Administration Guide
For the Plantronics
IP40 headset adapter

Copyright 2009 Plantronics, Inc.
Date: March 16, 2009
Firmware: v0211
Part Number: 81911-01

Table of Contents

1 Introduction to the Plantronics IP40 headset adapter

The Plantronics IP40 is a Voice over Internet Protocol (VoIP) headset adapter targeted for use in the contact center. Contact center agents use a PC as their telephony control device and perform actions such as on/off-duty status, customer follow-up, and supervisor feedback directly from the PC.

The IP40 provides a direct audio connection for the contact center headset to the Ethernet and a subset of the audio control functionality of an IP telephone. In contrast to an IP telephone the handset and speakerphone functionality are replaced by a Plantronics optimized headset interface.

To an end user, an IP40 looks much like a Plantronics DM15 or AP15 audio processor, except that it is connected directly to an IP network instead of being connected to a telephone. For contact center agents a telephone dial pad is largely redundant. On the IP40 only a limited number of the useful buttons are retained.

Good quality 'voice' communication is key to a successful contact center. In environments where the administrator of the contact center wants to guarantee the sound quality of a conversation, an IP40 headset adapter is a compact alternative to a soft-client that is simple to install and to use.

The IP40 headset adapter has an interface for a Plantronics H-series headset with a quick disconnect (QD) connector, an Ethernet port to connect to the IP network, and a second Ethernet port to allow a PC to share a single Ethernet connection from the wall jack.

The IP40 can be powered from the Ethernet using standard 802.3af Power over Ethernet (PoE) and enumerates as a class 1 PoE device. Alternatively it can be powered by an external DC power adapter, which is supplied separately.

The IP40 headset adapter supports the industry standard Session Initiation Protocol (SIP) for session signaling and the Real-time Transport Protocol (RTP) for audio media. These standards are supported by a wide range of products. The IP40 headset adapter is designed to work with any SIP based implementation, but the administrator should consult the release notes to determine which products have been formally validated. A list of systems with which interoperability has been verified can be found on the Plantronics support site.

The product is designed to be plug and play. At startup the IP40 attempts to fetch its configuration automatically from a web server in the customer's network. Administrators can use this facility to automatically configure new headset adapters and integrate configuration with the rest of their contact center administration regime. Alternatively,

administrators can individually configure the IP40 headset adapter using the IP40's built-in web server.

2 Product Overview

The IP40 has three buttons for agent audio control

2.1 Call Handling - Answer/End Button

The Answer/End button on the IP40 headset adapter is configurable and can be used for different functions during normal operation: answering a call, disconnecting a call, and placing a call to one pre-configured destination.

Volume Up

Answer/End

Volume Down

Mute

Power Light
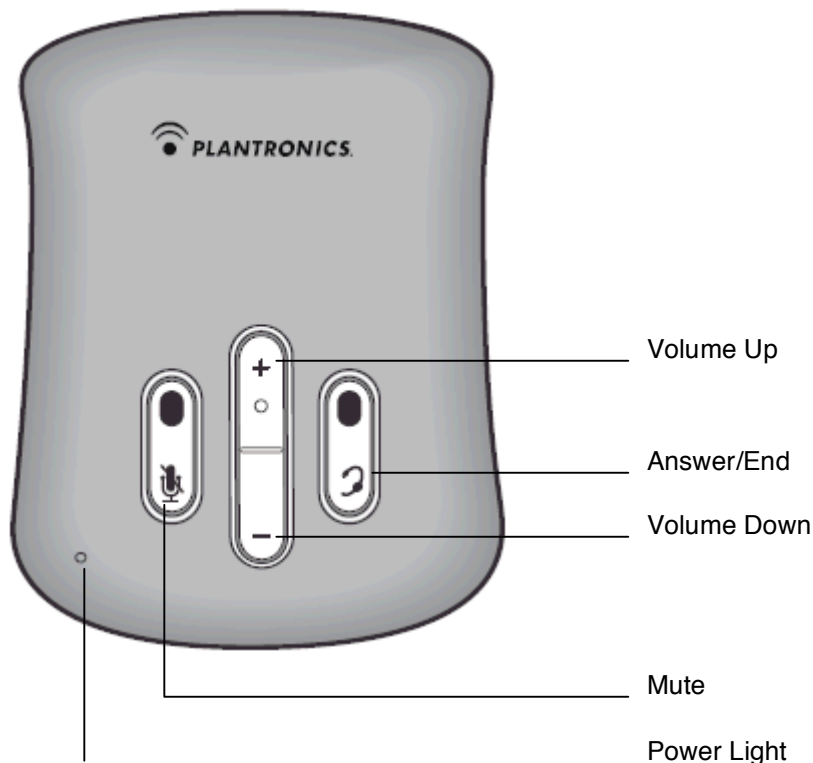
Figure 1 IP40 Top View

In addition, the Answer/End button is also used to find out local administrative information of individual IP40s. This information is accessed by pushing the Answer/End button when not in a call to hear any of the following - IP address of the adapter (described in section 3.3); - spoken error prompts (described section 10). In conjunction with the Volume Up button the Answer/End button is used to initiate a factory reset (described in section 2.7).

Handling Incoming Calls

The IP40 headset adapter can be configured to automatically answer incoming calls

(see the discussion of the CALL_AUTO_ANSWER parameter in section 6.3). When the IP40 headset adapter is configured to automatically answer incoming calls and an incoming call arrives, the adapter checks if a headset is attached to adapter. If so, the call is immediately answered and the Answer/End button is green. If a headset is not attached to the adapter, the adapter returns a SIP '180 Ringing' response to the incoming call and flashes the Answer/End button red. If the headset is reattached while the adapter is ringing in auto answer mode, the adapter will answer the ringing call.

When the headset is not configured to answer incoming calls and an incoming call arrives, the adapter returns a '180 Ringing' response and flashes the Answer/End button red. The adapter then checks if a headset is attached. If so, pressing the Answer/End button *briefly* will answer the call, while disconnecting the headset will refuse the call. If the headset was not attached when the incoming call arrives, reattaching the headset will automatically answer the call.

Terminating Calls

If the IP40 headset adapter is configured so that the disconnect button is enabled (see section 6.3 discussion of the DISCONNECT_BUTTON parameter), pressing the Answer/End button for half a second and releasing the button during an active call will disconnect the call. The short delay requires a deliberate press. This deliberate key press prevents calls from accidentally dropped calls. If this feature is disabled, only the far end or PC control software will be able to end a call.

Making an Outgoing Call

If so configured, the IP40 can make an outbound call to a single configured phone number or SIP URI (a full SIP address such as "sip:2000@example.com"). The phone number or URI to call is stored in the AUTO_DIAL_NUMBER parameter.

Canceling an outgoing call is accomplished by holding down the Answer/End button for half a second.

Message Waiting Indication

The Answer/End button can be used to indicate if a message is waiting for configured voicemail account. If a message is received the Answer/End button will blink RED '**on**' half a second and '**off**' 2.5 seconds to indicate a Voice Mail is available for this voice mailbox subscriber. See section 6.2.2 for details

2.2 Volume Control Button

When the IP40 headset adapter boots, its receive volume is set to the middle or reference position. During a call, the receive volume can be adjusted by pressing the Volume Up (+) or Volume Down (-) button. Each time the volume is adjusted, a tone plays. At the maximum and minimum loudness a distinctive tone plays. At the middle volume position, a triple beep is played.

Once adjusted, the volume setting persists across calls, unless the headset is disconnected when the IP40 headset adapter is not in a call or the IP40 headset adapter is rebooted. When the headset is disconnected in the idle state, the receive volume level reverts to the default setting.

The transmit volume is calibrated at the factory and does not require adjustment.

2.3 Mute Button

During a call, pressing the mute button mutes the headset microphone on the headset adapter. The mute button will turn red to indicate this and a mute tone is played. To turn off the mute feature, press the button again. The mute status does not persist across calls.
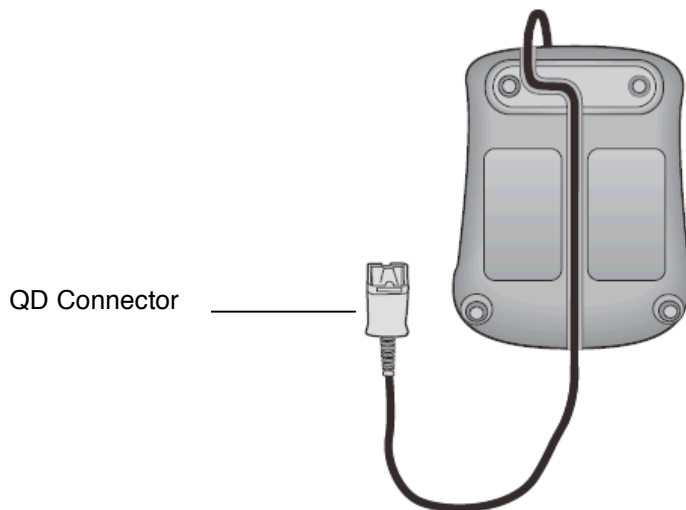
QD Connector

Figure 2 IP40 Underside View Showing Cable Routing and QD Location

2.4 Hold Function

During a call, if the headset is unplugged at the QD connector, the IP40 headset adapter will attempt to place the other party on hold. If this was successful, the Answer/End button will be yellow. Reconnecting the headset at the QD connector will take the other party off hold and resume a normal call.

2.5 Ethernet Switch

The IP40 has two Ethernet ports that are switched / bridged with the internal Ethernet

port used by the IP40's processor. This switch is provided purely as a convenience to conserve physical wiring to the agents' desk. These two Ethernet ports are set at the factory to auto negotiate between 10Base-T and 100Base-TX and to auto detect full or half-duplex.
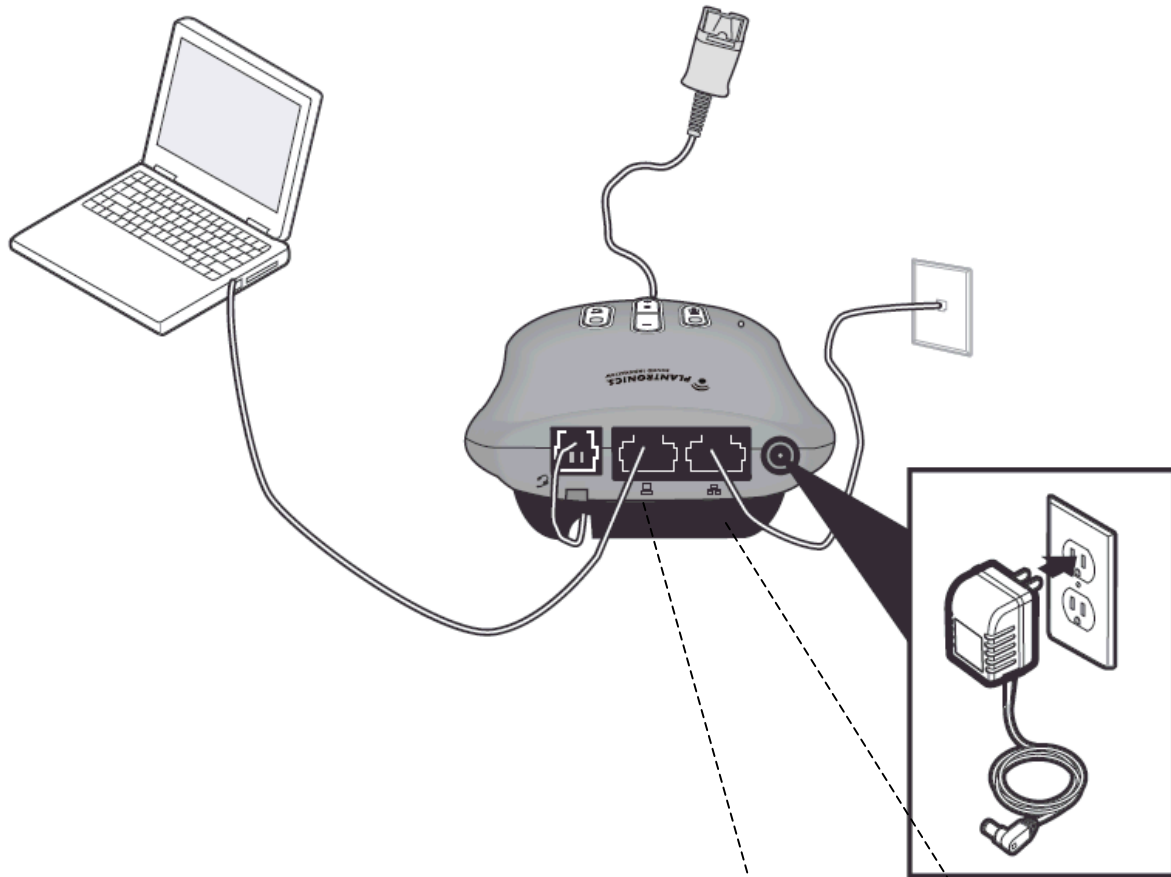
Figure 3 IP40 Cable Connections

The two Ethernet ports on the unit are labeled with a PC ( ) and a LAN ( ) icon. The green light on each Ethernet port is lit when link integrity is detected and blinks during network activity. The yellow light on each Ethernet port is on when 100Base-TX is in use. The light is off when 10Base-T is in use. If your data network supports Power over Ethernet (PoE) the unit will power up indicated by the power LED flashing green.

