

User Manual

HandyTone-386

Analog Telephone Adaptor

For SW Release Version 1.0.2.5



Grandstream Networks, Inc.

www.grandstream.com

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1 Welcome

Congratulations on becoming an owner of HandyTone-386. You made an excellent choice and we hope you enjoy all of its capabilities.

Grandstream's HandyTone-386 is an all-in-one VoIP integrated access device that features superb audio quality, rich functionalities, high level of integration, compactness and ultra-affordability. The HandyTone-386 is fully compatible with SIP industry standard and can interoperate with many other SIP compliant devices and software on the market.

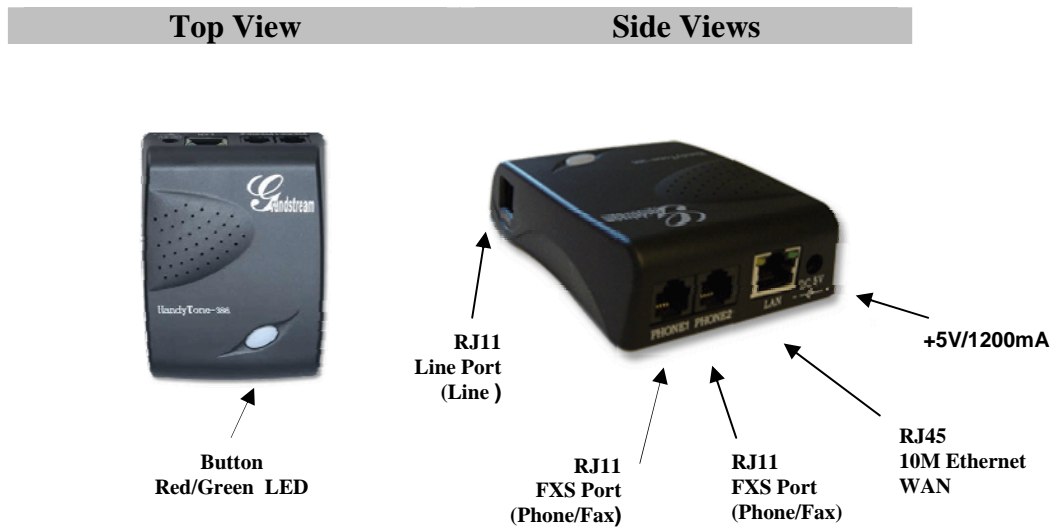
Grandstream HandyTone-386 is a new addition to the popular HandyTone product family. The new HandyTone-386 features two FXS ports each with independent SIP accounts.

2 Installation

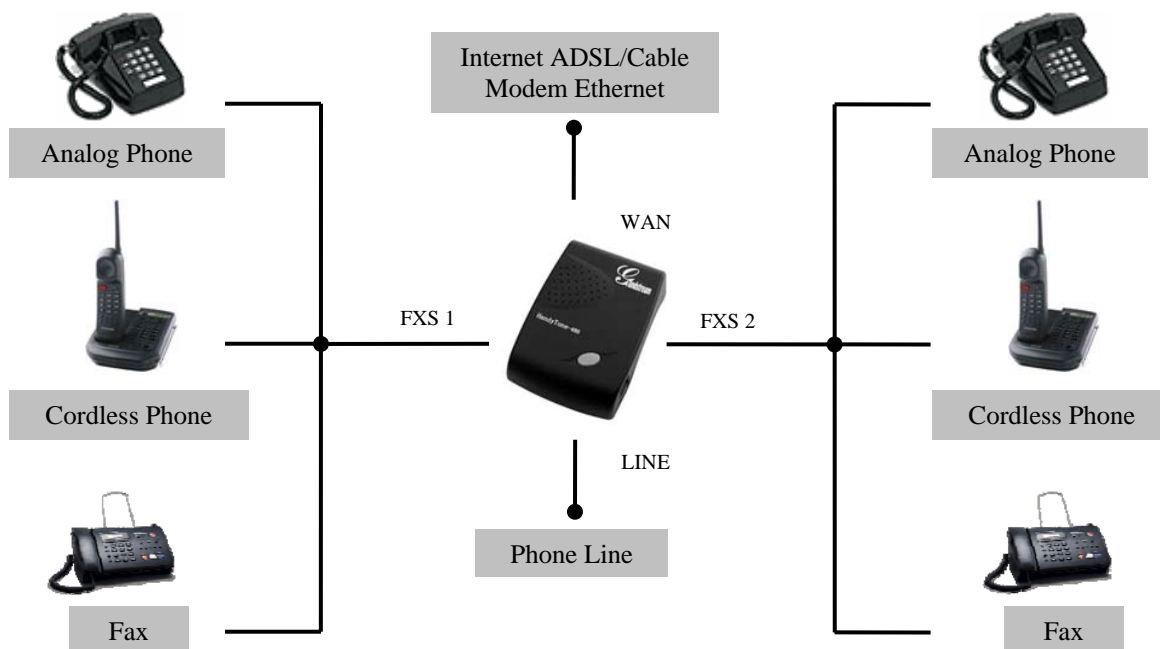
HandyTone-386 Analog Telephone Adaptor is an all-in-one VoIP integrated device designed to be a total solution for networks providing VoIP services.

The HandyTone-386 VoIP functionalities are available via regular analog telephones.

The following photo illustrates the appearance of a HandyTone-386.



Interconnection Diagram of the HandyTone-386:



HandyTone-386 has two FXS ports. The RJ11 jack next to the WAN is called FXS port 2 and the RJ11 jack on the corner is called FXS port 1. The RJ11 jack on the side on of the HandyTone-386 is a LINE port. Each FXS port can have a separate SIP account. This is a key feature of HandyTone-386. Both ports can make calls concurrently.

Following are the steps to install a HandyTone-386:

1. Connect a standard touch-tone analog telephone (or fax machine) to FXS port 1.
2. Connect another standard touch-tone analog telephone (or fax machine) to FXS port 2.
3. Insert a standard telephone cable into the LINE port of HandyTone-386 and connect the other end of the telephone cable to a wall jack.
4. Insert the Ethernet cable into the WAN port of HandyTone-386 and connect the other end of the Ethernet cable to an uplink port (a router or a modem, etc.)
5. Insert the power adapter into the HandyTone-386 and connect it to a wall outlet.

Please follow the instructions in section 6.2.1 to configure the HandyTone-386.

3 What is Included in the Package

The HandyTone-386 package contains:

- 1) One HandyTone-386
- 2) One universal power adaptor
- 3) One Ethernet cable

3.1 Safety Compliances

The HandyTone-386 is compliant with various safety standards including FCC/CE and C-tick. Its power adaptor is compliant with UL standard. The HandyTone-386 should only operate with the universal power adaptor provided in the package.

