CyberData

VoIP V2 Paging Amplifier Operations Guide

Part #011061

Document Part #930324D
for Firmware Version 1.1.2

CyberData Corporation
2555 Garden Road
Monterey, CA 93940
(831) 373-2601

VoIP V2 Paging Amplifier Operations Guide 930324D
Part # 011061

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Phone: (831) 373-2601
Technical Support Ext. 333
support@cyberdata.net
Fax: (831) 373-4193
Company and product information at www.cyberdata.net

Revision Information

Revision 930324D, released on 12-15-2010, corresponds to firmware version 1.1.2 and has the following changes:

- Updates Figure 1-2, "Typical Installation".
- Updates Figure 2-7, "Relay or Strobe Alert Connection".
- Updates Figure 2-7, "Relay or Strobe Alert Connection".
- Updates Figure 2-9, "Line Out Connection".
- Updates Figure 2-10, "Speaker Out Connection".

mportant Safety Instructions

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with dry cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
11. Only use attachments/accessories specified by the manufacturer.
12. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
13. Prior to installation, consult local building and electrical code requirements.

Warning

Electrical Hazard: This product should be installed by a licensed electrician according to all local electrical and building codes.

Warning

Electrical Hazard: To prevent injury, this apparatus must be securely attached to the floor/wall in accordance with the installation instructions.

Pictorial Alert Icons

GENERAL ALERT	General Alert *This pictoral alert indicates a potentially hazardous situation. This alert will be followed by a hazard level heading and more specific information about the hazard.*
	Ground *This pictoral alert indicates the Earth grounding connection point.*

Hazard Levels

Danger: Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury. This is limited to the most extreme situations.

Warning: Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

Caution: Indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury. It may also alert users against unsafe practices.

Notice: Indicates a statement of company policy (that is, a safety policy or protection of property).

The safety guidelines for the equipment in this manual do not purport to address all the safety issues of the equipment. It is the responsibility of the user to establish appropriate safety, ergonomic, and health practices and determine the applicability of regulatory limitations prior to use. Potential safety hazards are identified in this manual through the use of words Danger, Warning, and Caution, the specific hazard type, and pictorial alert icons.

Abbreviations and Terms

Abbreviation or Term	Definition
A-law	A standard companding algorithm, used in European digital communications systems to optimize, i.e., modify, the dynamic range of an analog signal for digitizing.
AVP	Audio Video Profile
Cat 5	TIA/EIA-568-B Category 5
DHCP	Dynamic Host Configuration Protocol
LAN	Local Area Network
LED	Light Emitting Diode
Mbps	Megabytes per Second.
NTP	Network Time Protocol
PBX	Private Branch Exchange
PoE	Power over Ethernet (as per IEEE 802.3af standard)
RTP	Real-time Transport Protocol
RTFM	Reset Test Function Management
SIP	Session Initiated Protocol
Talkback	Two-way communication enabled
TFTP	Trivial File Transfer Protocol
u-law	A companding algorithm, primarily used in the digital telecommunication
UC	Unified Communications
VoIP	Voice over Internet Protocol

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1 Product Overview

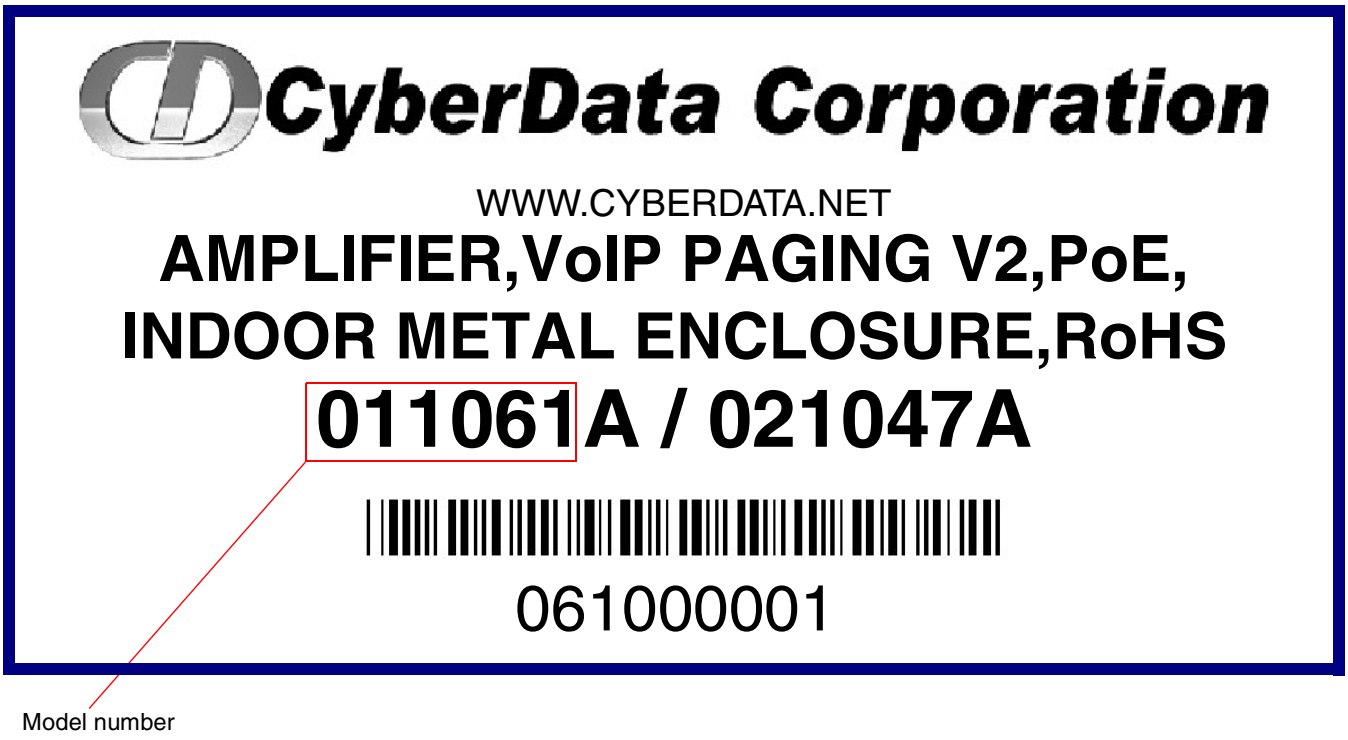
The CyberData SIP-enabled VoIP V2 Paging Amplifier provides an easy method for implementing an IP-based overhead paging system for both new and legacy installations.

With up to 25 watts of driving power (802.3at), the Amplifier provides direct drive of a standard Horn speaker and supports a line-out connector for connection to an external amplifier. The interface is compatible with most SIP-based IP PBX servers that comply with the SIP RFC 3261. For non-SIP environments, the Paging Amplifier can be configured to listen to multicast address and port number combinations to form paging zones.

1.1 How to Identify This Product

To identify the VoIP V2 Paging Amplifier, look for a model number label similar to the one shown in Figure 1-1. The model number on the label should be **011061**.