Green LED   Yellow LED
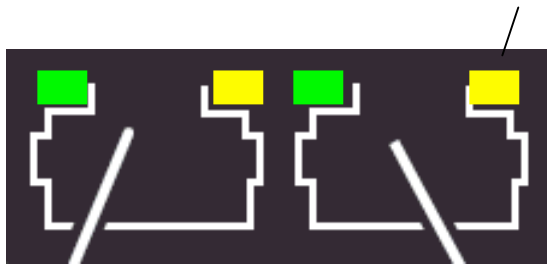
The port labeled with the network icon (right hand port) can be used to power the device from an 802.3af provisioned network connection. The IP40 is a Class 1 PoE device

2.6 Boot-up Light Sequence

During boot-up, the Answer/End light will blink yellow until it has an IP address and has initialized its signaling stack.

Once the yellow power light stops blinking, the adapter will either be ready to use (no control button lights) or the adapter will be in an error state. If there is an error state, the Answer/End button will be solid red. Briefly pressing the Answer/End button during an error state will play the specific error message (see section 10 Debugging and Troubleshooting for more details).

During a firmware upgrade, the mute button will blink red. Do not interrupt a firmware upgrade.

A summary of the LED indications can be found in Section 9

2.7 Factory Reset

To restore the IP40 to factory configuration settings, hold down the Volume Up and Answer/End buttons while powering on the IP40. The mute LED and Answer/End LED will blink red for several seconds. When the LEDs become solid RED, release the buttons. The IP40 will then reboot with factory configuration settings.

3 Initial Setup

Overview

When the IP40 unit powers on for the first time (or after a factory reset) it searches for a configuration server to fetch its configuration automatically. The first action as it 'boots up' is to try obtaining an IP address using Dynamic Host Configuration Protocol (DHCP). Most DHCP servers also provide a default domain name in addition to the IP address assigned to their device. If domain is indicated the IP40 will use this information and try and follow the 'Auto Discovery' configuration process.

If no domain name and/or configuration server is provided the IP40 can be configured via it's built in web interface

3.1 Using Automatic Discovery

If a default domain name was provided, the IP40 queries the DNS (Domain Name System) server for the address and port number of a configuration service in that domain. If the default domain name is 'example.com', the IP40 queries the DNS for an SRV record named '_pltconfig._tcp.example.com'.
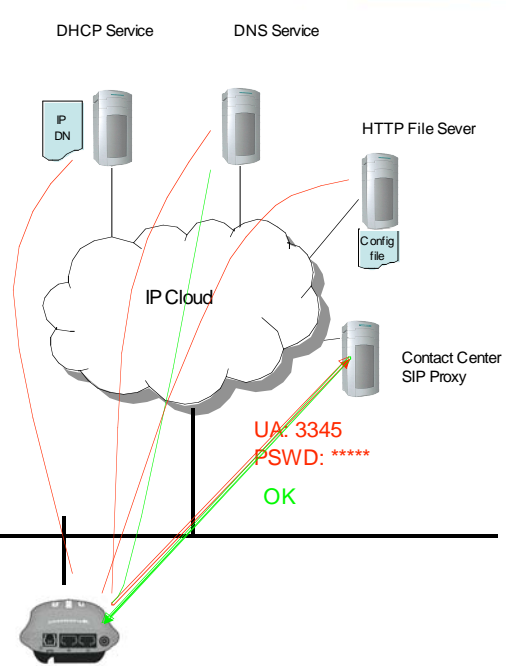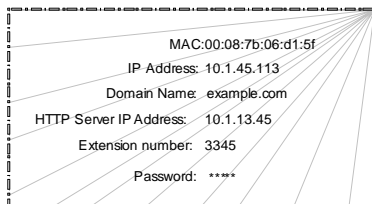

Figure 4 DHCP Auto Configuration Process

```
;; in the example.com. zone file
_pltconfig._tcp     IN SRV 0 1 config.example.com. 8080
```

If this lookup is successful, the response will contain an ordinary hostname, its IP address, and a port number.   The IP40 then uses HTTP (Hyper Text Transfer Protocol) to fetch its configuration file from the server at the address and port number in the DNS response. The path in the request is '/Config' and the filename is the MAC address of the IP40 (in lowercase with no separator symbols) plus the extension '.cfg'.

```
GET /Config/00087b06d15f.cfg HTTP/1.1
Host: config.example.com:8080
```

This process is also shown in the following diagram, assuming the MAC address of the unit is 00:08:7B:06:D0:D6.

IP40   **DHCP Server**   **DNS Server**   **HTTP Server**

    DHCP Discover →

    DHCP Request ←

    DHCP Offer →

    DHCP ACK ←
    (domain = *example.com*)

    DNS Request: SRV _pltconfig._tcp.example.com →

    DNS Response: *config.example.com port 8080* ←

    HTTP GET http://*config.example.com:8080/Config/00087b06d0d6.cfg* →

    HTTP: 200 OK (with configuration file) ←
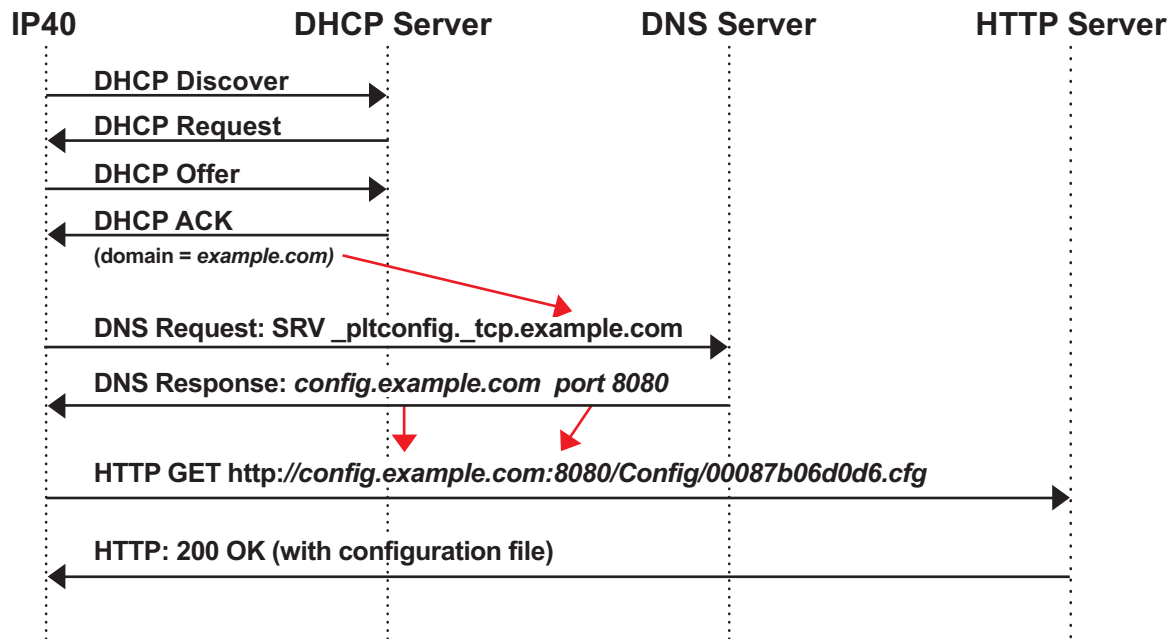
Figure 5 Configuration Process

3.2 Configuration File Format

The format of the configuration file is a structured text file. An example of the file structure for a minimal configuration is contained in section 6.9 Settings Page.

Each line contains the name of a configurable item and its value in the following format. At the beginning of each line, before the name of the configurable item, is a percent symbol (%). The name of the configurable item will be in uppercase letters, numerals, and underscores. The name is followed by a percent symbol (%) and then a colon character (:). If the type of parameter has an integer, Boolean, or enumerated value, the

value will follow immediately after the colon and will be expressed as a decimal integer (with no quotes):

%NETWORK_DHCP_CLIENT_BOOT_SERVER_OPTION%:12345   // integer value in decimal

%NETWORK_WAN_SETTINGS_IP%:0xC0A80106 // or hexadecimal

If the parameter is a codec priority list, the value following the colon is a comma separated list of decimal or hexadecimal integers, ending in hexadecimal 0xFF (255 decimal):

%SRV_0_SIP_UA_CODEC_PRIORITY%:0,1,3,4,0xFF

If the type of parameter has any other type of value (a string, IP address, domain name, or URI), the value following the colon is a double-quoted string value (a value bracketed by <"> on both sides):

%NETWORK_DHCP_CLIENT_BOOT_SERVER_OPTION%:"string value of configurable option"

The specific configuration file entries are discussed in more detail in the following sections under Section 6 "Configuration Reference ".

3.3 Configuration Using the Embedded Web Server

The IP40 has an embedded web server which can be used for individual configuration. The web server also provides access to the internal logging messages and the ability to reboot the unit. Before accessing the web server, it is necessary to determine the IP address of the IP40.

Determine the IP address of the IP40

Since the IP40 has no display, the IP address is rendered to the administrator aurally by playing the IP address, one digit at time, through the headset. For example, '10.1.7.155' sounds like "one-zero-dot-one-dot-seven-dot-one-five-five".

Make sure that a headset is plugged into the IP40. Make sure that the IP40 has finished booting. The power LED will be solid green, the mute button will be unlit, and the answer/end button will be unlit or solid red. If the Answer/End LED is red (this is typical if not configured), press and hold the Answer/End button for more than 5 seconds and the IP address of the unit will be spoken

Error messages maybe accessed in the same way using a brief button press (less than 5 seconds) of the Answer/End button. If the error message played says either "IP address not found" or "Your network cable is not connected", the administrator needs to

first attach the IP40 to a network with a functioning DHCP server with available addresses. A list of error messages can be found in section 10

If any other error message is played, the IP40 headset adapter can still be configured over the network.

Modifying the IP40 configuration

Using a web browser connected to the same network as the headset adapter, enter the IP address of the IP40 headset adapter into the Address Bar of the browser. For example, if the IP address played by the IP40 headset adapter was '10.1.7.155' enter 'http://10.1.7.155' into the web browser.
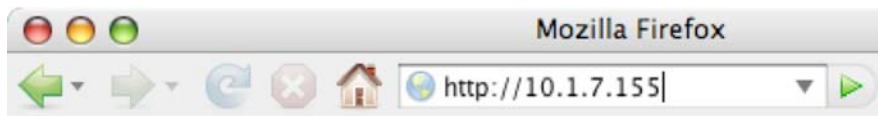
Figure 6 Web Browser Access

The IP40 web browser interface will then ask you to authenticate to the headset adapter.
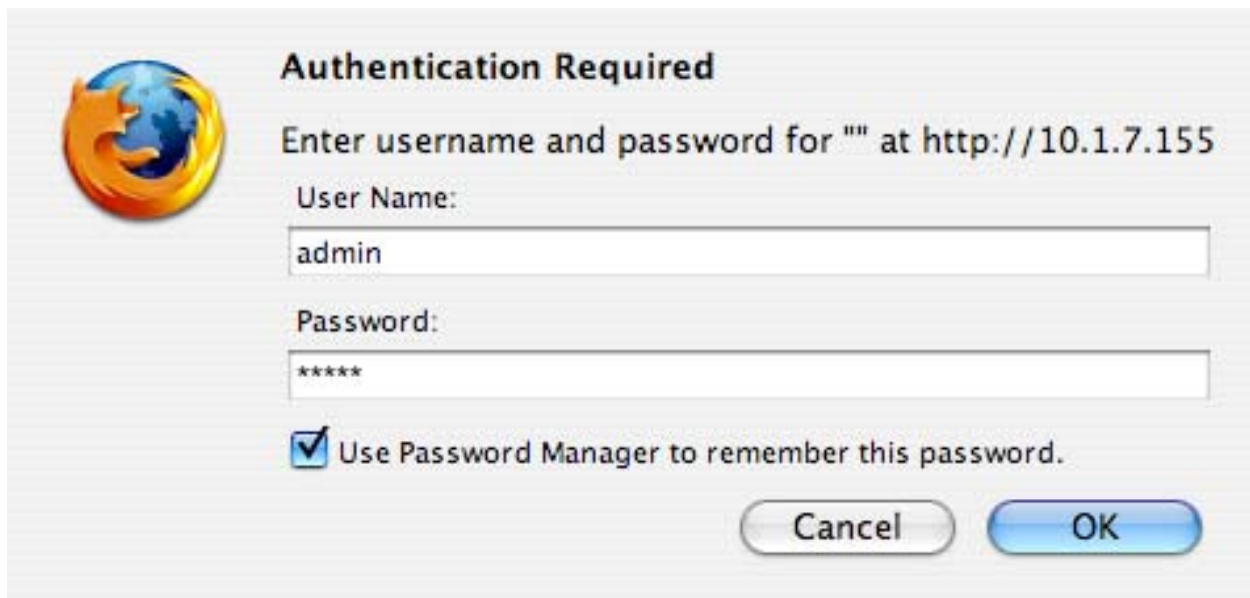
Figure 7 Log authorization

Enter the username and password configured for the headset adapter. The default username and password are listed below.