3.2 Warranty

Grandstream has a reseller agreement with our reseller customer. End users should contact the company from whom you purchased the product for replacement, repair or refund.

If you purchased the product directly from Grandstream, contact your Grandstream Sales and Service Representative for a RMA (Return Materials Authorization) number.

Grandstream reserves the right to remedy warranty policy without prior notification.

Warning: Please do not attempt to use a different power adaptor. Using other power adaptor may damage the HandyTone-386 and will void the manufacturer warranty.

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.

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4 Product Overview

4.1 Key Features

- Supports SIP 2.0(RFC 3261), TCP/UDP/IP, RTP/RTCP, HTTP, ICMP, ARP/RARP, DNS, DHCP (both client and server), NTP, PPPoE, STUN, TFTP, etc.
- Supports dual SIP accounts via dual FXS ports
- Powerful digital signal processing (DSP) to ensure superb audio quality; advanced adaptive jitter control and packet loss concealment technology
- Support various vocoders including G.711 (a-law and u-law), G.723.1 (5.3K/6.3K), G.726 (40K/32K/24K/16K), as well as G.728, G.729A/B, and iLBC.
- Support Caller ID/Name display or block, Hold, Call Waiting/Flash, Call Transfer, Call Forward, Call Waiting Caller ID, in-band and out-of-band DTMF, Dial Plans, etc.
- Support fax pass through and T.38
- Support Silence Suppression, VAD (Voice Activity Detection), CNG (Comfort Noise Generation), Line Echo Cancellation (G.168), and AGC (Automatic Gain Control)
- Support standard encryption and authentication (DIGEST using MD5 and MD5-sess)
- Support for Layer 2 (802.1Q VLAN, 802.1p) and Layer 3 QoS (ToS, DiffServ, MPLS)
- Support automated NAT traversal without manual manipulation of firewall/NAT
- Support device configuration via built-in IVR, Web browser or central configuration file through TFTP or HTTP
- Support firmware upgrade via TFTP or HTTP (pending) with encrypted configuration files.
- Ultra compact (wallet size) and lightweight design, great companion for travelers
- Compact, lightweight Universal Power adapter.

4.2 Hardware Specification

The table below lists the hardware specification of HandyTone-386.

| <u>Model</u> | <u>HandyTone-386</u> |
|-----------------------------------|---|
| WAN interface | 1xRJ45 10Base-T |
| FXS telephone port | 2xFXS |
| PSTN Port | 1x PSTN pass-through or life line port |
| Button | 1 |
| LED | Green and red color |
| Universal Switching Power Adaptor | Input: 100-240VAC 50-60 Hz Output: +5VDC, 1200mA, UL certified |
| Dimension | 70mm (W) 130mm (D) 27mm (H) |
| Weight | 0.6lbs (0.3kg) |
| Temperature | 40 - 130°F 5 – 45°C |
| Humidity | 10% - 90% (non-condensing) |
| Compliance |  |

5 Basic Operations

5.1 Get Familiar with Voice Prompt

HandyTone-386 has stored a voice prompt menu for quick browsing and simple configuration. Currently, the voice prompt menu and the LED button are designed for FXS port 1 only.

To enter this voice prompt menu, simply **press the button or “****” from the analog phone.**

| Menu | Voice Prompt | Options |
|-----------|---|--|
| Main Menu | “Enter a Menu Option” | Enter “*” for the next menu option Enter “#” to return to the main menu Enter 01-06, 47, 86, 99 menu option |
| 01 | “DHCP Mode”, “Static IP Mode” | Enter “9” to toggle the selection |
| 02 | “IP Address “ + IP address | The current WAN IP address is announced Enter 12 digit new IP address if in Static IP Mode |
| 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 |
| 06 | “TFTP Server “ + IP address | Same as menu 02 |
| 47 | “Direct IP Calling” | When entered, you will be prompted a dial tone, then enter 12 digit IP address This menu can also be entered by pressing the button again |
| 86 | “Voice Messages Pending” “No Voice Messages” | Enter “9” to dial pre-configured phone number to retrieve VM |
| 99 | “RESET” | Enter “9” to reboot the phone Enter encoded MAC address to restore factory default setting |
| | “Invalid Entry” | Automatically returns to main menu |

Notes:

- Once the button is pressed, it enters the voice prompt main menu. If the button is pressed again, while it is already in the voice prompt menu, it jumps to “*Direct IP Call*” option and a dial tone is prompted
- “*” shifts down to the next menu option
- “#” returns to the main menu
- “9” functions as the ENTER key in many cases to confirm an option
- All entered digit sequences have known lengths - 2 digits for menu option and 12 digits for IP address. Once all of the digits are collected, the input will be processed.
- Key entry can not be deleted but the phone may prompt error once it is detected

5.2 Make Phone Calls

5.2.1 Calling phone or extension numbers

To make a phone or extension number call:

- a) Dial the number directly and wait for 4 seconds (default “No Key Entry Timeout”). Or
- b) Dial the number directly, and press # (assuming that “Use # as dial key” is selected in web configuration).

Other functions available during the call are call-waiting/flash, call-transfer, and call-forward.

5.2.2 Direct IP calls

Direct IP calling allows two phones, that is, a HandyTone with an analog phone and another VoIP Device, to talk to each other in an ad hoc fashion without a SIP proxy. VoIP calls can be made between two phones if:

- Both HandyTone ATA and the other VoIP device (i.e., another HandyTone ATA or other SIP products) have public IP addresses, or
- Both HandyTone ATA and the other VoIP device (i.e., another HandyTone ATA or other SIP products) are on the same LAN using private or public IP addresses, or
- Both HandyTone ATA and the other VoIP device (i.e., another HandyTone ATA or other SIP products) can be connected through a router using public or private IP addresses.

To make a direct IP call, first pick up the analog phone or turn on the speakerphone on the analog phone, follow Section 5.1 with voice prompt 47, followed by the 12-digit target IP address. Destination ports can be specified by using “*4” (encoding for “:”) followed by the encoded port number. Following is a table of the encoding scheme for the most commonly used characters:

| Input | Meaning |
|-------|----------------------|
| 00 | 0 |
| 01 | 1 |
| 02 | 2 |
| 03 | 3 |
| 04 | 4 |
| 05 | 5 |
| 06 | 6 |
| 07 | 7 |
| 08 | 8 |
| 09 | 9 |
| *0 | . (dot character) |
| *4 | : (column character) |

Examples:

If the target IP address is 192.168.0.160, the dialing convention is

Voice Prompt with option 47, then 192168000160

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.

