT SETTINGS

Warning:

Restoring the Factory Default Settings will delete all configuration information on the phone. Please backup or print all the settings before you restore to the factory default settings. Grandstream is not responsible for restoring lost parameters and cannot connect your device to your VoIP service provider.

There are three (3) methods for resetting your unit:

Using the Reset Button

To reset default factory settings using the reset button please follow the steps above:

1. Unplug the Ethernet cable.
2. Locate the reset hole on the back panel of your HT818.
3. Insert a pin in this hole, and press for about 7 seconds.
4. Take out the pin. All unit settings are restored to factory settings

Using the IVR Command

Reset default factory settings using the IVR prompt:

1. Dial "***" for voice prompt.
2. Enter "99" and wait for "reset" voice prompt.
3. Enter the encoded MAC address (Look below on how to encode MAC address).
4. Wait 15 seconds and device will automatically reboot and restore factory settings.

Encode the MAC Address

1. Locate the MAC address of the device. It is the 12-digit HEX number on the bottom of the unit.
2. Key in the MAC address. Use the following mapping:

Table 7: MAC Address Key Mapping

Key	Mapping
0-9	0-9
A	22 (press the "2" key twice, "A" will show on the LCD)
B	222
C	2222
D	33 (press the "3" key twice, "D" will show on the LCD)

E	333
F	3333

For example: if the MAC address is 000b8200e395, it should be keyed in as “0002228200333395”

Reset from Web Interface (Reset Type)

1. Access your HT818 UI by entering its IP address in your favorite browser.
2. Enter your admin password (default: admin).
3. Press **Login** to access your settings.
4. Go to **Basic Settings → Reset Type**
5. Press **Reset** button (after selecting the reset type).

• **Full Reset:** This will make a full reset
• **ISP Data:** This will reset only the basic settings, like IP mode, PPPoE and Web port
• **VOIP Data Reset:** This will reset only the data related with a service provider like SIP server, sip user ID, provisioning, and others.

Note:

- Factory Reset will be disabled if the “Lock keypad update” is set to “Yes”.
- If the HT818 were previously locked by your local service provider, pressing the RESET button will only restart the unit. The device will not return to factory default settings.

EXPERIENCING HT818

Please visit our website: https://www.grandstream.com to receive the most up- to-date updates on firmware releases, additional features, FAQs, documentation, and news on new products.

We encourage you to browse our product related documentation, FAQs and User and Developer Forum for answers to your general questions. If you have purchased our products through a Grandstream Certified Partner or Reseller, please contact them directly for immediate support.

Our technical support staff is trained and ready to answer all of your questions. Contact a technical support member or submit a trouble ticket online to receive in-depth support.

Thank you again for purchasing Grandstream analogue telephone adapter, it will be sure to bring convenience to both your business and personal life.