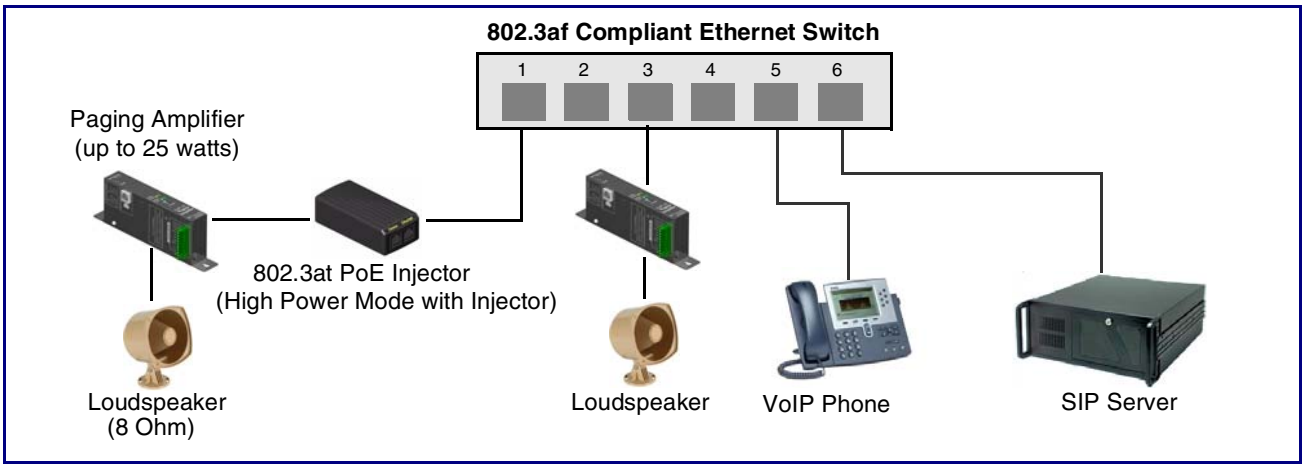
Figure 1-1. Model Number Label



1.2 Typical System Installation

Figure 1-2 illustrates how the VoIP V2 Paging Amplifier is normally installed as part of a public address system.

Figure 1-2. Typical Installation



1.3 Product Features

- SIP (RFC 3261) compatible
- Dual-speed ethernet 10/100 Mbps
- Web-based configuration
- Web-based firmware upgradeable
- PoE 802.3at and 802.3af-enabled
- IGMP
- Line-out connector
- DTMF controlled relay with open sense
- Direct speaker drive
- User-uploadable tones
- Simultaneous SIP and Multicast
- Autoprovisioning
- Line-In capability
- Nightringer

1.4 Supported Protocols

The V2 Paging Amplifier supports:

- SIP
- Multicast
- HTTP Web-based configuration

  Provides an intuitive user interface for easy system configuration and verification of V2 Paging Amplifier operations.
- DHCP Client

  Dynamically assigns IP addresses in addition to the option to use static addressing.
- TFTP Client

  Facilitates Web-based firmware upgrades of the latest V2 Paging Amplifier capabilities.
- RTP
- RTP/AVP - Audio Video Profile
- SPEEX
- Audio Encodings

  PCMU (G.711 mu-law)

  PCMA (G.711 A-law)

  Packet Time 20 ms

1.5 Supported SIP Servers

The following link contains information on how to configure the V2 Paging Amplifier for the supported SIP servers:

http://www.cyberdata.net/support/server/index.html

1.6 Product Specifications

Table 1. Product Specifications

Category	Specification
Ethernet I/F	10/100 Mbps
Power Input	PoE 802.3at or 802.3af
Operating Temperature	-30 to 55 C (-22 to 131 F)
Protocol	SIP RFC 3261
Payload Types	G711, SPEEX
Regulatory Compliance	FCC Class A, CE
Warranty	2 Years Limited
Dimensions	1.26” x 9.45” x 3.13”
Audio Output	802.3af - up to 10 Watts (default, 50% duty cycle [one second on and one second off]). 802.3at - up to 22 Watts (default, 50% duty cycle [one second on and one second off])
Lineout:	
Output Signal Amplitudes	2.0 VPP maximum
Output Level	+2dBm nominal
Total Harmonic Distortion	0.5% maximum
Part Number	011061

2 Installing the VoIP V2 Paging Amplifier

2.1 Parts List

Table 2-1 illustrates the parts for each Paging Amplifier and includes a kit for mounting.

Table 2-1. Parts List

Quantity	Part Name	Illustration
1	Paging Amplifier Assembly	
1	Installation Quick Reference Guide	
1	Paging Amplifier Mounting Accessory Kit, RoHS (part #071057A) which includes: (2)Plastic Ribbed Anchors (2) #6 Sheet Metal Screws	

2.2 Paging Amplifier Setup

Set up and configure each Paging Amplifier *before* you mount it.

CyberData delivers each Paging Amplifier with the factory default values indicated in Table 2-2:

Table 2-2. Factory Default Settings—Default of Network

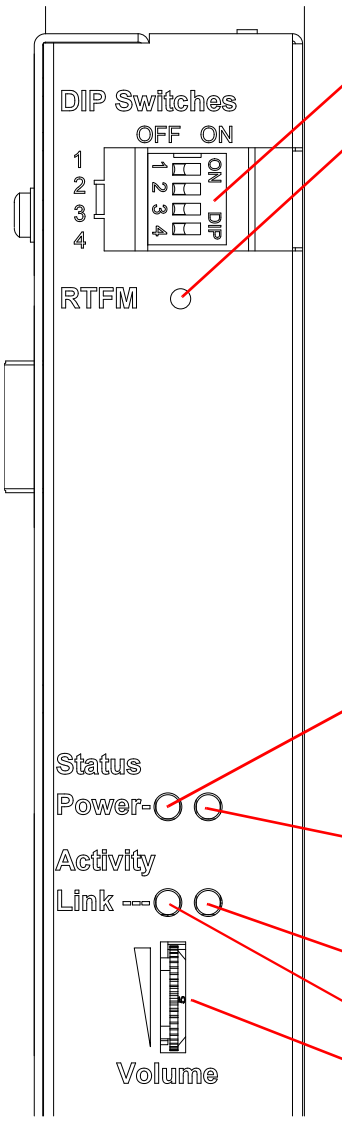
Parameter	Factory Default Setting
IP Addressing	DHCP
IP Address[a]	10.10.10.10
Web Access Username	admin
Web Access Password	admin
Subnet Mask[a]	255.0.0.0
Default Gateway[a]	10.0.0.1

a. Default if there is not a DHCP server present.

2.2.1 Paging Amplifier Components

Figure 2-3 shows the components of the Paging Amplifier .

Figure 2-3. Paging Amplifier Components



DIP Switches

RTFM Switch

To broadcast a Paging Amplifier's current IP address, press and hold the RTFM switch until you hear the IP address announcement, and then release the RTFM switch.

To restore the factory defaults, complete the following steps:

1. Press and hold the RTFM switch until you hear the IP address announcement. Continue holding the RTFM switch for an additional five seconds until you hear the Paging Amplifier announce the words, "restoring defaults" and "rebooting".

2. Release the RTFM switch. The Paging Amplifier will be restored to the factory default settings.

Power LED (GREEN/BLUE)
The power LED is a steady **green** in low power mode and a steady **blue** during high power mode. The power LED will only blink either during a boot up or a phone call.

Status LED (GREEN)
A steady LED confirms that the Paging Amplifier is operational. The LED will blink during a page when it is online.