If the target IP address/port is 192.168.1.20:5062, then the dialing convention would be:

Voice Prompt with option 47, then 192168001020*45062 followed by pressing the “#” key if it is configured as a send key or wait for 4 seconds.

5.2.3 Blind Transfer

Assuming that call party A and B are in conversation. A wants to *Blind Transfer* B to C:

1. A presses FLASH (on the analog phone, or Hook Flash for old model phones) to get a dial tone.
2. Then A dials *87 then dials C’s number, and then #(or wait for 4 seconds)
3. A can hang up.

Note: *Call Feature* has to be set to YES.

A can hold on to the phone and wait for one of the three following behaviors:

- A quick confirmation tone (temporarily using the call waiting indication tone) followed by a dial tone. This indicates the transfer is successful (transferee has received a 200 OK from transfer target). At this point, A can either hang up or make another call.
- A quick busy tone followed by a restored call (on supported platforms only). This means the transferee has received a 4xx response for the INVITE and we will try to recover the call. The busy tone is just to indicate to the transferor that the transfer has failed.
- Busy tone keeps playing. This means we have failed to receive the second NOTIFY from the transferee and decided to time out. Note: this does not indicate the transfer has been successful, nor does it indicate the transfer has failed. When transferee is a client that does not support the second NOTIFY (such as our own earlier firmware), this will be the case. In bad network scenarios, this could also happen, although the transfer may have been completed successfully.

5.2.4 Attended Transfer

Assuming that call party A and B are in conversation. A wants to *Attend Transfer* B to C:

1. A presses FLASH (on the analog phone, or Hook Flash for old model phones) to get a dial tone.
2. A dials C’s number then # (or wait for 4 seconds). A and C are now in conversation.
3. A can hang up.

Note: When intended Transfer failed, if A hangs up, the HandyTone-386 will ring user A again to remind A that B is still on the call, by pressing FLASH or Hook again will restore the conversation between A and B.

5.2.5 3-way Conferencing

Assuming that call party A and B are in conversation. A wants to bring C in a conference:

1. A presses FLASH (on the analog phone, or Hook Flash for old model phones) to get a dial tone.
2. A dials *23 then C's number then # (or wait for 4 seconds). A and C are now in conversation.
3. A presses FLASH again to begin conference.

5.2.6 Send and Receive PSTN Calls Through PSTN Line Port

User can send and receive calls from PSTN. To receive PSTN calls, simply make phone off hook when the analog phone rings. To make a PSTN call, simply press *00 (default, can be configured in web configuration page) to switch to the PSTN line and get dial tone and call out using the PSTN line.

5.3 Call Features

5.3.1 Call Features Table

Following table shows the call features of HandyTone-386.

| Key | Call Features |
|-----|---|
| *30 | Block Caller ID (for all subsequent calls) |
| *31 | Send Caller ID (for all subsequent calls) |
| *67 | Block Caller ID (per call) |
| *82 | Send Caller ID (per call) |
| *50 | Disable Call Waiting (for all subsequent calls) |
| *51 | Enable Call Waiting (for all subsequent calls) |
| *70 | Disable Call Waiting. (Per Call) |
| *71 | Enable Call Waiting (Per Call) |
| *72 | Unconditional Call Forward. To use this feature, dial “*72” and get the dial tone. Then dial the forward number and “#” for a dial tone, then hang up. |
| *73 | Cancel Unconditional Call Forward To cancel “Unconditional Call Forward”, dial “*73” and get the dial tone, then hang up. |
| *90 | Busy Call Forward |

| | |
|------------|--|
| | To use this feature, dial “*90” and get the dial tone. Then dial the forward number and “#” for a dial tone, then hang up. |
| *91 | Cancel Busy Call Forward To cancel “Busy Call Forward”, dial “*91” and get the dial tone, then hang up |
| *92 | Delayed Call Forward To use this feature, dial “*92” and get the dial tone. Then dial the forward number and “#” for a dial tone, then hang up. |
| *93 | Cancel Delayed Call Forward To cancel this Forward, dial “*93” and get the dial tone, then hang up |
| Flash/Hook | When in conversation, this action will switch to the new incoming call if there is a call waiting indication. When in conversation without an incoming call, this action will switch to a new channel for a new call. |

5.3.2 PSTN Pass Through / Life Line

When HandyTone-386 is out of power, the RJ 11 line jack on the HandyTone-486 side will function as a pass through jack. The user will be able to use the same analog phone for PSTN calls.

5.4 FAX Support

HandyTone-286 supports FAX in two modes: T.38 (Fax over IP) and fax pass through. T.38 is the preferred method because it is more reliable and works well in most network conditions. If the service provider supports T.38, please use this method by selecting Fax mode to be T.38. If the service provider does not support T.38, pass-through mode may be used. To send or receive faxes in fax pass through mode, users will need to select all the Preferred Codecs to be PCMU/PCMA.

5.5 LED Light Pattern Indication

Following tables show the LED light pattern indication.

| | |
|--|--|
| RED LED indicates abnormal status | |
| DHCP Failed or WAN No Cable | Button flashes every 2 seconds (if DHCP is configured) |
| HandyTone-386 fails to register | Button flashes every 2 seconds (if SIP server is configured) |

| | |
|--|--------------------------------|
| GREEN LED indicates normal working status | |
| Message Waiting Indication | Button flashes every 2 seconds |
| RINGING | Button flashes at 1/10 second |
| RINGING INTERVAL | Button flashes every second |

6 Configuration Guide

6.1 Configuring HandyTone-386 WAN IP through Voice Prompt

6.1.1 DHCP Mode

Follow section 5.1 with voice menu option 01 to enable HandyTone-386 to use DHCP.

6.1.2 STATIC IP Mode

Follow section 5.1 with voice menu option 01 to enable HandyTone-386 to use STATIC IP mode, then use option 02, 03, 04 to set up HandyTone-386's IP, Subnet Mask, Gateway respectively.

6.1.3 TFTP Server Address

Follow section 5.1 with voice menu option 06 to configure the IP address of the TFTP server.

6.2 Configuring HandyTone-386 with Web Browser

HandyTone-386 series ATA has an embedded Web server that will respond to HTTP GET/POST requests. It also has embedded HTML pages that allow users to configure the HandyTone-386 through a Web browser such as Microsoft's IE and AOL's Netscape.

6.2.1 Access the Web Configuration Menu

First, get the IP address of the HandyTone-386 through section 5.1 with menu option 02. Then access the HandyTone-386's Web Configuration Menu using the following URI:

<http://Phone-IP-Address>

where the **Phone-IP-Address** is the IP address of the phone.