> The default username is: **admin**
> The default password is: **admin**

The IP40 configuration is split across several web pages, each listed in the left-hand column of any page.
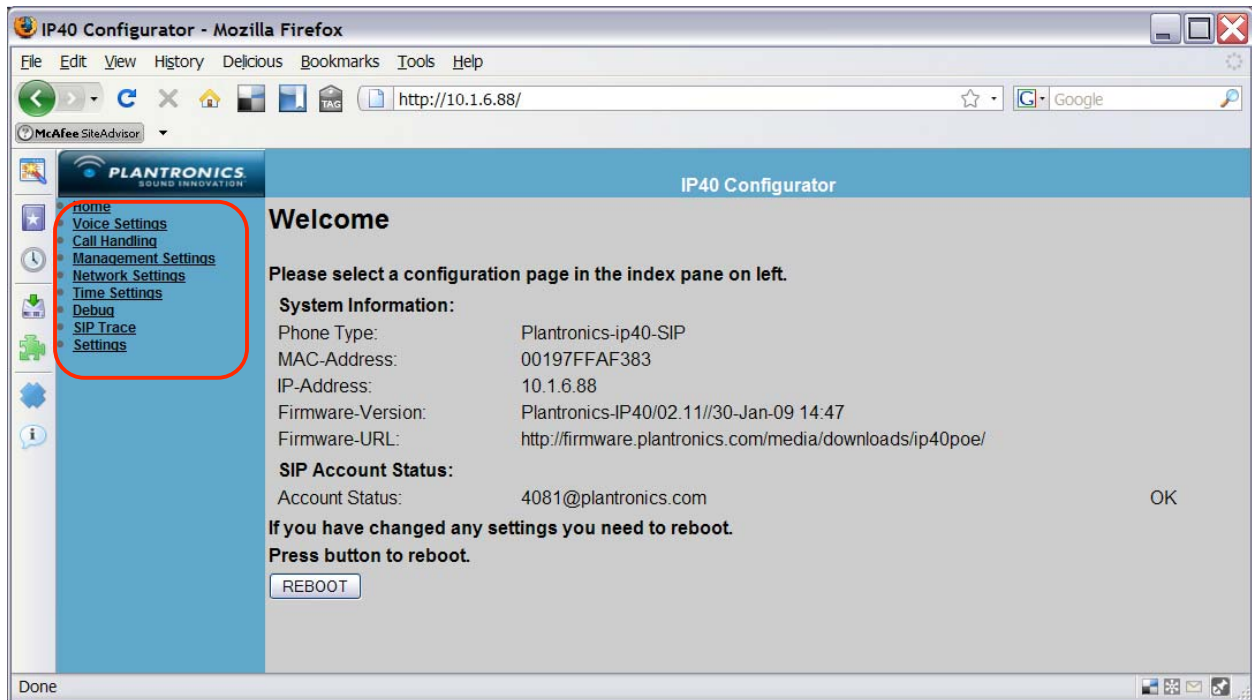
Figure 8 IP40 Home Page

After any change is made on a page, the SAVE CHANGES button must be pressed (before changing to the next page for edit). Once all the changes (possibly from more than one page) have been made, the REBOOT button (***once all edits are complete***) must be used before these changes will take effect. It is not necessary to reboot the adapter after each page of changes.

A warm reboot will take approximately 15 seconds
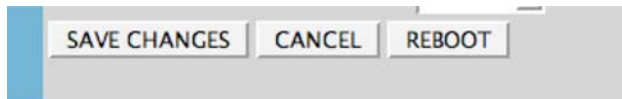
Figure 9 IP40 Modification Actions

In a later section "Configuration Option Reference", the meaning of each configurable item is discussed according to its internal name as used by the configuration file. The screenshots in that section show the internal name of each configurable option shown on the web pages. The most commonly used configurable items are discussed in the next section 4 "Typical Minimal Configuration".

4 Typical Minimal Configuration

4.1 Configuration example

The following example configuration configures the IP40 headset adapter to register against the Address of Record "sip:4081@plantronics.com" with the password "12341234" by sending to a proxy server at 10.1.3.32 on port 5060. It uses the display name "4081" and will call "831 458 5858" (Plantronics central number) when the Answer/End button is pressed. The adapter gets the current time from the SNTP server "bigben.example.com" and is in Time Zone +1 (Midway Island).

What the SIP parameters mean

The right-hand-side of the @ sign (the domain portion) of an Address of Record (AOR) contains the domain or server responsible for that AOR, and typically it is where SIP requests should be sent for that AOR. This value is called the "Domain" on the Voice Server page (SRV_0_SIP_UA_DATA_DOMAIN in configuration file). This value is mandatory.

The left-hand-side of the @ sign (the user portion) contains the name of the resource or user at the domain or server name in the right-hand-side. In other words, sip:bill@bigcompany.com is a different resource than sip:bill@smallcompany.com. This value is called the "SIP user name" on the Voice Subscription page (SUBSCR_0_UA_DATA_SIP_NAME). This value is also mandatory.

In some cases the domain name, hostname, or IP address provided for the registrar is not the hostname or IP address where the IP40 should send its SIP requests. If this is the case, the "Proxy Address" on the Voice Server page (SRV_0_SIP_UA_DATA_PROXY_ADDR) should be set to the address where requests need to be sent. This value is optional. If the value is blank, the IP40 headset adapter will send its SIP requests to the server identified by SRV_0_SIP_UA_DATA_DOMAIN.

4.1.1 Via configuration file upload

```
%SRV_0_SIP_UA_DATA_DOMAIN%:"plantronics.com"
%SRV_0_SIP_UA_DATA_PROXY_ADDR%:"10.1.3.32"
%SRV_0_SIP_UA_DATA_SERVER_PORT%:5060
%NETWORK_SNTP_SERVER%:"bigben.example.com"
%GMT_TIME_ZONE%:+1
%SUBSCR_0_UA_DATA_SIP_NAME%:"4081"
%SUBSCR_0_UA_DATA_DISP_NAME%:"4081"
%SUBSCR_0_UA_DATA_AUTH_NAME%:"4081"
%SUBSCR_0_UA_DATA_AUTH_PASS%:"12341234"
%AUTO_DIAL_NUMBER%:"918314585858"
```

4.1.2 Via web configuration

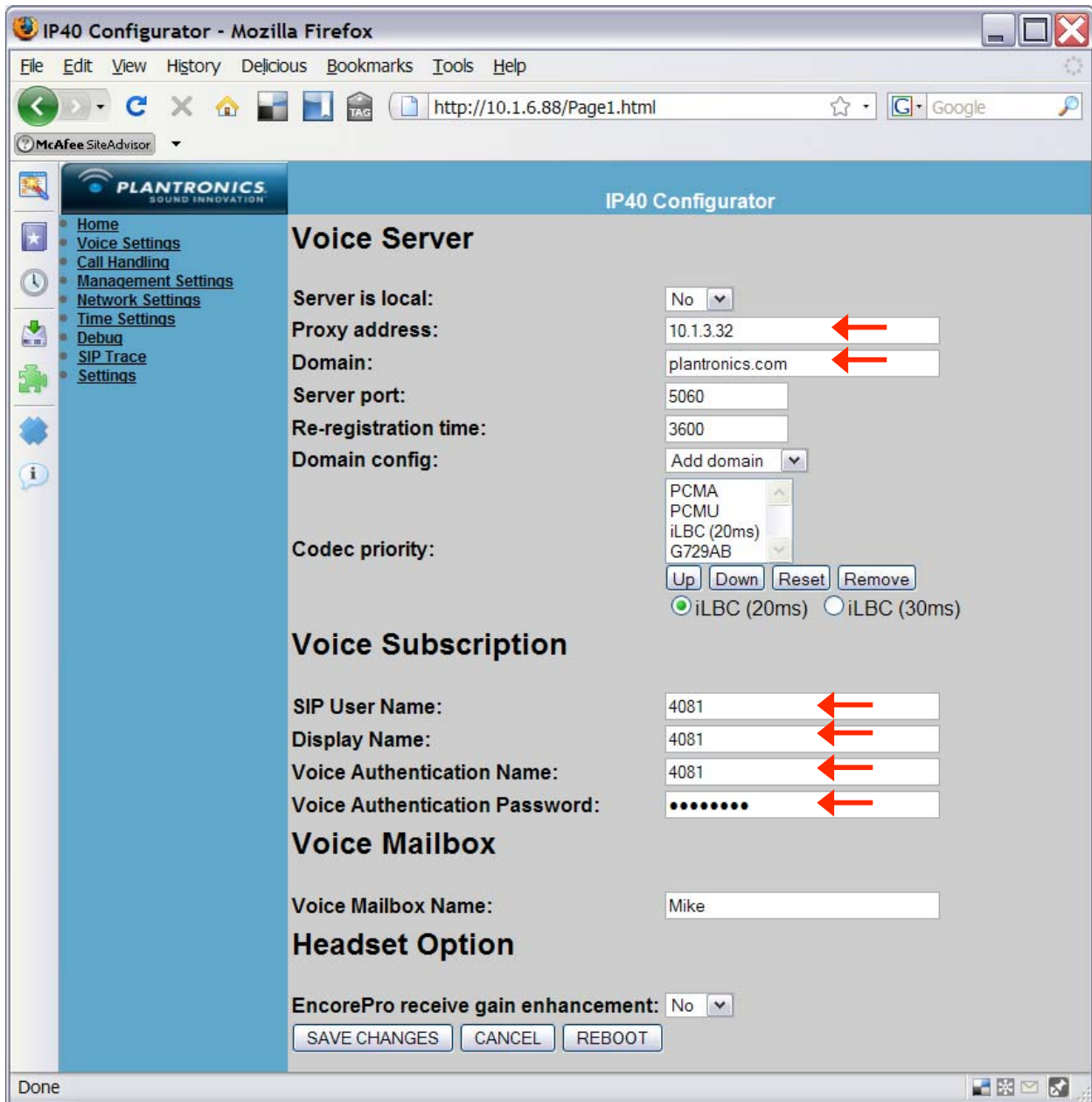The following screen shots show the same configuration described above.