Network Activity LED (GREEN)

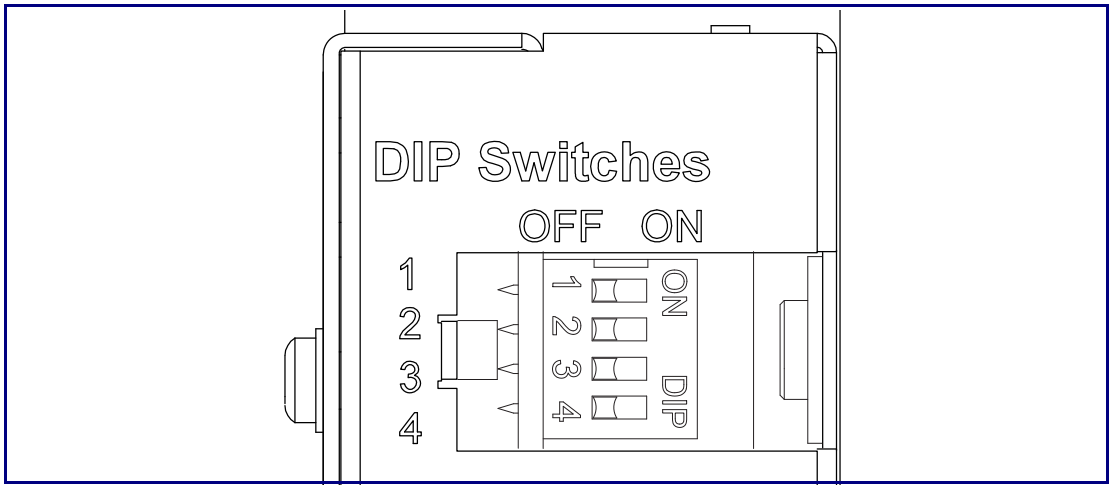
Network Link LED (GREEN/YELLOW)

Speaker Volume

2.2.2 Paging Amplifier DIP Switches

See Figure 2-4 to identify the DIP Switches.

Figure 2-4. DIP Switches



See Table 2-3 and Table 2-4 for the DIP Switch settings for the revision B (or later) board.

Table 2-3. DIP Switch Settings—Low Power—802.3af Compliant (Default)

DIP Switch	Setting	Description
1	OFF	Sets PoE for 802.3af class.
2	N/A	Not applicable for power setting.
3	ON	Switch mode current set to **LOW**.
4	OFF	Low gain amplifier setting.

Table 2-4. DIP Switch Settings—High Power—Non-PoE Compliant[a]

DIP Switch	Setting	Description
1	ON	Sets PoE for 802.3at class.
2	N/A	Not applicable for power setting.
3	OFF	Switch mode current set to **HIGH**.
4	ON	Force high gain amplifier.

a. If set to high power, the unit will not power ON with 802.3af compliant switch. You must use a power injector in this mode (CyberData part number 010867A).

Table 2-5. DIP Switch 2 Settings

DIP Switch	Setting	Description
2	OFF	**Manual Vol**. The speaker volume is set manually by the analog volume trimmer.
2	ON	**Bypass**. Bypasses the manual volume control of the analog volume trimmer and uses the web page volume settings.

2.2.3 VoIP V2 Paging Amplifier System Installation and Connection Options

The following figures show the connection options for the VoIP V2 Paging Amplifier.