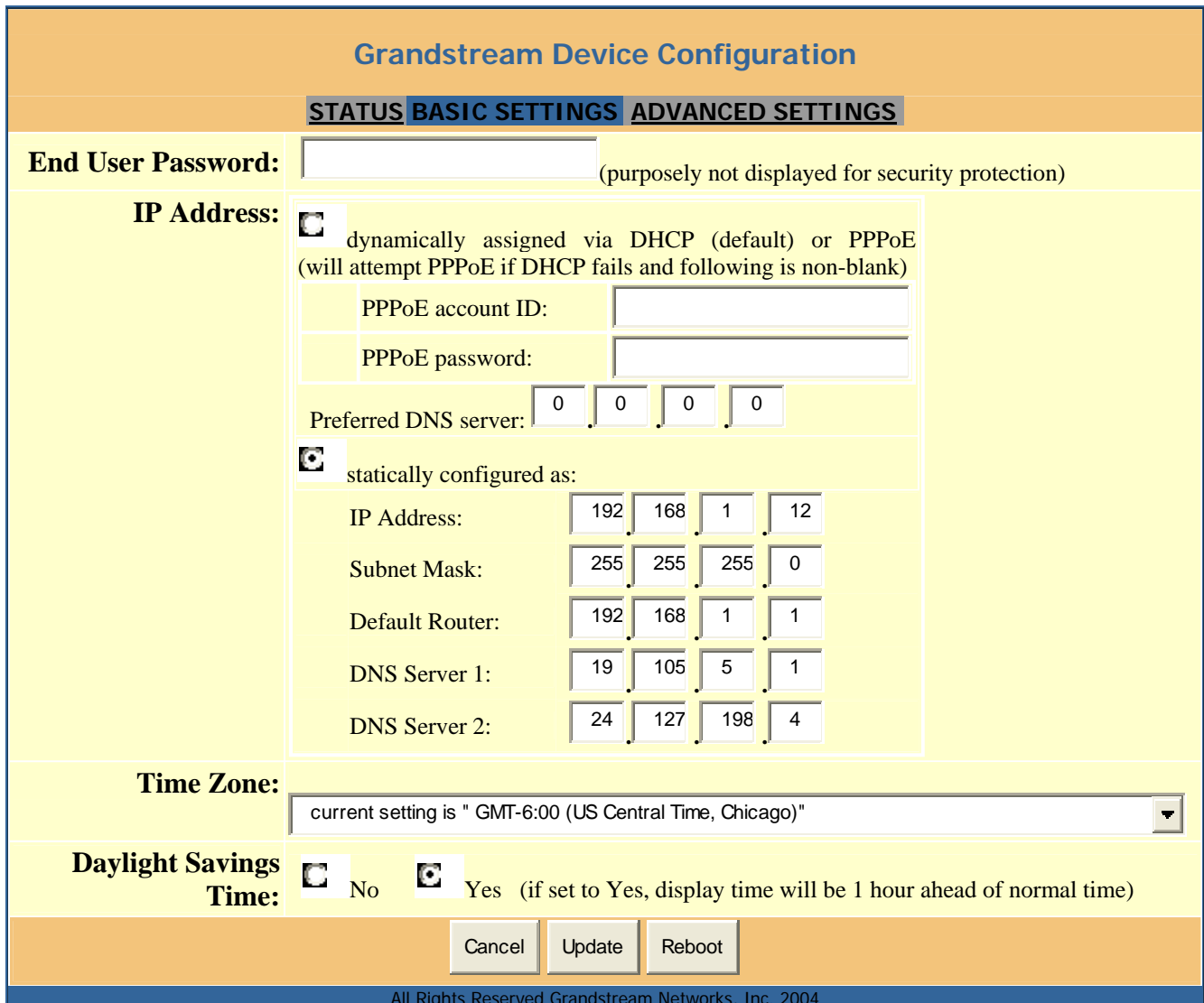
6.2.2 End User Configuration

Once this HTTP request is entered and sent from a Web browser, the HandyTone-386 will respond with the following login screen:



The password is case sensitive and the factory default password for End User is “123”.

After a correct password is entered in the login screen, the embedded Web server inside the HandyTone-386 will respond with the Configuration page which is explained in details below.



| | |
|------------------------------|--|
| End User Password | This contains the password to access the Web Configuration Menu. This field is case sensitive. |
| IP Address | <p>There are 2 modes under which the HandyTone ATA can operate:</p> <ul style="list-style-type: none"> - If DHCP mode is enabled, then all the field values for the Static IP mode are not used (even though they are still saved in the Flash memory.) The HandyTone ATA will acquire its IP address from the first DHCP server it discovers from the LAN it is connected. <p>To use the PPPoE feature the PPPoE account settings need to be set. The HandyTone will attempt to establish a PPPoE session if any of the PPPoE fields is set.</p> <ul style="list-style-type: none"> - If Static IP mode is enabled, then the IP address, Subnet Mask, Default Router IP address, DNS Server 1 (primary), DNS Server 2 (secondary) fields will need to be configured. These fields are reset to zero by default. |
| Time Zone | This parameter controls how the displayed date/time will be adjusted according to the specified time zone. |
| Daylight Savings Time | This parameter controls whether the displayed time will be daylight savings time or not. If set to Yes, then the displayed time will be 1 hour ahead of normal time. |

In addition to the Basic Settings configuration page, end users also have access to the device Status page. The following is a snap shot of the device Status page. Details will be explained next.

| Grandstream Device Configuration | |
|--|---|
| STATUS BASIC SETTINGS ADVANCED SETTINGS | |
| MAC Address: | 00.0B.82.00.00.00 |
| WAN IP Address: | |
| Product Model: | HT386 |
| Software Version: | Program-- 1.0.2.5 Bootloader-- 1.0.1.0 HTML-- 1.0.0.5 VOC-- 1.0.0.10 |
| System Up Time: | 0 day(s) 4 hour(s) 43 minute(s) |
| Registered: | Yes |
| PPPoE Link Up: | disabled |
| | detected NAT type is symmetric NAT |
| | |

| | |
|--------------------------|--|
| MAC Address | The device ID, in HEX format. This is a very important ID for ISP troubleshooting. |
| WAN IP Address | This field shows WAN port IP address. |
| Product Model | This field contains the product model info. |
| Software Version | Program: This is the main software release, its number is always used for firmware upgrade. Bootloader: This is normally not changed. HTML: This is the web user interface, normally not changed. VOC: This is the codec program, normally not changed. |
| System Up Time | This field indicates how long the device has been up since the last reboot. |
| Registered | This field indicates whether the device is registered to the SIP server. |
| PPPoE Link Up | This field shows whether the PPPoE connection is enabled or not. |
| Detected NAT Type | This field shows what kind NAT the HandyTone is connected to via its WAN port. It is based on STUN protocol. |

6.2.3 Advanced User Configuration

To login to the Advanced User Configuration page, please follow the instructions in section 6.2.1 to get to the following login page. The password is case sensitive and the factory default password for Advanced User is “admin”.