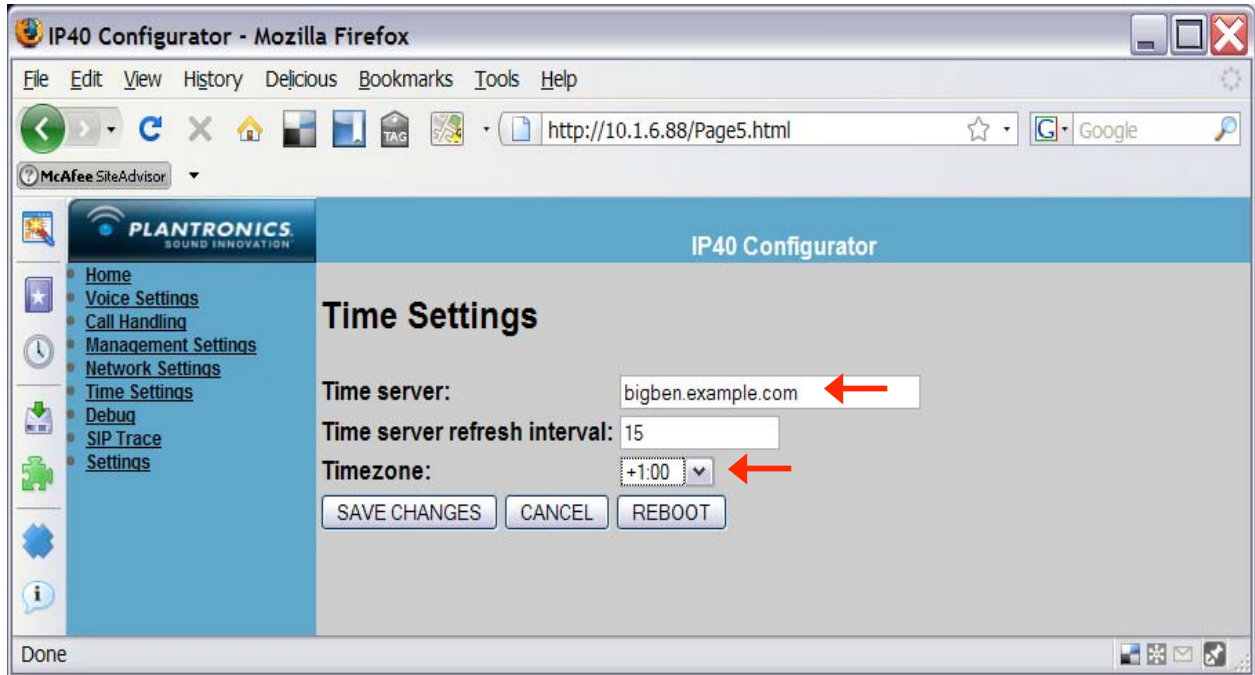**Figure 10 Minimal Configuration via Voice Server Web Page**

Figure 11 Time Setting Web Page

5 Updating Firmware and Configuration

The IP40 headset adapter is capable of automatically fetching configuration files and new firmware periodically. Both configuration files and firmware need to be downloaded from the same server which we will call the "management server". Once this management server is discovered or configured, the server can be contacted either at a specific (Absolute) time once each day, or at a repeating frequency every so many seconds (Relative). These timers are separate for configuration and firmware. For example, the IP40 headset adapter could check for new configuration once every 8 hours (Relative), but check for firmware every day at 2:30am (Absolute). A sample configuration file snippet for this configuration is shown below.

```
%NETWORK_TFTP_SERVER%:"config.example.com"
%MANAGEMENT_TRANSFER_PROTOCOL%:1    // use HTTP (the default)
%CFG_POLLING_ENABLE%:1
%CFG_POLLING_MODE%:1                 // relative
%CFG_POLLING_PERIOD%:28800           // 8 hours = 28800 secs
%CFG_POLLING_TIME_HH%:2
%CFG_POLLING_TIME_MM%:30             // 02:30am
%FWU_POLLING_ENABLE%:1
%FWU_POLLING_MODE%:0                 // absolute
%FWU_POLLING_PERIOD%:28800           // 8 hours = 28800 secs
%FWU_POLLING_TIME_HH%:2
%FWU_POLLING_TIME_MM%:30             // 02:30am
```

The IP40 headset adapter can use either HTTP or TFTP to fetch its configuration and firmware (HTTP is strongly recommended). In addition, the path name used for firmware downloads is configurable. (The path name used for configuration download is always "/Config".) Also, the username and password of the administrator account on the built-in web server is configured in the same area.

5.1 Automatically initiating firmware update

Firmware can be downloaded from the Plantronics web site and placed on an enterprise file server or download directly by the IP40 from the Plantronics web site.   For direct download the administrator can enable the default settings on the IP40 Management web page that point to the correct Plantronics public web site.

The configuration described in the screen shots below will cause the IP40 headset adapter to automatically check the Plantronics web site once a day at 3:00 AM for new firmware.
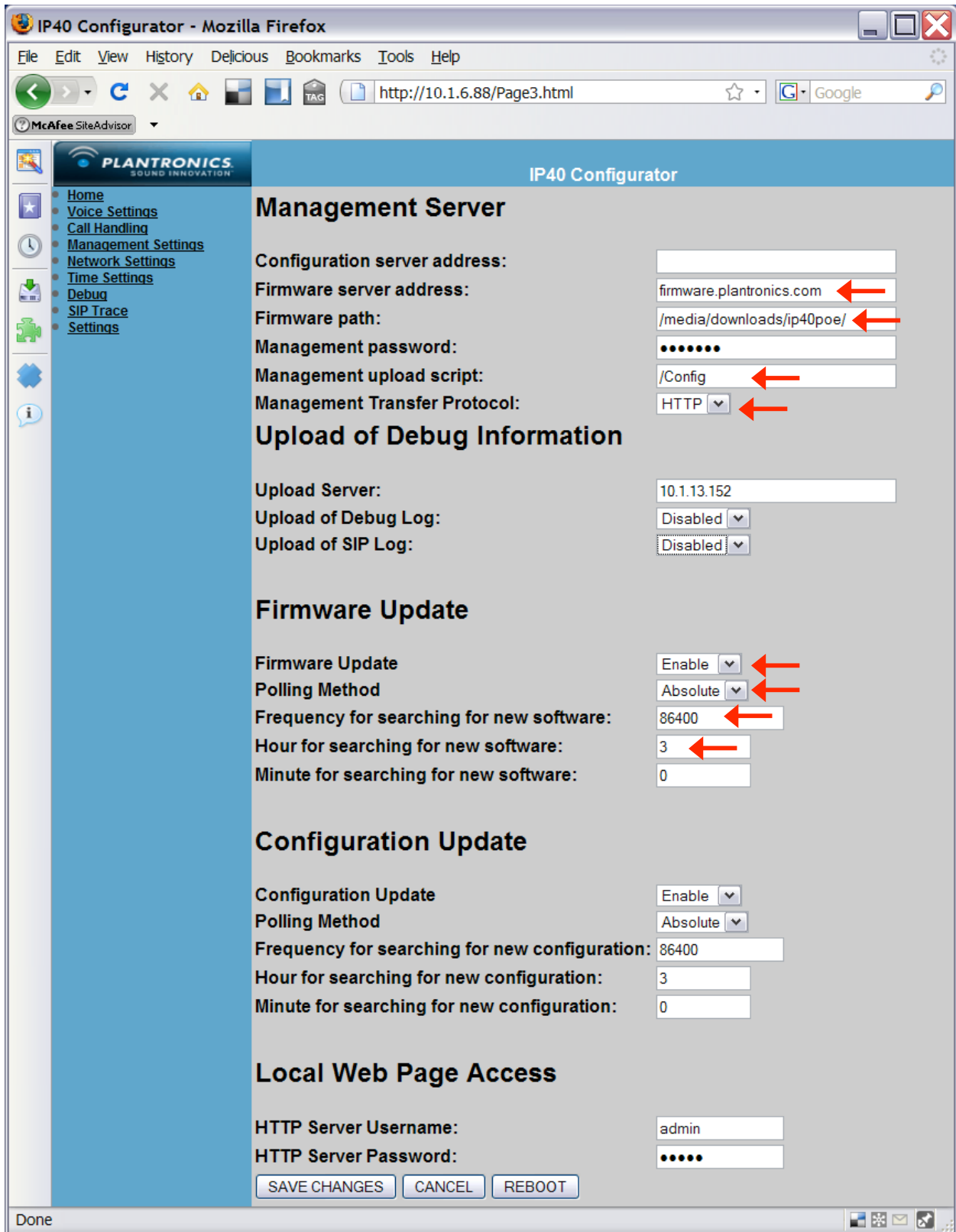
Figure 12 Management Server Web Page

5.2 Manually initiating firmware update

The administrator can manually update the IP40 headset adapter to the latest firmware by pointing the IP40 at the correct firmware directory on the enterprise file server or Plantronics public web site and changing the polling setting to 'Relative' with the desired time interval. Before upgrade the IP40 will check that it is not in an active call. If it is it will defer upgrade to after the call is terminated.

After a 'Relative' firmware upgrade, remember to disable polling for firmware and configuration updates.

5.3 Check-sync Upgrade

The IP40 headset adapter can respond to an unsolicited notification from a management system. When this feature is enabled and the IP40 headset adapter receives this "check-sync" SIP NOTIFY request, it compares the firmware version it is currently running with the version stored on the server. If the versions are different, the adapter immediately starts a firmware update.

The NOTIFY request is an unsolicited NOTIFY for the "check-sync" event. It has a unique Call-ID. The Request URI has the MAC address of the adapter in capital hexadecimal digits in the user part, and the IP address of the adapter (and port number if a non-default source port number is used) in the host part. The From header is a URI on the registration domain. For example, a partial check-sync message corresponding to our example in Section 4 is below (Via, CSeq, and Call-ID headers are not shown).

```
NOTIFY sip:00087B06D175@10.1.7.155 SIP/2.0
From: <sip:10.1.3.32>;tag=0sdhug3bsy9nh
To: <sip:00087B06D175@10.1.7.155>
Event: check-sync
Contact: <sip:4081@10.1.7.155>
```

This feature is enabled only if the SUBSCR_0_SIP_UA_DATA_SERVER_ID and ENABLE_SIP_MESSAGE_ENCRYPTION are explicitly set to 0. Note that no authentication is provided for the check-sync request.

If VOIP_LOG_AUTO_UPLOAD is set to 2, the IP40 headset adapter will also use HTTP to upload its Debug Log before attempting a Firmware Update.

6 Configuration Reference

6.1 SIP and RTP

The IP40 headset adapter needs to register with a SIP registrar successfully before it can make or receive calls. Administrators using this guide should be familiar with the basics of SIP operation and terminology. A very short summary of the SIP methods supported is attached in an appendix to this administration guide.

When the IP40 makes or receives a call, it will try to negotiate a common speech codec, and then it will exchange media using RTP.

While the IP40 does not have 'buttons' to enable it to initiate call transfer, call forwarding, call park, or many other traditional PBX features autonomously, the IP40 is a "good citizen" and can be the passive participant in any of these features initiated by most other SIP endpoints or via a SIP PBX or SIP ACD.

The configuration for SIP and for RTP options is specified in Voice Settings web page.

6.2 Voice Server Page
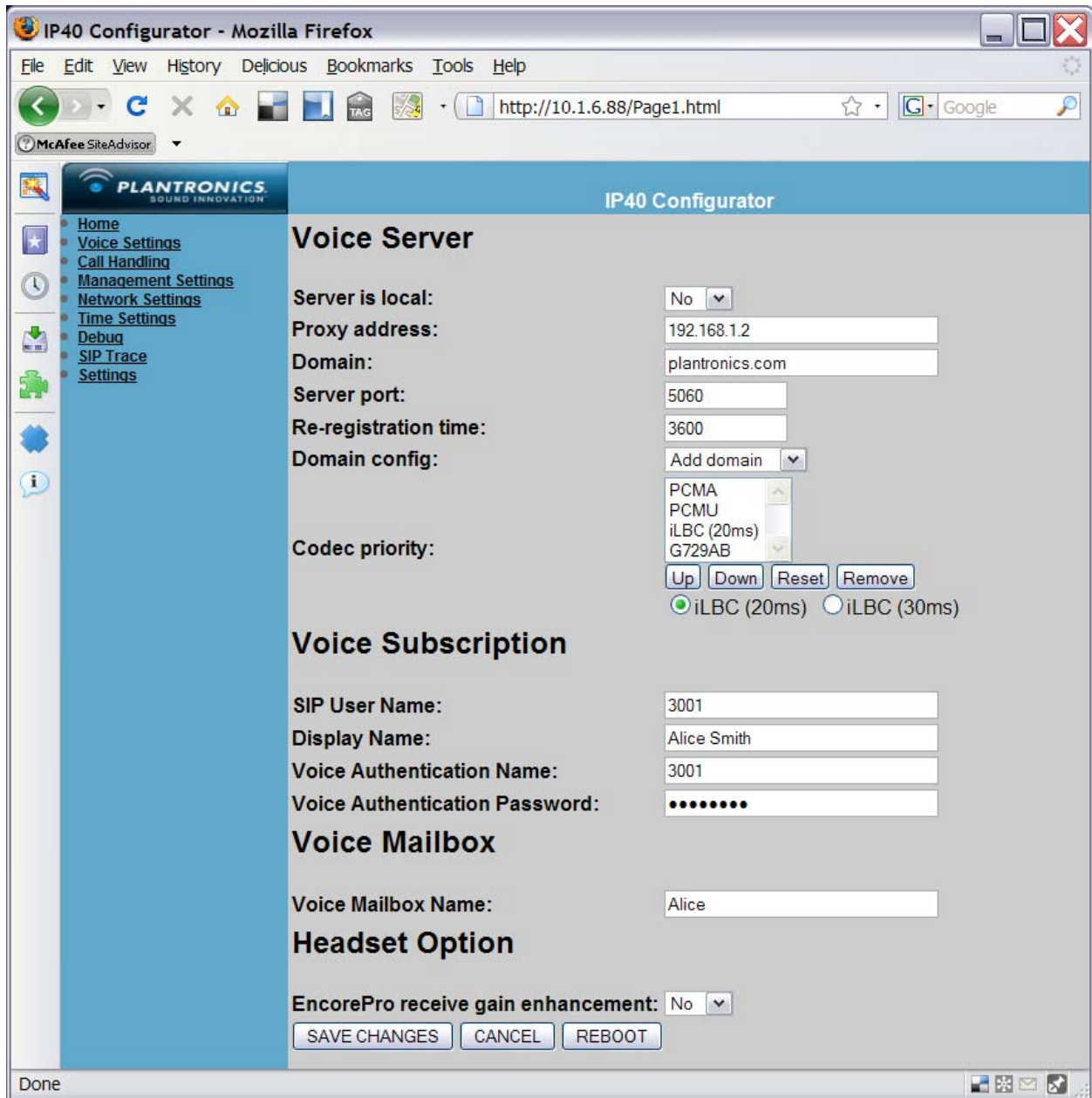
Figure 13 IP40 Voice Server Web Page

6.2.1 Voice Server

Web Page: Voice Settings
Label on web page: **Server is local**
Parameter name: SRV_0_SIP_UA_DATA_SERVER_IS_LOCAL

Type: Boolean
Default Value: 0 (No)
Notes: If '1' this server is regarded as being directly available on the net, even though stun or other mechanisms have resolved the system to be behind a NAT-firewall.