Figure 2-5. V2 Paging Amplifier Connections

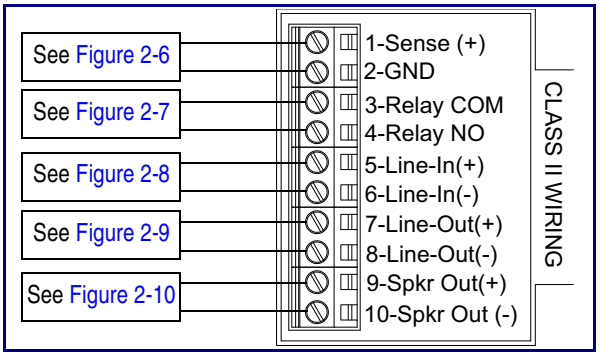


Figure 2-6. Sensor Connection

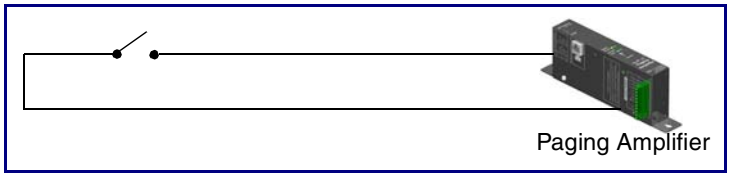


Figure 2-7. Relay or Strobe Alert Connection

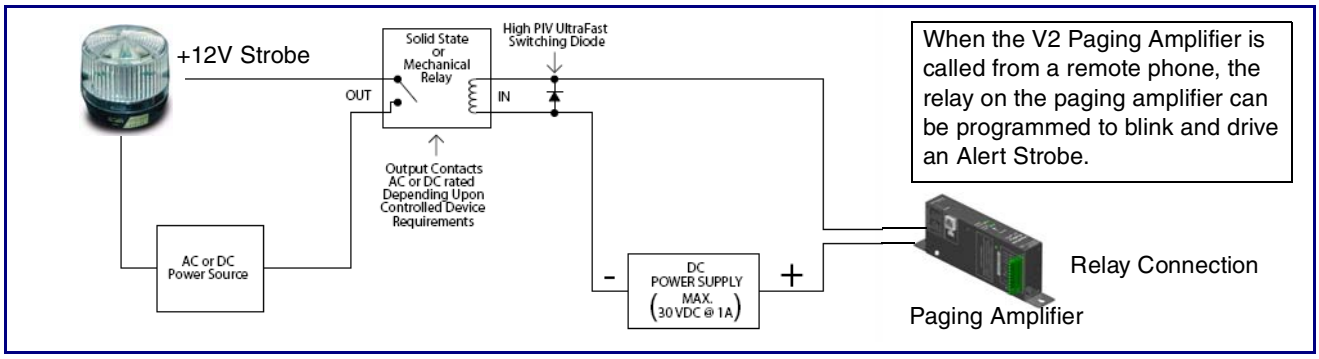


Figure 2-8. Line-In Connection

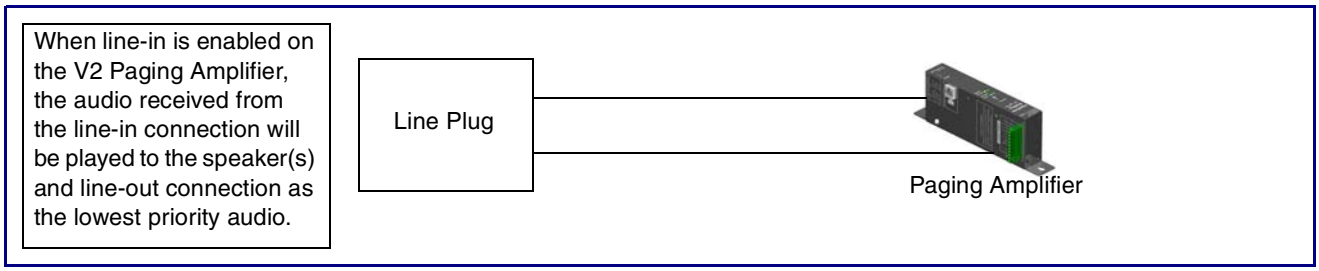


Figure 2-9. Line Out Connection

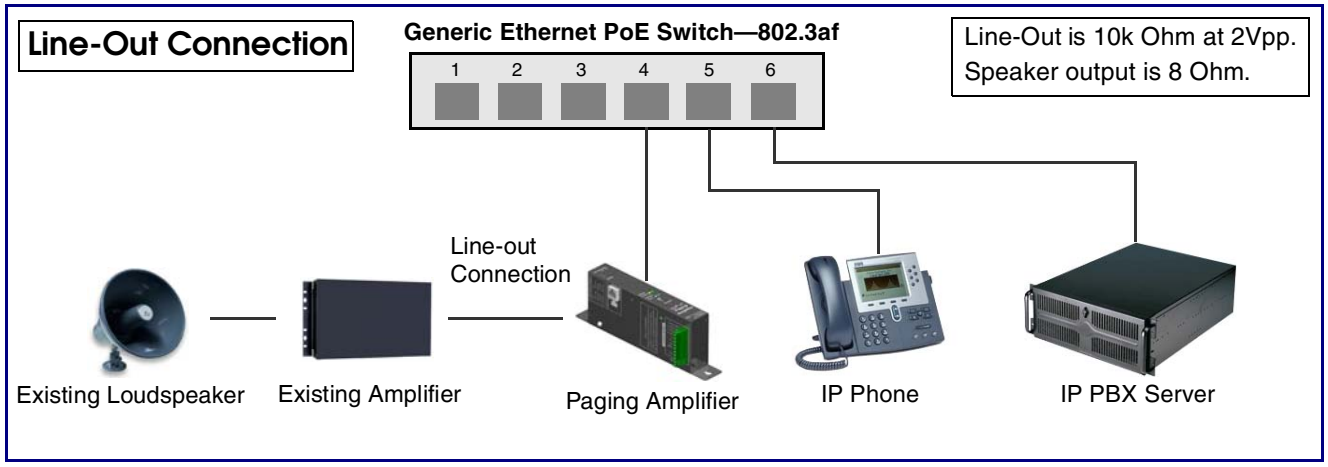
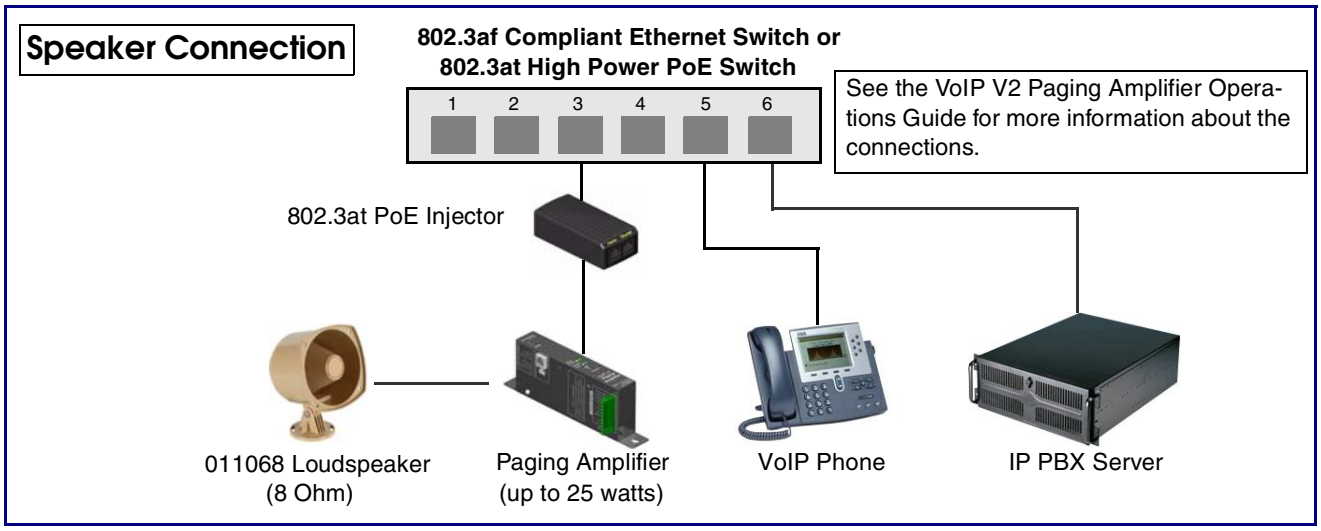


Figure 2-10. Speaker Out Connection



See Table 2-6 for details about the Paging Amplifier connections.

Table 2-6. Paging Amplifier Connections

Connection	Connection Details	Location
Ethernet	• Use a RJ 45 cable.	VoIP V2 Paging Amplifier

2.2.3.1 Loudspeaker Type

Using the amplified output, the CyberData VoIP V2 Paging Amplifier supports the 011068 Loudspeaker or equivalent unamplified loudspeaker.

Figure 2-11. 011068 Loudspeaker

2.2.3.2 Cabling/Wiring

Using the amplified output, you may connect a 011068 loudspeaker or equivalent unamplified speaker to a Paging Amplifier with good quality speaker wire that is 16 gauge and limited to 25 feet in length.

2.2.4 Confirm Operation

After connecting the Paging Amplifier to the ethernet hub, use the LEDs on the Paging Amplifier face to confirm that the Paging Amplifier is operational and linked to the network.

Table 2-7. Paging Amplifier LEDs

LED	Color	Function
Power	Blue/Green	The power LED is illuminated a steady green when the power is on and in low power mode. The power LED is illuminated a steady blue when the amplifier is in high power mode. The power LED will blink during a boot up or a phone call.
Status	Green	After supplying power to the Paging Amplifier, a steady LED confirms that the Paging Amplifier is operational. The status LED will blink during a page when it is online.
Link	Green/Yellow	The Link LED is illuminated green for a 10Mb link or yellow/green for a 100Mb link when the network link to the Paging Amplifier is established.
Activity	Green	The Activity LED blinks to indicate network traffic.

Figure 2-12. Paging Amplifier LEDs—Power and Link

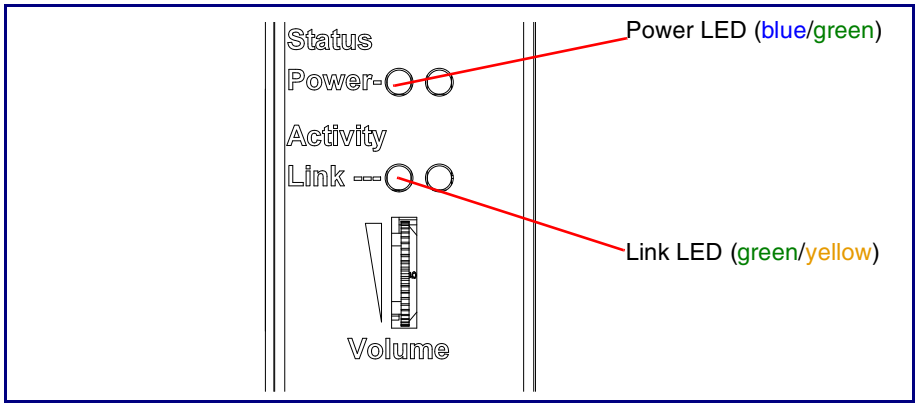
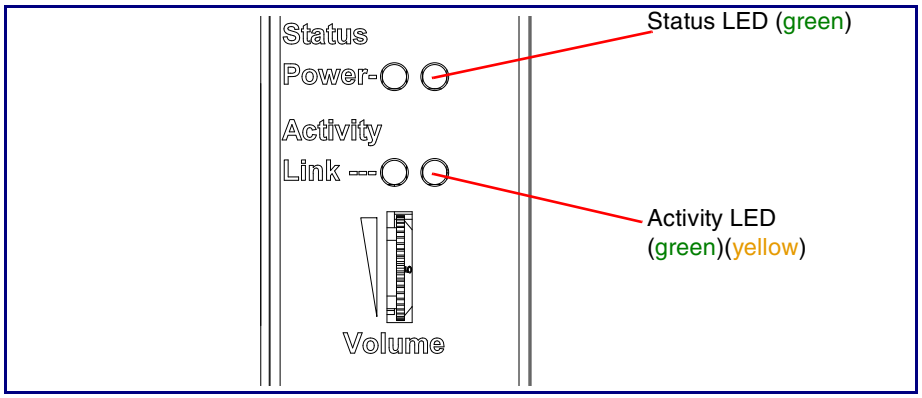