Advanced User configuration includes not only the end user configuration, but also advanced configuration such as SIP configuration, Codec selection, NAT Traversal Setting and other miscellaneous configuration. Following is a snap shot of the advanced configuration page.

Grandstream Device Configuration

| | STATUS | BASIC SETTINGS | ADVANCED SETTINGS |
|-------------------------------|--|---|-------------------|
| Admin Password: | <input type="text"/> | (purposely not displayed for security protection) | |
| FXS Port 1: | | | |
| SIP Server: | <input type="text" value="sip.mycompany.com"/> | (e.g., sip.mycompany.com, or IP address) | |
| Outbound Proxy: | <input type="text"/> | (e.g., proxy.myprovider.com, or IP address, if any) | |
| SIP User ID: | <input type="text" value="3123320"/> | (the user part of an SIP address) | |
| Authenticate ID: | <input type="text" value="3123320"/> | (can be identical to or different from SIP User ID) | |
| Authenticate Password: | <input type="text"/> | (purposely not displayed for security protection) | |
| Name: | <input type="text"/> | (optional, e.g., John Doe) | |
| Register Expiration: | <input type="text" value="60"/> | (in minutes. default 1 hour, max 45 days) | |
| local SIP port: | <input type="text" value="5060"/> | (default 5060) | |
| local RTP port: | <input type="text" value="5004"/> | (1024-65535, default 5004) | |
| Enable Call Features: | <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes (if Yes, Call Forwarding & Call-Waiting-Disable are supported locally) | | |
| Send DTMF: | <input checked="" type="checkbox"/> in-audio <input checked="" type="checkbox"/> via RTP (RFC2833) <input type="checkbox"/> via SIP INFO | | |
| DTMF Payload Type: | <input type="text" value="101"/> | | |
| FXS Port 2: | | | |
| SIP Server: | <input type="text" value="sip.mycompany.com"/> | (e.g., sip.mycompany.com, or IP address) | |
| Outbound Proxy: | <input type="text"/> | (e.g., proxy.myprovider.com, or IP address, if any) | |
| SIP User ID: | <input type="text" value="3125250"/> | (the user part of an SIP address) | |
| Authenticate ID: | <input type="text" value="3125250"/> | (can be identical to or different from SIP User ID) | |
| Authenticate Password: | <input type="text"/> | (purposely not displayed for security protection) | |
| Name: | <input type="text"/> | (optional, e.g., John Doe) | |
| Register Expiration: | <input type="text" value="60"/> | (in minutes. default 1 hour, max 45 days) | |
| local SIP port: | <input type="text" value="5062"/> | (default 5062) | |
| local RTP port: | <input type="text" value="5008"/> | (1024-65535, default 5008) | |
| Enable Call Features: | <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes (if Yes, Call Forwarding & Call-Waiting-Disable are supported locally) | | |

| | | | |
|---|---|--|---------------------------------------|
| Send DTMF: | <input type="checkbox"/> in-audio | <input checked="" type="checkbox"/> via RTP (RFC2833) | <input type="checkbox"/> via SIP INFO |
| DTMF Payload Type: | <input type="text" value="101"/> | | |
| General Misc. Settings: | | | |
| <i>Preferred Vocoder: (in listed order)</i> | choice 1: | <input pcmu"="" type="text" value="current setting is "/> | |
| | choice 2: | <input pcma"="" type="text" value="current setting is "/> | |
| | choice 3: | <input g723"="" type="text" value="current setting is "/> | |
| | choice 4: | <input g729"="" type="text" value="current setting is "/> | |
| | choice 5: | <input g726-32"="" type="text" value="current setting is "/> | |
| | choice 6: | <input ilbc"="" type="text" value="current setting is "/> | |
| <i>Voice Frames per TX:</i> | <input type="text" value="2"/> | (up to 10/20/32/64 for G711/G726/G723/other codecs respectively) | |
| <i>G723 rate:</i> | <input checked="" type="checkbox"/> 6.3kbps encoding rate | <input type="checkbox"/> 5.3kbps encoding rate | |
| <i>iLBC frame size:</i> | <input checked="" type="checkbox"/> 20ms | <input type="checkbox"/> 30ms | |
| <i>iLBC payload type:</i> | <input type="text" value="97"/> | (between 96 and 127, default is 97) | |
| <i>Silence Suppression:</i> | <input checked="" type="checkbox"/> No | <input type="checkbox"/> Yes | |
| <i>SIP Registration:</i> | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | |
| <i>Unregister On Reboot:</i> | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No | |
| <i>Fax Mode:</i> | <input checked="" type="checkbox"/> T.38 (Auto Detect) | <input type="checkbox"/> Pass-Through | |
| <i>Layer 3 QoS:</i> | <input type="text" value="48"/> | (Diff-Serv or Precedence value) | |
| <i>Layer 2 QoS:</i> | 802.1Q/VLAN Tag <input type="text" value="0"/> | 802.1p priority value <input type="text" value="0"/> | (0-7) |
| <i>Use DNS SRV:</i> | <input checked="" type="checkbox"/> No | <input type="checkbox"/> Yes | |
| <i>User ID is phone number:</i> | <input checked="" type="checkbox"/> No | <input type="checkbox"/> Yes | |
| <i>Early Dial:</i> | <input checked="" type="checkbox"/> No | <input type="checkbox"/> Yes (use "Yes" only if proxy supports 484 response) | |
| <i>Dial Plan Prefix:</i> | <input type="text"/> | (this prefix string is added to each dialed number) | |
| <i>No Key Entry Timeout:</i> | <input type="text" value="4"/> | (in seconds, default is 4 seconds) | |
| <i>Use # as Dial Key:</i> | <input checked="" type="checkbox"/> No | <input type="checkbox"/> Yes (if set to Yes, "#" will function as the "(Re-)Dial" key) | |
| <i>Use random port:</i> | <input checked="" type="checkbox"/> No | <input type="checkbox"/> Yes | |
| <i>NAT Traversal:</i> | <input checked="" type="checkbox"/> No | | |