Web Page: Voice Settings
Label on web page: **Proxy address**
Parameter name: SRV_0_SIP_UA_DATA_PROXY_ADDR
Type: IP address or domain name (up to 60 chars)
Default Value: ""
Notes: Address or domain name where SIP requests are sent. If empty, the value of SRV_0_SIP_UA_DATA_DOMAIN is used instead

Web Page: Voice Settings
Label on web page: **Domain**
Parameter name: SRV_0_SIP_UA_DATA_DOMAIN
Type: IP address or domain name (up to 60 chars)

Web Page: Voice Settings
Label on web page: **Server port**
Parameter name: SRV_0_SIP_UA_DATA_SERVER_PORT
Type: integer (0 to 65535)
Default Value: 5060
Notes: Port number used when an explicit address is provided in SRV_0_SIP_UA_DATA_PROXY_ADDR (above)

Web Page: Voice Settings
Label on web page: **Re-registration time**
Parameter name: SRV_0_SIP_UA_DATA_REREG_TIME
Type: integer (0 to 65535)
Default Value: 3600
Notes: How long in seconds the IP40 headset adapter asks its registration to be valid (in the Expires: header)

Web Page: Voice Settings
Label on web page: **Domain config**
Parameter name: SRV_0_SIP_URI_DOMAIN_CONFIG
Type: enumerated type
Default Value: 0 (Add domain if needed)
Notes: **Do not change this value**. 0 = Add domain if needed; 1 = Must specify entire URI; 2 = Replace domain name provided with SRV_0_SIP_DATA_DOMAIN.

Web Page: Voice Settings
Label on web page: **Codec priority**

Parameter name: SRV_0_SIP_UA_CODEC_PRIORITY
Type: comma separated list of exactly five (5) 8-bit, unsigned integers
Default Value: 1,0,2,4,0xFF
Notes: The codec list represents the number of the 1st priority codec, then the number of the 2nd priority codec, and so forth, up until the 5th priority codec. Whenever there is not a codec left in the priority list, it is replaced by 0xFF (decimal 255). For example, for G.729ab only, the codec list is 4,0xFF,0xFF,0xFF,0xFF.
The codec numbers are: 0 = G.711u (20 ms), 1 = G.711A (20 ms), 2 = iLBC(20 ms), 3 = iLBC(30 ms), 4 = G.729ab. Note that it is not possible to choose both option 2(iLBC 20 ms) and 3(iLBC 30 ms) in the same priority list.

Warning: The default packetization time used by the IP40 is 20ms. Because the IP40 software makes several assumptions about packetization time, we do not support configurations with iLBC 30ms and another codec in the codec list. In other words, we will support a codec list of "3,0xFF, 0xFF,0xFF,0xFF", but no other codec lists are supported which contain iLBC 30ms (3). The IP40 will not prevent the administrator from setting an unsupported configuration, but undesirable behavior such as phantom ringing, one-way audio, or no audio may occur if these recommendations are ignored. iLBC 20ms can be used safely in combination with any other codec (except iLBC 30ms).

6.2.2 Voice Subscription

Web Page: Voice Settings
Label on web page: **SIP User Name**
Parameter name: SUBSCR_0_UA_DATA_SIP_NAME
Type: string (up to 60 chars)
Default Value: ""
Notes: The user part (the value to the left of the @ sign) of the From: URI

Web Page: Voice Subscription
Label on web page: **Display Name**
Parameter name: SUBSCR_0_UA_DATA_DISP_NAME
Type: string (up to 32 chars)
Default Value: ""
Notes: The display name used in the From: header.

Web Page: Voice Subscription
Label on web page: **Voice Authentication Name**
Parameter name: SUBSCR_0_UA_DATA_AUTH_NAME
Type: string (up to 60 chars)
Default Value: ""
Notes: The SIP digest username. Note that if this field is left blank, the value from SUBSCR_0_UA_DATA_SIP_NAME will not be used instead

Web Page: Voice Settings
Label on web page: **Voice Authentication Password**
Parameter name: SUBSCR_0_UA_DATA_AUTH_PASS
Type: string (up to 60 chars)
Default Value: ""
Notes: The SIP digest password

Web Page: Voice Settings
Label on web page: **Voice Mailbox Name**
Parameter name: SUBSCR_0_SIP_UA_DATA_VOICE_MAILBOX_NAME
Type: string (up to 60 chars)
Default Value: ""
Notes: The SIP digest name for Voice Mailbox URI like sip:alice@vmail.example.com.
During normal operation, the Answer/End button will blink RED 'on' half a second 'off'
2.5 seconds to indicate a Voice Mail is available for this Voice Mailbox subscriber

6.2.3 Headset Option

Web Page: Voice Settings
Label on web page: **EncorePro receive gain enhancement**
Parameter name: ENABLE_EXTRA_RX_GAIN
Type: enumerated type
Default Value: 0 (No)
Notes: If '1' (Yes) will enable an extra 6 db gain on RX to be used with Plantronics
EncorePro headsets

6.3 Call Handling Page

The behavior of the Answer/End button is described in the section 2.1 Call Handling
Answer/End Button. The relevant three configuration values are described below.

Figure 14 Call Handling Web Page Settings

Web Page: Call Handling
Label on web page: **Automatically Dial Number**
Parameter name: AUTO_DIAL_NUMBER
Type: string (up to 40 chars)
Default Value: ""
Notes: The number or URI to call when the Answer/End button is pressed during the idle state. If no domain is provided, the domain from SRV_0_SIP_UA_DATA_DOMAIN will be added.

Web Page: Call Handling
Label on web page: **Automatically Answer**
Parameter name: CALL_AUTO_ANSWER
Type: Boolean
Default Value: 0 (Disable)
Notes: Determines if IP40 headset adapter will answer (respond with 200 OK) or ring (respond with 180 Ringing) to incoming call.

Web Page: Call Handling
Label on web page: **Disconnect Button**
Parameter name: DISCONNECT_BUTTON
Type: Boolean
Default Value: 1 (Enable)
Notes: Determine if the IP40 headset adapter will be able to send BYE and CANCEL requests. If this feature is disabled, the user will only be able to disconnect a call using third party software on a PC for example.

6.4 Management Settings Page

Figure 15 Management Settings Web Page

6.4.1 Management Server

Web Page: Management Settings
Label on web page: **Configuration server address**
Parameter name: NETWORK_TFTP_SERVER
Type: IP address or domain name (up to 60 chars)
Default Value:""
Notes: This is the domain name or IP address of the HTTP or TFTP configuration server used to fetch configuration updates (if different from the firmware server address)

Web Page: Management Settings
Label on web page: **Firmware server address**
Parameter name: NETWORK_FWU_SERVER
Type: IP address or domain name (up to 60 chars)
Default Value: "firmware.plantronics.com"
Notes: This is the domain name or IP address of the HTTP or TFTP server used to fetch both configuration and firmware updates.

Web Page: Management Settings
Label on web page: **Firmware path**
Parameter name: FWU_TFTP_SERVER_PATH
Type: string
Default Value: "/media/downloads/ip40poe/"
Notes: This directory in which the IP40 headset adapter will look for new software on the HTTP or TFTP management server.

Web Page: Management Settings
Label on web page: **Management Password**
Parameter name: MANAGEMENT_PASSWORD
Type: string (up to 25 chars)
Default Value: "VoipLan"

Web Page: Management Settings
Label on web page: **Management Upload Script**
Parameter name: MANAGEMENT_UPLOAD_SCRIPT
Type: string (up to 20 chars)
Default Value: "/Config"

The name of the management server can be configured, it can be discovered using DNS SRV lookups, or it can be discovered using DHCP options. Customers who want to use a DHCP provided management server can use a two-stage configuration process. The IP40 is turned on first on a private network where it use DNS SRV to find a configuration server, and downloads a very minimal configuration file that enables DHCP-based configuration. The DHCP option approach just provides an IP address.

The protocol to use is still selected using whatever protocol is selected in MANAGEMENT_TRANSFER_PROTOCOL, and the default port number for that protocol is selected.

Web Page: Management Settings
Label on web page: **Management Transfer Protocol**
Parameter name: MANAGEMENT_TRANSFER_PROTOCOL
Type: enumeration
Default Value: 1 (HTTP)
Notes: The protocol used to fetch both configuration and firmware updates. 0 = TFTP; 1 = HTTP (strongly recommended)

6.4.2 Upload of Debug Information

Web Page: Management Server
Label on web page: **Upload Server**
Parameter name: NETWORK_UPLOAD_SERVER
Type: string
Default Value: ""
Notes: Server to upload debug information

Web Page: Management Server
Label on web page: **Upload of Debug Log**
Parameter name: VOIP_LOG_AUTO_UPLOAD
Type: Boolean
Default Value: 0
Notes: Setting to upload debug information, 0=Disable, 1=Boot Log only, All information

Web Page: Management Server
Label on web page: **Upload of SIP Log**
Parameter name: VOIP_SIP_AUTO_UPLOAD
Type: Boolean
Default Value: 0
Notes: Setting to upload debug information, 0=Disable, All information

6.4.3 Firmware Update

Web Page: Management Settings
Label on web page: **Firmware Update**
Parameter name: FWU_POLLING_ENABLE
Type: Boolean
Default Value: 1 (Enabled)
Notes: Turns on overall polling process for new firmware

Web Page: Management Settings
Label on web page: **Polling Method**
Parameter name: FWU_POLLING_MODE
Type: enumeration
Default Value: 0 (Absolute)
Notes: Checks either at a specific time (Absolute = 0) or by a period / frequency
(Relative = 1)

Web Page: Management Settings
Label on web page: **Frequency for searching for new software**
Parameter name: FWU_POLLING_PERIOD
Type: integer (0 to 65535)
Default Value: 86400 seconds (= one day)
Notes: Defines the frequency (period in seconds) of checks for new firmware in Relative
mode.

Web Page: Management Settings
Label on web page: **Hour for searching for new software**
Parameter name: FWU_POLLING_TIME_HH
Type: integer (0 to 23)
Default Value: 3 (= 03:xx am)
Notes: Defines the hour when a check for new firmware would occur in Absolute mode.

Web Page: Management Settings
Label on web page: **Minute for searching for new software**
Parameter name: FWU_POLLING_TIME_MM
Type: integer (0 to 59)
Default Value: 0 (= xx:00)
Notes: Defines the minute when a check for new firmware would occur in Absolute
mode.

6.4.4 Configuration Update

Web Page: Management Settings
Label on web page: **Configuration Update**
Parameter name: CFG_POLLING_ENABLE
Type: Boolean
Default Value: 1 (Enabled)
Notes: Turns on overall polling process for new configuration

Web Page: Management Settings
Label on web page: **Polling Method**
Parameter name: CFG_POLLING_MODE
Type: enumeration

Default Value: 0 (Absolute)
Notes: Checks either at a specific time (Absolute = 0) or by a period / frequency
(Relative = 1)

Web Page: Management Settings
Label on web page: **Frequency for searching for new configuration**
Parameter name: CFG_POLLING_PERIOD
Type: integer (0 to 65535)
Default Value: 86400 seconds (= one day)
Notes: Defines the frequency (period in seconds) of checks for new configuration in
Relative mode.

Web Page: Management Settings
Label on web page: **Hour for searching for new configuration**
Parameter name: CFG_POLLING_TIME_HH
Type: integer (0 to 23)
Default Value: 3 (= 03:xx am)
Notes: Defines the hour when a check for new configuration would occur in Absolute
mode.