Figure 2-13. Paging Amplifier LEDs—Status and Activity

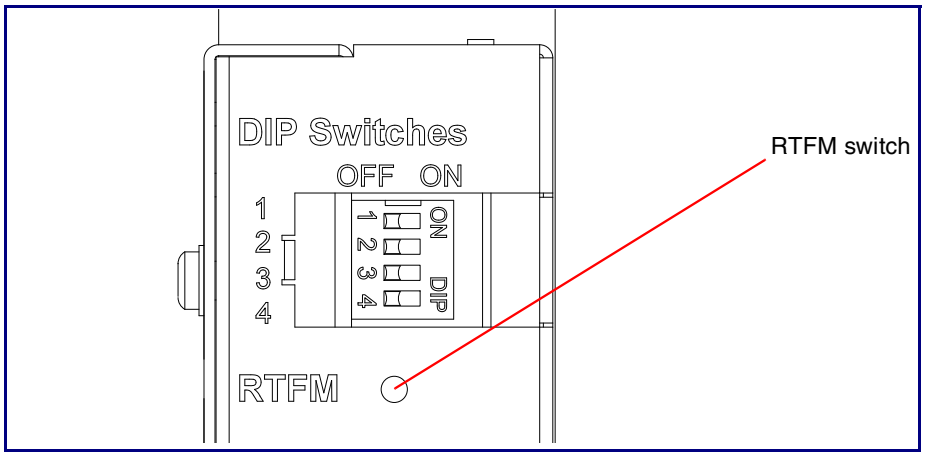


2.2.5 Confirm the IP Address and Test the Audio

2.2.5.1 RTFM Switch

When the Paging Amplifier is operational and linked to the network, use the Reset Test Function Management **(RTFM)** switch (Figure 2-14) on the Paging Amplifier face to announce and confirm the Paging Amplifier's IP Address, and test that the audio is working.

Figure 2-14. RTFM Switch



Announcing the IP Address

To announce a Paging Amplifier's current IP address:

1. Press and hold the RTFM switch until you hear the IP address announcement.
2. Release the RTFM switch.

Caution

Equipment Caution: Pressing and holding the RTFM switch for more than five seconds after the IP address announcement will restore the V2 Paging Amplifier to the factory default settings. See the "Restoring the Factory Default Settings" section.

Restoring the Factory Default Settings

To restore the factory default settings, complete the following steps:

1. Press and hold the RTFM switch until you hear the IP address announcement. Continue holding the RTFM switch for an additional five seconds until you hear the Paging Amplifier announce the words, "restoring defaults" and "rebooting".
2. Release the RTFM switch. The Paging Amplifier will be restored to the factory default settings.

2.2.6 Adjust the Volume

There are two ways to adjust the volume for the Paging Amplifier:

- The **Speaker Volume (0-9)** setting on the **Device Configuration** page
- The external **Volume** dial on the Paging Amplifier face

2.2.6.1 The "Speaker Volume (0-9)" Setting

To adjust the Paging Amplifier volume with the **Speaker Volume (0-9)** setting on the **Device Configuration** page, complete the following steps:

1. Make sure that dip switch 2 is set to **ON**.
2. Go to the Paging Amplifier **Home** page.
3. Select the **Device Configuration** page.
4. In the **Speaker Volume (0-9)** box, type a number between **0** (lowest) and **9** (highest).
5. Select **Save**.
6. Select **Reboot**.

2.2.6.2 The "Line-In Volume (0-9)" Setting

To adjust the Paging Amplifier volume with the **Line-In Volume (0-9)** setting on the **Device Configuration** page, complete the following steps:

1. Make sure that dip switch 2 is set to **ON**.
2. Go to the Paging Amplifier **Home** page.
3. Select the **Device Configuration** page.
4. In the **Line-In Volume (0-9)** box, type a number between **0** (lowest) and **9** (highest).
5. Select **Save**.
6. Select **Reboot**.

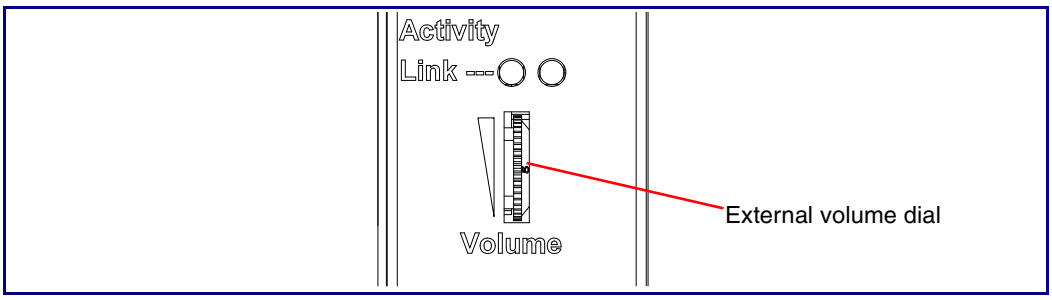
2.2.6.3 External Volume Dial

To adjust the Paging Amplifier volume with the external volume dial, complete the following steps:

1. Make sure that dip switch 2 is set to **OFF**.
2. Turn the external **Volume** dial (Figure 2-15) on the Paging Amplifier face.

Note For the lineout volume, the volume is fixed and the volume control is adjusted through an external amplifier.

Figure 2-15. External Volume Dial



2.3 Configure the Paging Amplifier Parameters

To configure the Paging Amplifier online, use a standard web browser.

Configure each Paging Amplifier and verify its operation *before* you mount it. When you are ready to mount a Paging Amplifier enclosure, refer to Appendix A, "Mounting the Amplifier" for instructions.

All Paging Amplifier are initially configured with the default IP settings indicated in Table 2-8.

When configuring more than one Paging Amplifier, attach the Paging Amplifiers to the network one at a time to avoid IP address conflicts.

Table 2-8. Factory Default Settings

Parameter	Factory Default Setting
IP Addressing	DHCP
IP Address[a]	10.10.10.10
Web Access Username	admin
Web Access Password	admin
Subnet Mask[a]	255.0.0.0
Default Gateway[a]	10.0.0.1

a. Default if there is not a DHCP server present.

2.3.1 Paging Amplifier Web Page Navigation

Table 2-9 shows the navigation buttons that you will see on every Paging Amplifier web page.