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| | <input checked="" type="checkbox"/> Yes, STUN server is: <input type="text" value="stun.mycompany.com"/> (URI or IP:port) |
| <i>keep-alive interval:</i> | <input type="text" value="20"/> (in seconds, default 20 seconds) |
| <i>Use NAT IP</i> | <input type="text"/> (if specified, this IP address is used in SIP/SDP message) |
| <i>Proxy-Require:</i> | <input type="text"/> (if specified, the content will appear in Proxy-Require header) |
| <i>TFTP Upgrade Server:</i> | <input type="text" value="192"/> <input type="text" value="168"/> <input type="text" value="1"/> <input type="text" value="30"/> (for remote software upgrade and configuration) |
| <i>SUBSCRIBE for MWI:</i> | <input checked="" type="checkbox"/> No, do not send SUBSCRIBE for Message Waiting Indication <input type="checkbox"/> Yes, send periodical SUBSCRIBE for Message Waiting Indication |
| <i>Offhook Auto-Dial:</i> | <input type="text"/> (User ID/extension to dial automatically when offhook) |
| <i>Send Flash Event:</i> | <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes (Flash will be sent as a DTMF event if set to Yes) |
| <i>FXS Impedance:</i> | current setting is " 600 Ohm (North America)" |
| <i>Caller ID Scheme:</i> | current setting is " Bellcore" |
| <i>Onhook Voltage (FXS Port):</i> | current setting is " 48V" |
| <i>Disable Call-Waiting:</i> | <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes |
| <i>Polarity Reversal:</i> | <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes (reverse polarity upon call establishment and termination) |
| <i>NTP Server:</i> | <input type="text" value="time.nist.gov"/> (URI or IP address) |
| <i>Send Anonymous:</i> | <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes (caller ID will be blocked if set to Yes) |
| <i>Lock keypad update:</i> | <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes (configuration update via keypad is disabled if set to Yes) |
| <i>PSTN access code:</i> | <input type="text"/> (key pattern to use the PSTN line, default is "*00") |
| <i>Syslog Server:</i> | <input type="text"/> |
| <i>Syslog Level:</i> | current setting is "NONE" |
| <input type="button" value="Cancel"/> <input type="button" value="Update"/> <input type="button" value="Reboot"/> | |
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| Admin Password | This contains the password to access the Advanced Web Configuration page. This field is case sensitive. |
| SIP Server | SIP Server's URI or IP address |
| Outbound Proxy | SIP Outbound Proxy Server's URI or IP address |

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| SIP User ID | SIP service subscriber's User ID |
| Authenticate ID | SIP service subscriber's Authenticate ID. Can be identical to or different from SIP User ID |
| Authenticate Password | SIP service subscriber's account password |
| Name | SIP service subscriber's name which will be used for Caller ID display |
| Register Expiration | This parameter allows the user to specify the time frequency (in minutes) the HandyTone ATA refreshes its registration with the specified registrar. The default interval is 60 minutes (or 1 hour). The maximum interval is 65535 minutes (about 45 days). |
| Local SIP port | This parameter defines the local SIP port the HandyTone ATA will listen and transmit. The default value for FXS port 1 is 5060. The default value for FXS port 2 is 5062. |
| Local RTP port | This parameter defines the local RTP-RTCP port pair the HandyTone ATA will listen and transmit. It is the base RTP port for channel 0. When configured, channel 0 will use this port_value for RTP and the port_value+1 for its RTCP; channel 1 will use port_value+2 for RTP and port_value+3 for its RTCP. The default value for FXS port 1 is 5004. The default value for FXS port 2 is 5008. |
| Enable Call Features | Default is No. If set to Yes, Call Forwarding & Do-Not-Disturb are supported locally |
| Send DTMF | This parameter controls how DTMF events are transmitted. There are 3 ways: in audio which means DTMF is combined in audio signal (not very reliable with low-bit-rate codec), via RTP (RFC2833), or via SIP INFO. |
| DTMF Payload Type | This parameter sets the payload type for DTMF using RFC2833 |
| Preferred Vocoder | <p>The HandyTone ATA supports up to 7 different Vocoder types including G.711 A-/U-law , G.723.1, G.726, G.728, G.729A/B, iLBC. Depending on the product model, some of these Vocoders may not be provided in standard release.</p> <p>Users can configure Vocoders in a preference list that will be included with the same preference order in SDP message. The first Vocoder in this list can be entered by choosing the appropriate option in "Choice 1". Similarly, the last Vocoder in this list can be entered by choosing the appropriate option in "Choice 7".</p> |

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| Voice Frames per TX | <p>This field contains the number of voice frames to be transmitted in a single packet. When setting this value, the user should be aware of the requested packet time (used in SDP message) as a result of configuring this parameter. This parameter is associated with the first vocoder in the above vocoder Preference List or the actual used payload type negotiated between the 2 conversation parties at run time.</p> <p>e.g., if the first vocoder is configured as G723 and the “Voice Frames per TX” is set to be 2, then the “ptime” value in the SDP message of an INVITE request will be 60ms because each G723 voice frame contains 30ms of audio. Similarly, if this field is set to be 2 and if the first vocoder chosen is G729 or G711 or G726, then the “ptime” value in the SDP message of an INVITE request will be 20ms.</p> <p>If the configured voice frames per TX exceeds the maximum allowed value, the HandyTone ATA will use and save the maximum allowed value for the corresponding first vocoder choice. The maximum value for PCM is 10(x10ms) frames; for G726, it is 20 (x10ms) frames; for G723, it is 32 (x30ms) frames; for G729/G728, 64 (x10ms) and 64 (x2.5ms) frames respectively.</p> |
| G723 Rate: | This defines the encoding rate for G723 vocoder. By default, 6.3kbps rate is chosen. |
| iLBC frame size: | This sets the iLBC size in 20ms or 30ms |
| iLBC payload type: | This defines payload time for iLBC. Default value is 98. The valid range is between 96 and 127. |
| Silence Suppression | This controls the silence suppression/VAD feature of G723 and G729. If set to “Yes”, when a silence is detected, small quantity of VAD packets (instead of audio packets) will be sent during the period of no talking. If set to “No”, this feature is disabled. |
| SIP Registration | This parameter controls whether the HandyTone ATA needs to send REGISTER messages to the proxy server. The default setting is “Yes”. |
| Unregister on Reboot | Default is No. If set to yes, the SIP user will be unregistered on reboot. |
| Fax Mode | T.38 (Auto Detect) FoIP by default, or Pass-Through (must use codec PCMU/PCMA) |
| Layer 3 QoS | This field defines the layer 3 QoS parameter which can be the value used for IP Precedence or Diff-Serv or MPLS. Default value is 48. |
| Layer 2 QoS | This contains the value used for layer 2 VLAN tag. Default setting is blank. |
| Use DNS SRV: | Default is No. If set to Yes the client will use DNS SRV for server lookup |