Web Page: Management Settings
Label on web page: Minute **for searching for new configuration**
Parameter name: CFG_POLLING_TIME_MM
Type: integer (0 to 59)
Default Value: 0 (= xx:00)
Notes: Defines the minute when a check for new configuration would occur in Absolute
mode.

6.4.5 Local Web Page Access (Page)

Web Page: Management Settings
Label on web page: **HTTP Server Username**
Parameter name: LOCAL_HTTP_SERVER_AUTH_NAME
Type: string (up to 36 chars)
Default Value: "admin"
Notes: The username used to login to the headset adapter

Web Page: Management Settings
Label on web page: **HTTP Server Password**
Parameter name: LOCAL_HTTP_SERVER_AUTH_PASS
Type: string (up to 36 chars)
Default Value: "admin"
Notes: The password used to login to the headset adapter

NOTE: Access to the IP40 headset adapter web pages can be disabled by setting LOCAL_HTTP_SERVER_ACCESS to 0. in configuration file. This setting can not be accessed from the web interface

6.5 Network Settings Page

By default, the IP40 uses DHCP to fetch an IP address. Once it obtains an initial address, it can be reconfigured with a static IP address. This is not recommended, but may be useful in some very specialized environments, such as in a network testing laboratory. Note that if these parameters are incorrectly configured, the IP40 can be restored to its factory settings (see the section on Factory Reset) at which point it will begin using DHCP
again.
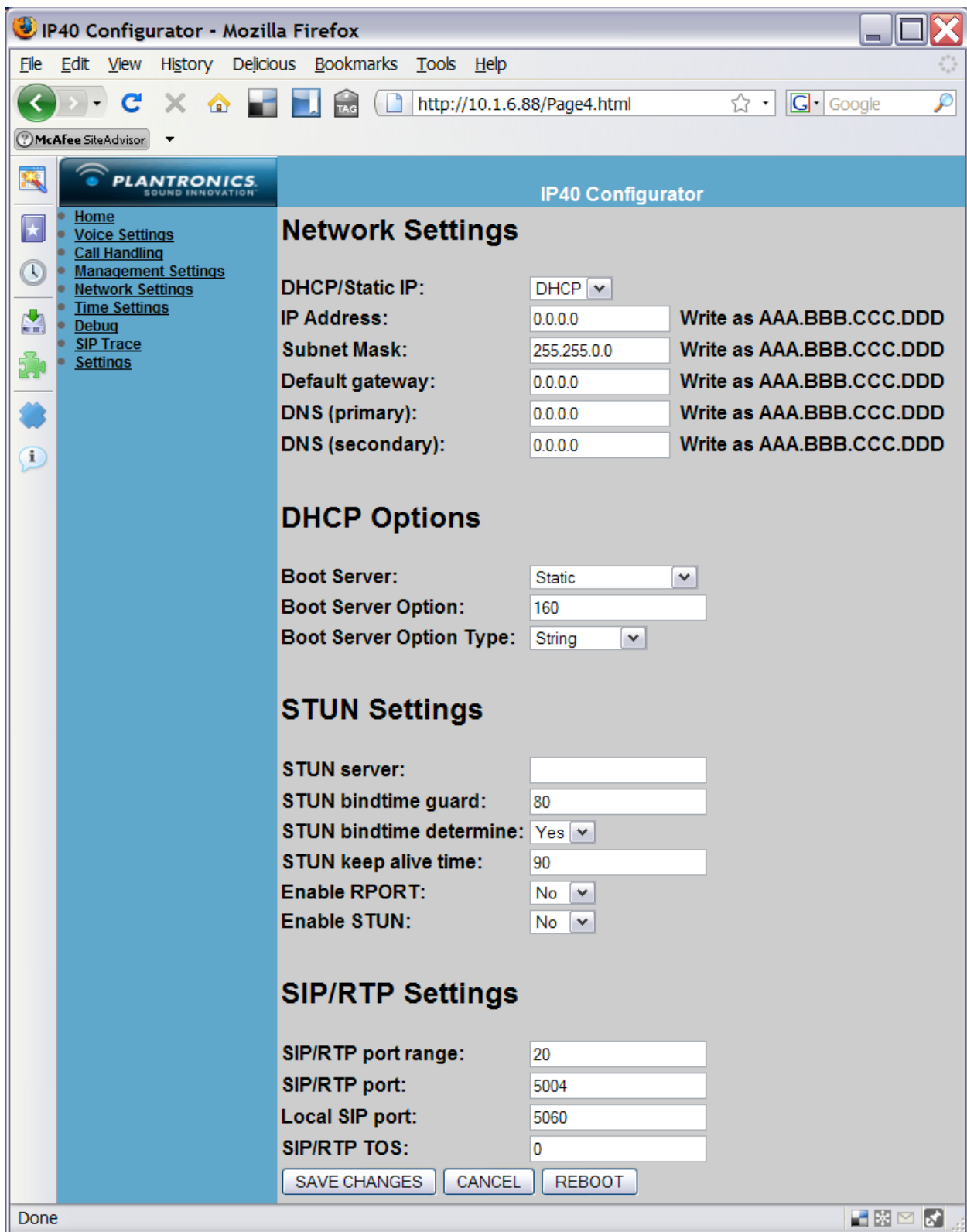
Figure 16 Network Settings Web Page

6.5.1 Network Settings (General)

Web Page: Network Settings
Label on web page: **DHCP/Static IP**
Parameter name: NETWORK_WAN_SETTINGS_DHCP
Type: Boolean
Default Value: 1 (DHCP)
Notes: 0 = Static; 1 = DHCP

For brevity the following parameters are listed individually. They each take an IP address *expressed in hexadecimal* and all but the subnet mask (which defaults to 0xFFFF0000 [255.255.0.0]) default to 0x00000000[0.0.0.0]. These parameters are ignored except when NETWORK_WAN_SETTINGS_DHCP is disabled (set to 0).

IP Address   NETWORK_WAN_SETTINGS_IP
Subnet Mask   NETWORK_WAN_SETTINGS_SUBNET_MASK
Default gateway   NETWORK_WAN_SETTINGS_GATEWAY
DNS (primary)   NETWORK_WAN_SETTINGS_DNS1
DNS (secondary)   NETWORK_WAN_SETTINGS_DNS2

For example, setting the IP address 192.168.1.6 is done like this:
%NETWORK_WAN_SETTINGS_IP%:0xC0A80106

!   **Note Well:** IP Addresses must be entered as a single hexadecimal number. In the IP40 configuration file *IP addresses in "dotted quad" format will be rejected* by the headset adapter.

The amount of time that the IP40 headset adapter will wait for DHCP responses is configurable from the configuration file as an integer number between 1 and 600 seconds via the NETWORK_DHCP_CLIENT_TIMEOUT parameter. The default setting is 3 seconds.

6.5.2 DHCP Options

Web Page: Network Settings
Label on web page: **Boot Server**
Parameter name: NETWORK_DHCP_CLIENT_BOOT_SERVER
Type: enumeration
Default Value: 2 (Static)
Notes: 0 = "Opt 66": use server found in DHCP Option 66; 1 = "Custom": use server found in the DHCP Option whose number is found in NETWORK_DHCP_CLIENT_BOOT_SERVER_OPTION; 2 = "Static": do not use servers found via DHCP options; 3 = "Custom + Opt 66": If the "custom" DHCP option is

present use it, otherwise use option 66.

Web Page: Network Settings
Label on web page: **Boot Server Options**
Parameter name: NETWORK_DHCP_CLIENT_BOOT_SERVER_OPTION
Type: integer (150 to 254)
Default Value: 160
Notes: This is the numeric value of any custom DHCP option code used to reference the configuration server. For example, by default DHCP option code 160 would be used if it is present.

Web Page: Network Settings
Label on web page: **Boot Server Option Type**
Parameter name: NETWORK_DHCP_CLIENT_BOOT_SERVER_OPTION_DATATYPE
Type: enumeration
Default Value: 1 (String)
Notes: 0 = 4 binary octets of an IP address; 1 = String. Some DHCP implementations convey an IP address as 4 octets in a DHCP option. Other implementations convey a string which can be a string representation of an IP address or a domain name. The string representation is more common.

6.5.3 STUN Settings

NAT Traversal
If the IP40 headset adapter is used on a private network while the SIP registrar, proxy server, and other endpoints (for example gateways) are accessed via the public Internet, some NAT traversal technique will need to be used to make sure that IP addresses and port numbers needed for RTP media are useful to the receiver (they need to be translated by the IP40 headset adapter or an intermediary), that the addresses and ports used for SIP traffic are useful to at least the adapter's proxy server, and that the NAT binding between the adapter and its SIP proxy remains open.

Currently there are a variety of NAT traversal techniques, STUN, TURN and ICE Factors affecting whether a specific approach will work include what type or types of NATs are being used, the topology of the network, whether any intermediaries attempt NAT-related adjustments, and whether the other parties are also behind a NAT.

For firewall traversal the IP40 uses STUN. The IP40 provides a STUN client to contact a STUN server (usually on the public Internet) to find out what the IP address and port number is likely to be after its address is translated by a NAT. The IP40 headset adapter can also determine the amount of time before NAT bindings expire by repeatedly trying to contact itself through the STUN server at various intervals. The STUN NAT traversal technique will usually work if the IP40 headset adapter is behind a

single modern residential NAT (for example in a home or small business setting), while the SIP proxy and registrar and other SIP user agents are accessible from the public Internet.

In this type of topology, the administrator should enable the STUN protocol (see the SIP_STUN_ENABLE parameter). If the operator of the SIP service provides the address of a STUN server, that address should be configured as the NETWORK_STUN_SERVER. Otherwise the default STUN address is a public STUN server which should provide adequate results.

Web Page: Network Settings
Label on web page: **STUN Server**
Parameter name: NETWORK_STUN_SERVER
Type: string - IP address or domain name plus optional port number (up to 60 chars)
Default Value: ""
Notes: The address of a STUN server which will be used to determine the public IP address of the IP40 headset adapter if STUN is enabled.

Web Page: Network Settings
Web Page: Network Settings
Label on web page: **STUN bindtime guard**
Parameter name: SIP_STUN_BINDTIME_GUARD
Type: integer (0 to 65535)
Default Value: 80 (seconds)
Notes: This is an initial value used to test NAT bindings if SIP_STUN_BINDTIME_DETERMINE is enabled. This is a starting "guess" of the binding time.

Note that the SRV_0_SIP_UA_DATA_SERVER_IS_LOCAL parameter is described under SIP and RTP parameters.

Web Page: Network Settings
Label on web page: **STUN bindtime determine**
Parameter name: SIP_STUN_BINDTIME_DETERMINE
Type: Boolean
Default Value: 1 (Yes / enabled)
Notes: If enabled, the IP40 headset adapter tries to dynamically determine the timeout values of any NATs between the IP40 headset adapter and the configured STUN server. Once a binding time is guessed, the IP40 headset adapter will send STUN binding requests at a frequency half of the discovered binding time.

Web Page: Network Settings
Label on web page: **STUN keeps alive time**
Parameter name: SIP_STUN_KEEP_ALIVE_TIME

Type: integer (0 to 65535)
Default Value: 90 (seconds)
Notes Controls how often empty UDP packets are sent to the SIP server as keep-alive packets to keep a NAT binding open with the SIP server. Note that on some NATs, refreshing a binding with the STUN server may not refresh the binding to the SIP server.

Web Page: Network Settings
Label on web page: **Enable RPORT**
Parameter name: SIP_RPORT_ENABLE
Type: Boolean
Default Value: 1 (enabled)
Notes: Enables the 'rport' Via: header parameter so responses are sent back to the address and port from which they were sent. Leave this on unless you have a very, very good reason to turn it off.

Label on web page: **Enable STUN**
Parameter name: SIP_STUN_ENABLE
Type: Boolean
Default Value: 0 (disabled)
Notes: Turns on STUN discovery.

6.5.4 SIP/RTP Settings

Web Page: Network Settings
Label on web page: **SIP/RTP port range**
Parameter name: SIP_RTP_PORT_RANGE
Type: integer (3 to 20)
Default Value: 20
Notes: Number of RTP ports that can be open (starting from SIP_RTP_PORT).

Web Page: Network Settings
Label on web page: **SIP/RTP port**
Parameter name: SIP_RTP_PORT
Type: integer (0 to 65535)
Default Value: 5004
Notes: The first port number used for RTP traffic.

Web Page: Network Settings
Label on web page: **Local SIP port**
Parameter name: SIP_SIP_PORT
Type: integer (0 to 65535)
Default Value: 5060
Notes: The port number that the headset adapters will listen on for SIP traffic.