Table 2-9. V2 Paging Amplifier Web Page Navigation

Web Page Item	Description
	Link to the **Home** page.
	Link to the **Device Configuration** page.
	Link to the **Networking** page.
	Link to the **SIP Configuration** page.
	Link to the **Nightringer** page.
	Link to the **Sensor Configuration** page.
	Link to the **Multicast Configuration** page.
	Link to the **Audio Configuration** page.
	Link to the **Event Configuration** page.
	Link to the **Autoprovisioning Configuration** page.
	Link to the **Update Firmware** page.

2.3.2 Log in to the Configuration Home Page

1. Open your browser to the Paging Amplifier IP address.

Note If the network does not have access to a DHCP server, the device will default to an IP address of 10.10.10.10.

Note Make sure that the PC is on the same IP network as the Paging Amplifier.

Note You may also download CyberData's VoIP Discovery Utility program which allows you to easily find and configure the default web address of the CyberData VoIP products.

CyberData's VoIP Discovery Utility program is available on the VoIP V2 Paging Amplifier product page at:

http://www.cyberdata.net/support/voip/discovery_utility.html

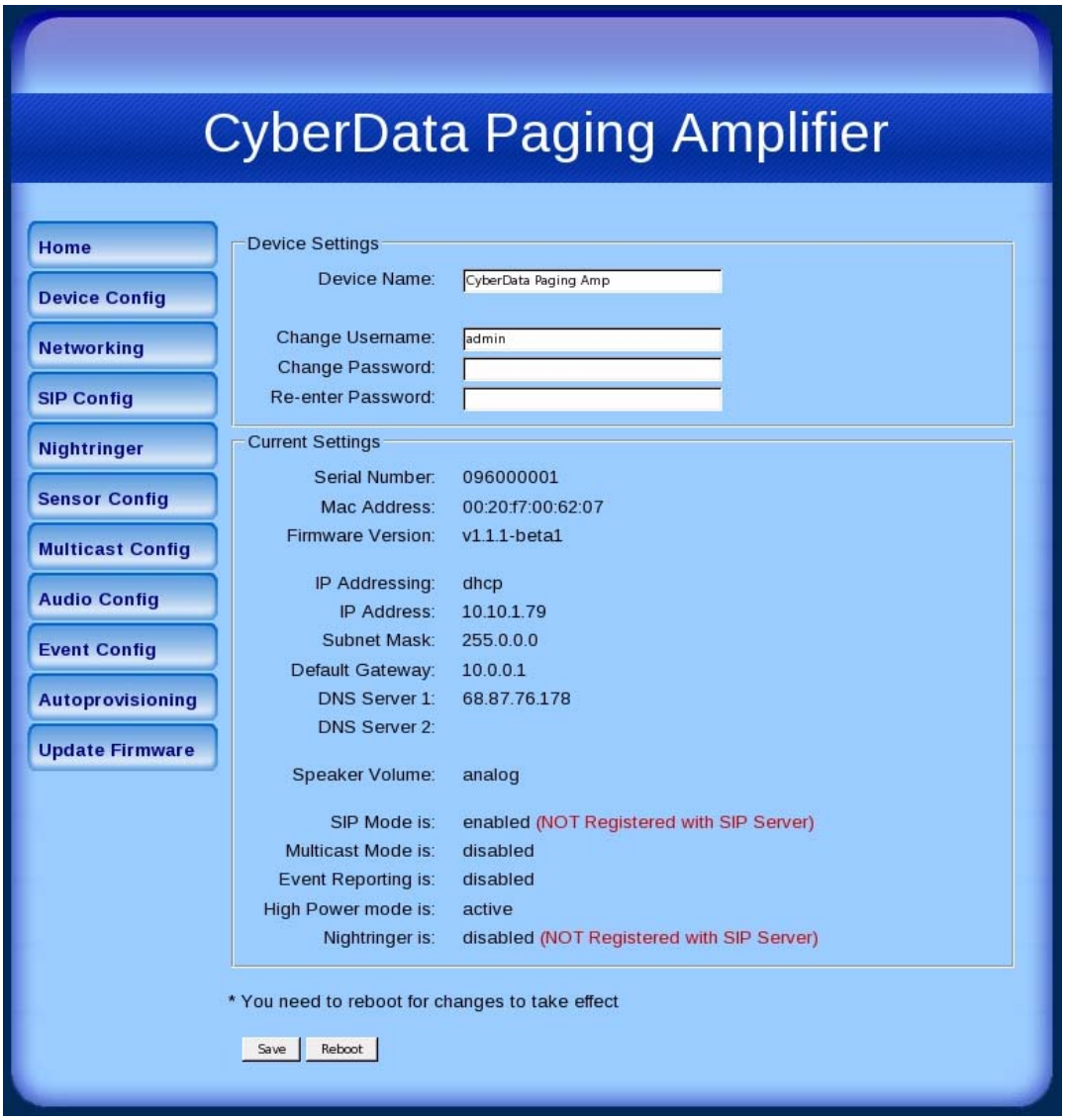
The Paging Amplifier ships in DHCP mode. To get to the **Home** page, use the discovery utility to scan for the device on the network and open your browser from there.

2. When prompted, use the following default **Web Access Username** and **Web Access Password** to access the **Home Page** (Figure 2-16):