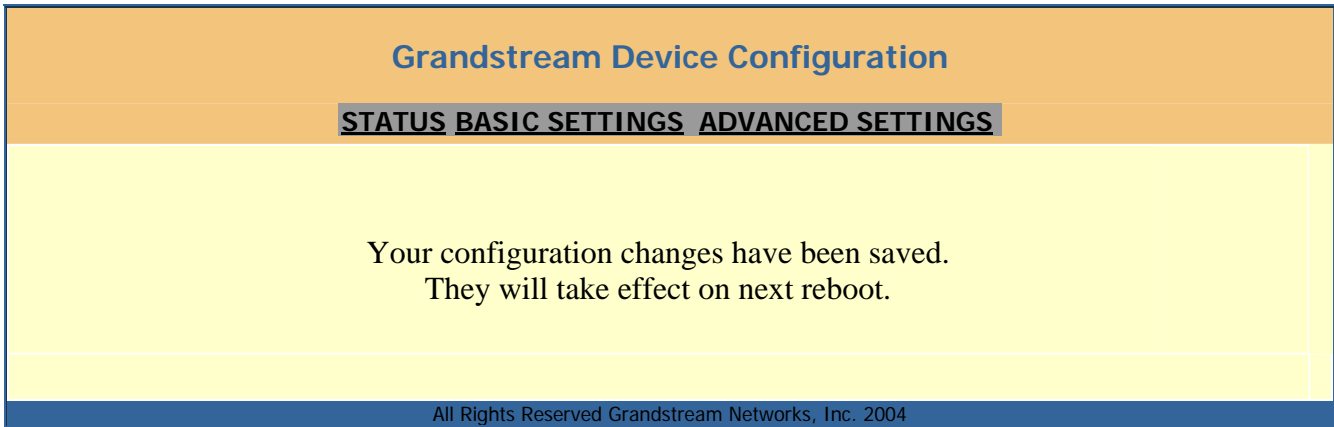
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| User ID is Phone Number | If the HandyTone ATA has an assigned PSTN telephone number, this field should be set to “Yes”. Otherwise, set it to “No”. If “Yes” is set, a “user=phone” parameter will be attached to the “From” header in SIP request |
| Early Dial | Default is No. Use only if proxy supports 484 response |
| Dial Plan Prefix | Sets the prefix added to each dialed number |
| No Key Entry Timeout | Default is 4 seconds. |
| Use # as Send Key | This parameter allows users to configure the “#” key to be used as the “Send” (or “Dial”) key. If set to “Yes”, pressing this key will immediately trigger the sending of dialed string collected so far. In this case, this key is essentially equivalent to the “(Re)Dial” key. If set to “No”, this “#” key will then be included as part of the dial string to be sent out. |
| Use Random Port | This parameter, when set to Yes, will force random generation of both the local SIP and RTP ports. This is usually necessary when multiple HandyTone ATAs are behind the same NAT. |
| NAT Traversal | This parameter defines whether the HandyTone ATA NAT traversal mechanism will be activated or not. If activated (by choosing “Yes”) and a STUN server is also specified, then the HandyTone ATA will behave according to the STUN client specification. Under this mode, the embedded STUN client inside the HandyTone ATA will attempt to detect if and what type of firewall/NAT it is sitting behind through communication with the specified STUN server. If the detected NAT is a Full Cone, Restricted Cone, or a Port-Restricted Cone, the HandyTone ATA will attempt to use its mapped public IP address and port in all its SIP and SDP messages. If the NAT Traversal field is set to “Yes” with no specified STUN server, the HandyTone ATA will periodically (every 20 seconds or so) send a blank UDP packet (with no payload data) to the SIP server to keep the “hole” on the NAT open. |
| Keep-alive interval | This parameter specifies how often the HandyTone ATA sends a blank UDP packet to the SIP server in order to keep the “hole” on the NAT open. |
| Use NAT IP: | NAT IP address used in SIP/SDP message. Default is blank. |
| Proxy-Require | SIP Extension to notify SIP server that the unit is behind the NAT/Firewall. |
| TFTP Upgrade Server | This is the IP address of the configured TFTP server. If it is non-zero or not blank, the HandyTone ATA will attempt to retrieve new configuration file or new code image from the specified TFTP server at boot time. It will make up to 3 attempts before timeout and then it will start the boot process using the existing code image in the Flash memory. If a TFTP server is configured and a new code image is retrieved, the new downloaded image will be verified and then saved into the Flash memory. |

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| Subscribe for MWI: | Default is No. When set to “Yes” a SUBSCRIBE for Message Waiting Indication will be sent periodically. |
| Offhook Auto-Dial | This parameter allows users to configure a User ID or extension number to be automatically dialed upon offhook. Please note that only the user part of a SIP address needs to be entered here. The HandyTone ATA will automatically append the “@” and the host portion of the corresponding SIP address. |
| Send Flash Event | This parameter allows users to control whether to send an SIP NOTIFY message indicating the Flash event, or just to switch to the voice channel when users press the Flash key. |
| FXS Impedance | Selects the impedance of the analog telephone connected to the Phone port. |
| Caller ID Scheme | <ul style="list-style-type: none"> • Bellcore (North America) • ETSI-FSK (France, Germany, Norway, Taiwan, UK-CCA) • ETSI-DTMF (Finland, Sweden) • DTMF (Denmark) |
| Onhook Voltage | Select the onhook voltage to suit different area or PBX. |
| Disable Call Waiting | Default is No. |
| Polarity Reversal | Default is No. If set to Yes, polarity will be reversed upon call establishment and termination. |
| NTP server | This parameter defines the URI or IP address of the NTP server which is used by the HandyTone ATA to display the current date/time. |
| Send Anonymous | If this parameter is set to “Yes”, the “From” header in outgoing INVITE message will be set to anonymous, essentially blocking the Caller ID from displaying. |
| Lock keypad update | If this parameter is set to “Yes”, the configuration update via keypad is disabled. |
| Syslog Server | The IP address or URL of System log server. This feature is especially useful for ITSP (Internet Telephone Service Provider) |

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| Syslog Level | <p>Select the ATA to report the log level. Default is NONE. The level is one of DEBUG, INFO, WARNING or ERROR. Syslog messages are sent based on the following events:</p> <ul style="list-style-type: none"> • product model/version on boot up (INFO level) • NAT related info (INFO level) • sent or received SIP message (DEBUG level) • SIP message summary (INFO level) • inbound and outbound calls (INFO level) • registration status change (INFO level) • negotiated codec (INFO level) • Ethernet link up (INFO level) • SLIC chip exception (WARNING and ERROR levels) • memory exception (ERROR level) <p>The Syslog uses USER facility. In addition to standard Syslog payload, it contains the following components:</p> <p>GS_LOG: [device MAC address][error code] error message</p> <p>Here is an example:</p> <p>May 19 02:40:38 192.168.1.14 GS_LOG: [00:0b:82:00:a1:be][000] Ethernet link is up</p> |
| PSTN Access Code | <p>Default is “*00”. By pressing the code, user can switch the phone connected to ATA to PSTN and call out using PSTN. User can change this access code in the configuration. This is very useful for “911” calls when emergency happens.</p> |

6.2.4 Saving the Configuration Changes

Once a change is made, users should click on the “Update” button in the Configuration page. The HandyTone-386 will then display the following screen to confirm that the changes have been saved.