Web Page: Network Settings
Label on web page: **SIP/RTP TOS**
Parameter name: SIP_RTP_PRIORITY
Type: integer (0 to 254)
Default Value: 0
Notes: The diffserv type-of-service (TOS) used for RTP traffic.

6.6 Time Settings Page

The time is used in the debug logs and SIP trace information pages. The time is also used to determine when to check for new configuration and firmware files if these use Absolute times. The IP40 headset adapter includes a Simple Network Time Protocol client to fetch the current time. The correct time zone should always be configured when an SNTP server is used.
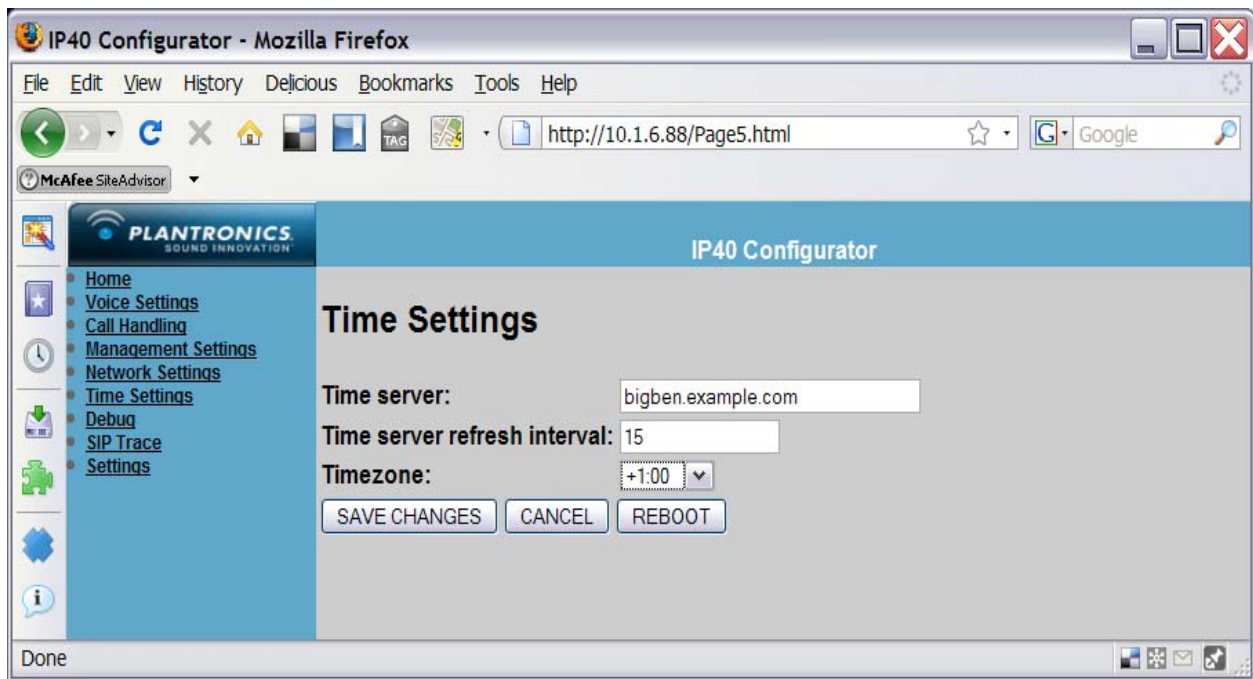

Figure 17 Time Settings Web Page

Web Page: Time Settings
Label on web page: **Time server**
Parameter name: NETWORK_SNTP_SERVER
Type: IP address or domain name (up to 32 chars)
Default Value: ""
Notes: The IP address or domain name of a Simple Network Time Protocol (SNTP) server.

Web Page: Time Settings
Label on web page: **Time server refresh interval**

Parameter name: NETWORK_SNTP_SERVER_UPDATE_TIME
Type: integer (0 to 255)
Default Value: 15 (seconds)
Notes: How often (in seconds) the IP40 headset adapter polls the SNTP server to refresh the time.

Web Page: Time Settings
Label on web page: **Timezone**
Parameter name: GMT_TIME_ZONE
Type: enumeration (0 to 32)
Default Value: 0
Notes: This setting controls the *offset* from UTC (Universal Coordinated Time). This is not a true time zone in that the offset is not adjusted automatically for locally seasonal daylight savings time changes. In order to insure that the time offset is correct, the administrator will need to reconfigure the time zone offset to be an hour ahead during local daylight savings time, and return the time zone offset back to the original value at the end of that daylight savings time. The configuration file value for the daylight savings time offset may not be the standard time value plus one. For example, in Moscow, the standard time offset (UTC+3) is represented by "16" in the configuration file, while the daylight savings time offset (UTC+4) is represented by "18". The value used in the configuration file is based on the following table:

Value	Offset	Example location with this offset (during standard time)
0	UTC-12	(Enewetak, Marshall Islands)
1	UTC-11	(Midway Island)
2	UTC-10	(Hawaii)
3	UTC-9	(Alaska)
4	UTC-8	(US-Pacific)
5	UTC-7	(US-Mountain)
6	UTC-6	(US-Central)
7	UTC-5	(US-Eastern)
8	UTC-4	(Canada-Atlantic)
9	UTC-3:30	(Newfoundland)
10	UTC-3	(Buenos Aires)
11	UTC-2	(Mid-Atlantic)
12	UTC-1	(Cape Verde)
13	UTC	(UK / Ireland)
14	UTC+1	(Central Europe)
15	UTC+2	(Helsinki)
16	UTC+3	(Moscow)
17	UTC+3:30	(Tehran)
18	UTC+4	(Abu Dhabi)
19	UTC+4:30	(Kabul)
20	UTC+5	(Islamabad)

```
21      UTC+5:30    (Calcutta)
22      UTC+5:45    (Kathmandu)
23      UTC+6       (Sri Lanka)
24      UTC+6:30    (Rangoon)
25      UTC+7       (Bangkok)
26      UTC+8       (Hong Kong / Perth)
27      UTC+9       (Tokyo)
28      UTC+9:30    (Adelaide)
29      UTC+10      (Sydney)
30      UTC+11      (Magadan)
31      UTC+12      (Auckland)
32      UTC+13      (Tonga)
```

6.7 Debug Page

During the normal operation, the IP40 will log all the transactions including debug messages, SIP messages and System Boot messages. These messages will be displayed in Debug Web page and SIP Trace Web page. They also stored into log files and depend on Management Settings, IP40 will attempt to upload these files to the TFTP Server for record keeping. For Settings see 6.4.2

6.8 SIP Trace Page

During the normal operation, the IP40 will log all the SIP transactions These messages will be displayed in SIP Trace Web page. They also stored into log files and depending on Management Settings, IP40 will attempt to upload these files to the TFTP Server for record keeping. See section 6.4.2 for settings

6.9 Settings Page

The settings page contains all the parameters that have been set to configure the IP40.

6.9.1 Config file Template

As very few settings change across IP40s in a customer network it is possible to create a config file template using the web interface of an IP40 and then cut and past the 'Setting' page contents to a text editor for creation of additional configuration files. Each file should be saved with a name from the MAC address of the IP40 it is to configure with the extension .cfg

6.9.2 Fields not visible via web interface

There are more fields available in the setting page than can be accessed from the IP40 web interface – most of these settings are reserved for future use in the IP40 and should not be changed from default

The exception to this rule is VLAN settings. These settings may be modified in line with the description in section 9 VLANs and included in the configuration file to set the VLAN

As description of the additional fields follows

Parameter name: PLAY_INBAND_DTMF
Type: Boolean (0-1)
Default Value: 0
Notes: Play inbound DTMF.

Parameter name: MicGain
Type: Integer value ranges from 21 to 23
Default Value: 22
Notes: Change Mic TX level

Parameter name: NETWORK_DHCP_CLIENT_TIMEOUT
Type: integer (1- 600)
Default Value: 3
Notes: Number of seconds the IP40 waits for secondary DHCP Offer messages before selecting an offer.

Parameter name: LOCAL_HTTP_SERVER_AUTH_PASS
Type: string up to 35 characters
Default Value: "**********"
Notes: IP40 Web page password.

Parameter name: DELAYED_MEDIA_BEHAVIOUR
Type: Boolean
Default Value: 0
Notes: This parameter defines how the device generates its offer in a Delayed Media scenario, i.e. when receiving an INVITE without SDP:
Allowed values are:
0: The phone will respond with an offer SDP indicating its own "local" state. That is,
- If Hold has not been activated from the phone (from the options menu on the handset), then the phone will always offer "sendrecv" if it receives an INVITE without SDP.
- If Hold has also been activated from the handset, the phone will offer "sendonly" and set the IP address to 0.0.0.0
1: The phone will respond with an offer SDP indicating its own "global" state.
- If Hold has not been activated from the phone:
    o If the phone was initially placed on Hold by an INVITE with "sendonly", the phone will offer "recvonly" and set the IP address to 0.0.0.0.

       o If the phone was initially placed on Hold by an INVITE with "inactive", the
          phone will offer "inactive" and set the IP address to 0.0.0.0.
-    If Hold has also been activated from the phone:
The phone will offer "inactive" and set the IP address to 0.0.0.0 in both cases.

Parameter name: CODEC_SILENCE_SUPPRESSION
Type: Boolean
Default Value: 0
Notes: This parameter defines if silence suppression shall be used. Silence suppression
is only used, if the codec supports it.
Currently supported in:
- G729 annex B
Allowed values are:
0: off.
1: on

Parameter name: SRV_0_SIP_UA_DATA_SERVER_TYPE
Type: Boolean
Default Value: 0
Notes: Specifies the type of server. Allowed values are (bitfield):
1 : Voice server (bin: 00000001)
2 : EMS (bin: 00000010) Not Used in Tarpon
4 : Infopush server(bin: 00000100) Not Used in Tarpon
 The server can be configured for more types at once. E.g. if used for both EMS and
InfoPush the value must be 6

Parameter name: SRV_0_DTMF_SIGNALLING
Type: Boolean
Default Value: 0
Notes: Parameter specifying how to transmit DTMF signaling
0: In-band generation, 1: SIP-Info, 2:RTP Named Event(see RFC2833).

Parameter name: SUBSCR_0_SIP_UA_DATA_SIP_NAME_ALIAS
Type: string up to 13 characters
Default Value: "SIP1"
Notes: Sip user name alias.
Name for this subscription when presented to user in handset

Parameter name: SUBSCR_0_SIP_UA_DATA_VOICE_MAILBOX_NUMBER
Type: Integer
Default Value: 0
Notes: Voice Mailbox number
Sip address/ phone number used when listening to messages

Parameter name: TRACE_MODE

Type: Boolean
Default Value: 1
Notes: Definition of the trace mode, i.e. what bus to use. Currently the following possibilities exist:
0: UART internal
1: Ethernet

Parameter name: LOCAL_HTTP_SERVER_TEMPLATE_TITLE
Type: string
Default Value: "IP40 configurator"
Notes: String that appears on the top of the IP40 web interface to describe the unit being viewed

Parameter name: CONFIGURATION_FILE_FLAG
Type: Boolean
Default Value: 0
Notes: Flag to control update of configuration file
Factory default sets CONFIGURATION_FILE_FLAG to 1 in order to avoid download of configuration file during production test only.