   Web Access Username: **admin**

   Web Access Password: **admin**

Figure 2-16. Home Page



3. On the **Home Page**, review the setup details and navigation buttons described in Table 2-10.

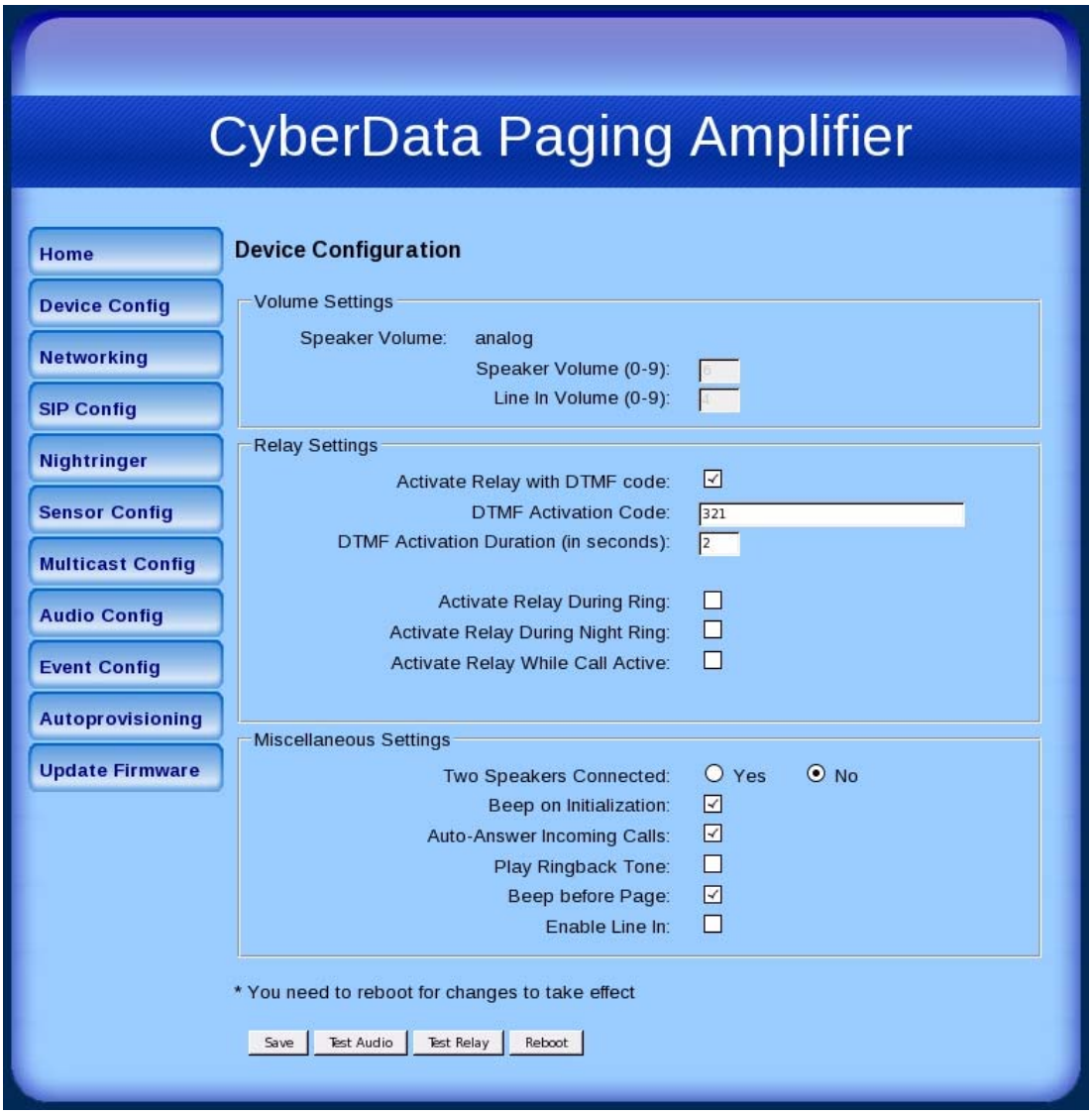
Table 2-10. Home Page Overview

Web Page Item	Description
Device Settings	
Device Name	Shows the device name (25 character limit).
Change Username	Type in this field to change the username (25 character limit).
Change Password	Type in this field to change the password (19 character limit).
Re-enter Password	Type the password again in this field to confirm the new password (19 character limit).
Current Settings	
Serial Number	Shows the device serial number.
Mac Address	Shows the device Mac address.
Firmware Version	Shows the current firmware version.
IP Addressing	Shows the current IP addressing setting (**DHCP** or **Static**).
IP Address	Shows the current IP address.
Subnet Mask	Shows the current subnet mask address.
Default Gateway	Shows the current default gateway address.
DNS Server 1	Shows the current DNS Server 1 address.
DNS Server 2	Shows the current DNS Server 2 address.
Speaker Volume	Shows the current Paging Amplifier volume mode: **Digital** (web page) or **Analog** (volume knob).
SIP Mode is	Shows the current status of the SIP Mode.
Multicast Mode is	Shows the current status of the Multicast Mode.
Event Reporting is	Shows the current status of the Event Reporting.
High Power Mode is	Shows the current status of the High Power Mode.
Nightringer is	Shows the current status of the Nightringer.
Save	Click the **Save** button to save your configuration settings. **Note**: You need to reboot for changes to take effect.
Reboot	Click on the **Reboot** button to reboot the system.

2.3.3 Configure the Device Parameters

1. Click the **Device Configuration** button to open the **Device Configuration** page. See Figure 2-17.

Figure 2-17. Device Configuration Page



2. On the **Device Configuration** page, you may enter values for the parameters indicated in Table 2-11.

Table 2-11. Device Configuration Parameters

Web Page Item	Description
Volume Settings	
Speaker Volume (0-9)	Type the desired Paging Amplifier volume level into this field (range is 0 - 9).
Line-In Volume (0-9)	Type the desired line-in volume level into this field (range is 0 - 9).
Relay Settings	
Activate Relay with DTMF Code	When selected, the relay can be activated with a DTMF code.
DTMF Activation Code	Type the desired DTMF activation code (25 character limit).
DTMF Activation Duration (in seconds)	Type the desired DTMF activation duration (in seconds) (1 character limit).
Activate Relay During Ring	When selected, the relay will be activated for as long as the phone is ringing. **NOTE**: When the phone is set to **Auto Answer**, it will not ring and this option does nothing.
Activate Relay During Night Ring	When selected, the relay will be activated for as long as a night ring tone is playing. **NOTE**: When the phone is set to **Auto Answer**, it will not ring and this option does nothing.
Activate Relay While Call Active	When selected, the relay will be activated for as long as the call is active.
Miscellaneous Settings	
Two Speakers Connected	Select **Yes** if two speakers are connected to the Paging Amplifier. Select **No** if two speakers are not connected to the Paging Amplifier.
Beep on Initialization	When selected, you will hear a beep when the Paging Amplifier initializes.
Auto-Answer Incoming Calls	When selected, the Paging Amplifier automatically answers incoming calls.
Play Ringback Tone	Check this box to enable the device to play a ringtone while the remote device is ringing.
Beep Before Page	Enable/Disable the tone (beep) before each page.
Enable Line In	When selected, whatever audio source that you have selected (mp3 player, internet stream, etc.) will be played. **Note**: The line in audio will be treated as low priority audio that will only play if there is no other audio playing. When higher priority audio is playing, the line in audio will be muted.
Save	Click the **Save** button to save your configuration settings. **Note**: You need to reboot for changes to take effect.

Table 2-11. Device Configuration Parameters (continued)

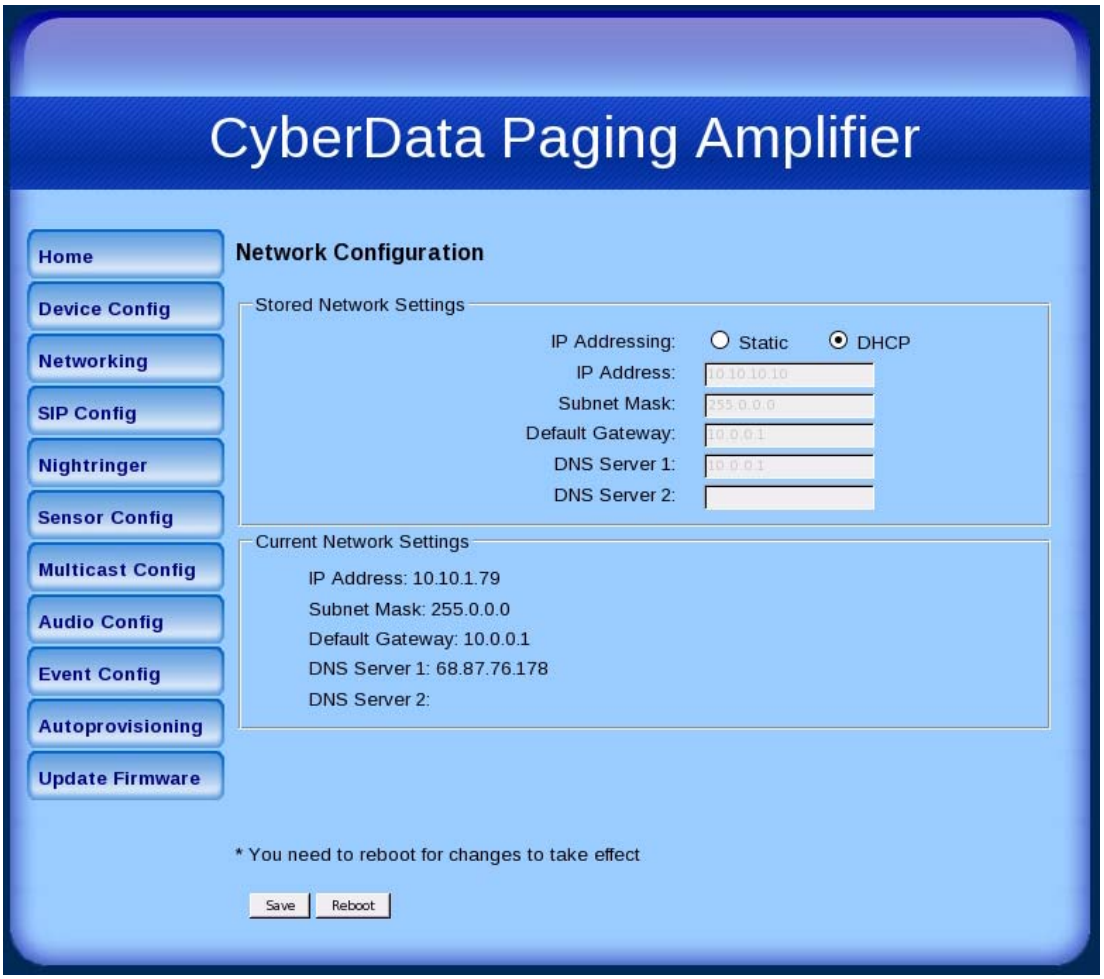
Web Page Item	Description
Test Audio	Click on the **Test Audio** button to do an audio test. Generates a voice message for testing the device audio quality and volume. It plays the audio at the volume you have configured the paging amp for **Note**: If the test audio button is pressed while music is playing via the **Enabled Line In** feature, the music will be muted during the test audio message.
Test Relay	Click on the **Test Relay** button to do a relay test.
Reboot	Click on the **Reboot** button to reboot the system.