Users are recommended to power cycle the HandyTone-386 after seeing the above message.

6.2.5 Rebooting the HandyTone-386 from Remote

The administrator of the HandyTone-386 can remotely reboot the HandyTone ATA by clicking on the “Reboot” button at the bottom of the configuration page. Once done, the following screen will be displayed to indicate that rebooting is underway.



At this point, the user can relogin to the HandyTone-386 after waiting for about 30 seconds.

6.3 Configuration through a Central Server

Grandstream HandyTone ATAs can be automatically configured from a central provisioning system.

When HandyTone ATA boot up, it will send TFTP or HTTP request to download configuration files, there are two configuration files, one is “cfg.txt” and the other is “cfg000b82xxxxxx”, where

“000b82xxxxxx” is the MAC address of the HandyTone ATA. For more information regarding configuration file format, please refer to the related Grandstream documentation.

The configuration file can be downloaded via TFTP or HTTP from the central server. A service provider or an enterprise with large deployment of HandyTone ATAs can easily manage the configuration and service provisioning of individual devices remotely and automatically from a central server. GAPS (Grandstream Automated Provisioning System) uses enhanced (NAT friendly) TFTP or HTTP (thus no NAT issues) and other communication protocols to communicate with each individual HandyTone ATA for firmware upgrade, remote reboot, etc.

Grandstream provides a licensed provisioning system called GAPS that can be used to support automated configuration of HandyTone ATA. To enable this feature on the HandyTone ATA, a user just needs to enter the IP address of the GAPS server in the TFTP server field of the configuration screen, or enter the HTTP provisioning Server URL in the HTTP Upgrade Server field. Then reboot the HandyTone ATA.

For details on how GAPS works, please refer to the documentation of GAPS product.

7 Software Upgrade

7.1 Upgrade through HTTP (pending)

To upgrade software, HandyTone-386 can be configured with an HTTP server where the new code image file is located. For example, following URL in the HTTP Upgrade Server:

```
http://firmware.mycompany.com:6688/Grandstream/1.0.0.4
```

Where `firmware.mycompany.com` is the FQDN of the HTTP server, “:6688” is the TCP port the HTTP server listening to, “/Grandstream/1.0.0.4” is the RELATIVE directory to the root directory in HTTP server. Thus, you can put different firmware into different directory as well.

Note: For HTTP firmware upgrade, if “Auto Upgrade” field is set to “No”, HTTP firmware upgrade will be performed once. If “Auto Upgrade” is set to “Yes”, the ATA will check the HTTP server in the number of days that is defined in “Check for new firmware every” field.

7.2 Upgrade through TFTP

To upgrade software, HandyTone-386 can be configured with a TFTP server where the new code image is located. The TFTP upgrade can work in either static IP or DHCP mode using private or public IP address. It is recommended to set the TFTP server address in either a public IP address or on the same LAN with the HandyTone-386.

There are two ways to set up the TFTP server to upgrade the firmware, namely through voice menu prompt or via the HandyTone-386’s Web configuration interface. To configure the TFTP server via voice prompt, follow section 5.1 with option 06, once set up the TFTP IP address, power cycle the ATA, the firmware will be fetched once the ATA boots up.

To configure the TFTP server via the Web configuration interface, open up your browser to point at the IP address of the HandyTone-386. Input the admin password to enter the configuration screen. From there, enter the TFTP server address in the designated field towards the bottom of the configuration screen.

Once the TFTP server is configured, please power cycle the HandyTone-386.

TFTP checking is only performed during the initial power up. If the configured TFTP server is found and a new code image is available, the HandyTone-386 will attempt to retrieve the new image files by downloading them into the HandyTone-386’s SRAM. During this stage, the HandyTone-386’s LED will blink until the checking/downloading process is completed. Upon verification of checksum, the new code image will be saved into the Flash. If TFTP fails for any reason (e.g., TFTP server is not responding, there are no code image files available for upgrade, or checksum test fails, etc), the HandyTone-386 will stop the TFTP process and simply boot using the existing code image in the flash.

TFTP process may take as long as 1 to 20 minutes over the Internet, or just 20+ seconds if it is performed on a LAN. Users are recommended to conduct TFTP upgrade in a controlled LAN environment if possible. For those who do not have a local TFTP server, Grandstream provides a

NAT-friendly TFTP server on the public Internet for firmware upgrade. Please check the Service section of Grandstream's Web site to obtain this TFTP server's IP address.

NOTES:

- When HandyTone ATA boot up, it will send TFTP or HTTP request to download configuration files, there are two configuration files, one is "cfg.txt" and the other is "cfg000b82xxxxxx", where "000b82xxxxxx" is the MAC address of the HandyTone ATA. These two files are for initial automatically provisioning purpose only, for normal TFTP or HTTP firmware upgrade, the following error messages in a TFTP or HTTP server log can be ignored.

```
TFTP Error from [IP ADRESS] requesting cfg000b82023dd4 : File does not exist  
TFTP Error from [IP ADRESS] requesting cfg.txt : File does not exist
```

8 Restore Factory Default Setting

Warning: Restore the Factory Default Setting will delete all configuration information of the device.

Please disconnect network cable and power cycle the unit before trying to reset the unit to factory default. The steps are as follows:

A. Find the MAC address of the device. It is a 12 digits number located on the bottom of the unit.

B. Encode the MAC address. Please use the following mapping:

0-9: 0-9

A: 22

B: 222

C: 2222

D: 33

E: 333

F: 3333

For example, 000B82004D2A will be encoded to 0002228200433222.

C. To perform factory reset:

1. Press “****” or the LED button for voice prompt.
2. Enter “99” and get the voice prompt “Reset”.
3. Enter the encoded MAC address of the device. A "click" sound will be heard.
4. Wait for 15 seconds.

The device is now restored to the factory default setting.