6.9.3 Default Setting file contents

%PLAY_INBAND_DTMF%:1
%FWU_POLLING_ENABLE%:1
%FWU_POLLING_MODE%:0
%FWU_POLLING_PERIOD%:86400
%FWU_POLLING_TIME_HH%:3
%FWU_POLLING_TIME_MM%:0
%GMT_TIME_ZONE%:15
%AUTO_DIAL_NUMBER%:""
%CFG_POLLING_ENABLE%:1
%CFG_POLLING_MODE%:0
%CFG_POLLING_PERIOD%:86400
%CFG_POLLING_TIME_HH%:3
%CFG_POLLING_TIME_MM%:0
%CALL_AUTO_ANSWER%:0
%DISCONNECT_BUTTON%:1
%MicGain%:22
%ENABLE_EXTRA_RX_GAIN%:0
%NETWORK_DHCP_CLIENT_TIMEOUT%:3
%NETWORK_DHCP_CLIENT_BOOT_SERVER%:2
%NETWORK_DHCP_CLIENT_BOOT_SERVER_OPTION%:160
%NETWORK_DHCP_CLIENT_BOOT_SERVER_OPTION_DATATYPE%:1

```
%LOCAL_HTTP_SERVER_TEMPLATE_TITLE%:"IP40 configurator"
%LOCAL_HTTP_SERVER_AUTH_NAME%:"admin"
//%LOCAL_HTTP_SERVER_AUTH_PASS%:"**********"
%LOCAL_HTTP_SERVER_ACCESS%:32799
%DELAYED_MEDIA_BEHAVIOUR%:0
%CODEC_SILENCE_SUPPRESSION%:0
%SIP_SIP_PORT%:5060
%SIP_RTP_PORT%:5004
%SIP_RTP_PORT_RANGE%:20
%SIP_RTP_PRIORITY%:0
%SRV_0_SIP_UA_DATA_DOMAIN%:""
%SRV_0_SIP_URI_DOMAIN_CONFIG%:0
%SRV_0_SIP_UA_DATA_SERVER_PORT%:5060
%SRV_0_SIP_UA_DATA_SERVER_TYPE%:0
%SRV_0_SIP_UA_DATA_SERVER_IS_LOCAL%:0
%SRV_0_SIP_UA_DATA_REREG_TIME%:3600
%SRV_0_SIP_UA_DATA_PROXY_ADDR%:""
%SRV_0_DTMF_SIGNALLING%:0
%SRV_0_SIP_UA_CODEC_PRIORITY%:1, 0, 2, 4, 255
%SUBSCR_0_SIP_UA_DATA_SIP_NAME%:""
%SUBSCR_0_UA_DATA_DISP_NAME%:""
%SUBSCR_0_SIP_UA_DATA_SIP_NAME_ALIAS%:"SIP1"
%SUBSCR_0_SIP_UA_DATA_SERVER_ID%:0
%SUBSCR_0_SIP_UA_DATA_VOICE_MAILBOX_NAME%:""
%SUBSCR_0_SIP_UA_DATA_VOICE_MAILBOX_NUMBER%:""
%SUBSCR_0_UA_DATA_AUTH_NAME%:""
%SUBSCR_0_UA_DATA_AUTH_PASS%:""
%NETWORK_UPLOAD_SERVER%:""
%VOIP_SIP_AUTO_UPLOAD%:0
%VOIP_LOG_AUTO_UPLOAD%:0
%TRACE_MODE%:1
%CONFIGURATION_FILE_FLAG%:0
%MANAGEMENT_TRANSFER_PROTOCOL%:1
%MANAGEMENT_PASSWORD%:"VoipLan"
%MANAGEMENT_UPLOAD_SCRIPT%:"/CfgUpload"
%ENABLE_SIP_MESSAGE_ENCRYPTION%:1
%NETWORK_TFTP_SERVER%:""
%NETWORK_FWU_SERVER%:"firmware.plantronics.com"
%FWU_TFTP_SERVER_PATH%:"/media/downloads/ip40poe/"
%NETWORK_SNTP_SERVER%:""
%NETWORK_SNTP_SERVER_UPDATE_TIME%:15
%VLAN_SW_P1_TAGGING_CTRL%:0
%VLAN_SW_P2_TAGGING_CTRL%:0
%VLAN_SW_P3_TAGGING_CTRL%:0
```

```
%VLAN_SW_P1VIDCR_REG%:0
%VLAN_SW_P2VIDCR_REG%:0
%VLAN_SW_P3VIDCR_REG%:0
%VLAN_DHCP_STRING%:""
%VLAN_DHCP_OPTION%:0
%VLAN_DHCP_OFFSET%:0
%VLAN_DHCP_TYPE%:0
%VLAN_DHCP_LENGTH%:0
%NETWORK_VLAN_ID%:0
%NETWORK_VLAN_USER_PRIORITY%:0
%NETWORK_STUN_SERVER%:""
%SIP_STUN_BINDTIME_GUARD%:80
%SIP_STUN_BINDTIME_DETERMINE%:1
%SIP_STUN_KEEP_ALIVE_TIME%:90
%SIP_STUN_ENABLE%:0
%SIP_RPORT_ENABLE%:0
%NETWORK_WAN_SETTINGS_IP%:0.0.0.0
%NETWORK_WAN_SETTINGS_SUBNET_MASK%:255.255.0.0
%NETWORK_WAN_SETTINGS_GATEWAY%:0.0.0.0
%NETWORK_WAN_SETTINGS_DNS1%:0.0.0.0
%NETWORK_WAN_SETTINGS_DNS2%:0.0.0.0
%NETWORK_WAN_SETTINGS_DHCP%:1
```

7 Protocols standards support

The IP40 headset adapter supports SIP as defined in RFC 3261 and related specifications with a few exceptions. The following SIP extensions are also supported:
- SIP digest authentication RFC2617
- SIP usage of DNS-SRV and NAPTR lookups RFC 3263
  SIP hold RFC 3264
- SIP refer method RFC 3515
- SIP refer event package RFC3265 (as transferee or transfer target)
- SDP RFC4566
- SIP replaces header RFC3891
- RTP, RTCP - RFC3550, RFC3551.
- Talk
- NOTIFY

In addition, the IP40 headset adapter supports IPv4, ICMP, DHCP and SNTP.

8 Creation of configuration file using the Web Page.

As very few settings change across IP40s in a customer network it is possible to create a config file template using the web interface of an IP40 and then cut and past the 'Setting' page contents to a text editor for creation of additional configuration files. Each file should be saved with a name from the MAC address of the IP40 it is to configure with the extension .cfg. For default file settings see 6.9.3

9 VLAN

9.1 VLAN Tagging

The IP40 unit can be used on a managed network with separate Virtual LANs (VLANs) for sending voice and data traffic. To work on these networks, the IP40 can tag voice traffic it generates on a specific "voice VLAN" using the IEEE 802.1q specification. The IP40 unit can also tag any untagged data traffic from the attached PC onto a default "data VLAN". Data from the PC port which is already tagged is switched transparently without modification.

VLAN Tagging is set via configuration file upload – It can not be set via the Web server

The IP40 contains three ports that can be configured – internal, network and PC. Tagging of the three ports can be managed with the following lines in the configuration file.

Parameter name: VLAN_SW_P1_TAGGING_CTRL
Type: integer value ranges from 0 to 2
Default Value: 0
Notes: VLAN Switch Tag Control for Port 1 (i.e. PC port); 0: Disabled; 1: Remove Tag; 2: Insert Tag specified in VLAN_SW_P1VIDCR_REG

Parameter name: VLAN_SW_P2_TAGGING_CTRL
Type: integer value ranges from 0 to 2
Default Value: 0
Notes: VLAN Switch Tag Control for Port 2 (i.e. WAN port); 0: Disabled; 1: Remove Tag; 2: Insert Tag specified in VLAN_SW_P2VIDCR_REG

Parameter name: VLAN_SW_P3_TAGGING_CTRL
Type: Boolean
Default Value: 0
Notes: VLAN Switch Tag Control for Port 3 (i.e. Host port); 0: Disabled; 1: Remove Tag; 2: Insert Tag specified in VLAN_SW_P3VIDCR_REG

Parameter name: VLAN_SW_P1VIDCR_REG
Type: string-integer
Default Value: 0
Notes: VLAN Switch VLAN ID/Priority setting register. If VLAN ID 10 is dedicated to data

communication then string "10" needs to be set.for this parameter.

Parameter name: VLAN_SW_P2VIDCR_REG
Type: string-integer
Default Value: 0
Notes: VLAN Switch VLAN ID/Priority setting register. If VLAN ID 20 is dedicated to voice communication then string "20" needs to be set.for this parameter.

Parameter name: VLAN_SW_P3VIDCR_REG
Type: string-integer
Default Value: 0
Notes: VLAN Switch VLAN ID/Priority setting register. If VLAN ID 20 is dedicated to voice communication then string "20" needs to be set.for this parameter

9.2 VLAN Configuration

9.2.1.1 Static Setting

The administrator can configure a voice VLAN ID and a data VLAN ID statically or the VLAN can be configured to be dynamically (see section 9.2.1.2 VLAN Discovery below).

Parameter name: NETWORK_VLAN_ID
Type: Boolean
Default Value: 0
Notes: A VLAN ID of 0 traditionally means that traffic is untagged.

9.2.1.2 Dynamic Setting - VLAN Discovery

If the administrator configures that VLAN configuration to be dynamic, then the IP40 unit will attempt to discover the correct VLAN automatically using a specific (configurable) DHCP option set by LAN network engineer. Note that this means that the voice gateway portion of the device needs to issue an untagged DHCP DISCOVER request, then if a DHCP OFFER contains VLAN information, reconfigure the switch with the correct VLAN IDs and issue a new DHCP DISCOVER tagged on the voice VLAN. Below is the sequence for VLAN Discovery:
1. IP40 sends out DHCP Discover message to find out if there is a DHCP server available.
2. If the DHCP Server sends a DHCP Offer back with the Option 43 Vendor Specific Options in a special format, the IP40 will accept the Offer, send back the DHCP Request, and save the VLAN ID provided by the DHCP Server
3. After DHCP Server sends the ACK message to the IP40, the IP40 will release the IP address and start a new DHCP Discovery cycle using the now know Voice VLAN

VLAN is set via configuration file upload – It can not be set via the Web server

The settings for inclusion in the configuration file are followed:

Parameter name: VLAN_DHCP_STRING
Type: string
Default Value:""
Notes: To specify a string the match for example "Siemen"

Parameter name: VLAN_DHCP_OPTION
Type: Boolean
Default Value: 0
Notes: To specify which option to look for in DHCP Offer from DHCP server for example "43".

Parameter name: VLAN_DHCP_OFFSET
Type: Integer
Default Value: 0
Notes: To specify an offset to where to start reading the VLAN ID for example "14".

Parameter name: VLAN_DHCP_TYPE
Type: Boolean
Default Value: 0
Notes: To specify whether the VLAN ID is in 0=HEX or 1=ASCII format.

Parameter name: VLAN_DHCP_LENGTH
Type: Integer
Default Value: 0
Notes: To specify the length of data should be collected to the VLAN ID for example "4"

Below is a typical VLAN Discovery settings:

The VLAN_DHCP_STRING is a string to search for: Fx. VLAN_DHCP_STRING="iemen" will find a match if the DHCP option string contains "Siemens" since the VLAN_DHCP_STRING is contained in the option string.
The VLAN_DHCP_OFFSET is always calculated from the beginning of byte after the option.

Fx. **2B 01 0A 53 69 65 6D 65 6E 73 00 00 00 02 04 00 00 00 14 00 00 00 00 FF**
VLAN_DHCP_OPTION=43:   //   to specify which option to look for
VLAN_DHCP_STRING="iemen" //   to specify a string the match
VLAN_DHCP_OFFSET=14:   //   to specify a offset to where to start reading the VLAN ID
VLAN_DHCP_TYPE=0   //   to specify whether the VLAN ID is in 0=HEX or 1=ASCII format.
VLAN_DHCP_LENGTH=4   //   to specify the length of data should be collected to the VLAN ID

10 Debugging and Troubleshooting

If the Answer/End button is lit solid red, there is an error of some kind. With a headset connected to the adapter, press the Answer/End button to hear a short error message. A description of each of these errors is described below.

Your network cable is not connected — No 10Base-T or 100Base-TX link could be detected.

IP Address not found — the device could not obtain an IP address from DHCP.

IP Address conflict — the device got an IP address but another device on the network is using that address.

Device not configured — the device could not discover a configuration server, or the configuration server that was discovered or configured in the NETWORK_TFTP_SERVER parameter did not provide a configuration file. The IP40 headset adapter does not attempt to discover a configuration server if CFG_POLLING_ENABLE has been disabled. In this case, the adapter checks if SRV_0_SIP_UA_DATA_DOMAIN and SUBSCR_0_UA_DATA_SIP_NAME have been configured.

Registration server not found — the device did not get a response from the configured registration server.

Registration password failure — the device received a non-repairable 401, 403, or 407 SIP error response from the registrar. It is extremely likely that the username or password on the device is incorrect.

Registration refused — the device tried to register but received some other type of SIP error response.

The Plantronics Technical Assistance Center is ready to assist you. You can ask a question using e-mail, receive service over the Internet, or speak directly with a representative. Visit www.plantronics.com/support or call 1-866-363-2583.

11 Summary of LED states

Answer/End LED	Mute LED	State
solid red	unlit	An error condition
blinking yellow	unlit	Initialization
blinking red	unlit	Voice Mail indication during normal operation
blinking red	blinking red	Factory reset warning
solid red	solid red	Factory reset in progress
unlit	blinking red	Firmware update in progress
solid green	unlit	In a call or attempted outgoing call, unmuted
solid green	solid red	In a call or attempted outgoing call, muted
solid yellow	unlit	In a call, far end on hold, unmuted
solid yellow	solid red	In a call, far end on hold, muted
blinking red	unlit	Incoming call received, ringing

12 Summary of OEM Settings