3. After changing the parameters, click the **Save** button.

2.3.4 Configure the Network Parameters

1. Click the **Networking** button to open the **Network Configuration** page (Figure 2-18).

Figure 2-18. Network Configuration Page



2. On the **Network Configuration** page, enter values for the parameters indicated in Table 2-12.

Table 2-12. Network Configuration Parameters

Web Page Item	Description
Network Settings	
IP Addressing*	Select either **DHCP IP Addressing** or **Static IP Addressing** by marking the appropriate radio button. If you select **Static**, configure the remaining parameters indicated in Table 2-12. If you select **DHCP**, go to Step 3.
IP Address*	Enter the Static IP address.
Subnet Mask	Enter the Subnet Mask address.
Default Gateway	Enter the Default Gateway address.
DNS Server 1*	Enter the DNS Server 1 address.
DNS Server 2*	Enter the DNS Server 2 address.
Current Network Settings	Shows the current network settings.
IP Address	Shows the current Static IP address.
Subnet Mask	Shows the current Subnet Mask address.
Default Gateway	Shows the current Default Gateway address.
DNS Server 1	Shows the current DNS Server 1 address.
DNS Server 2	Shows the current DNS Server 2 address.
	Click the **Save** button to save your configuration settings. **Note**: You need to reboot for changes to take effect.
	Click on the **Reboot** button to reboot the system.

3. After changing the parameters, click **Save Settings**. This updates the changed parameters and reboots the Paging Amplifier if appropriate.

4. Connect the Paging Amplifier to the target network.

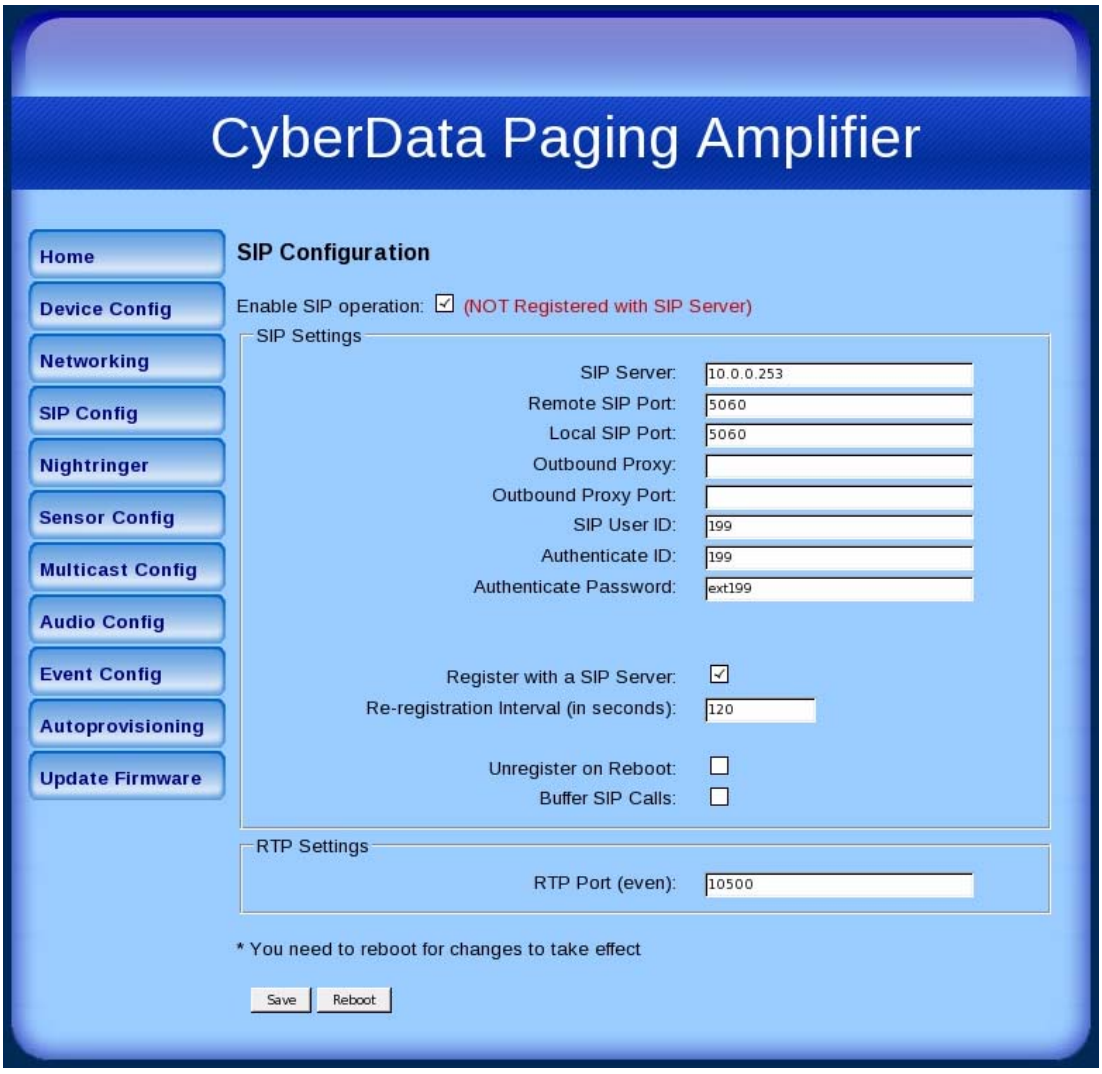
5. From a system on the same network as the Paging Amplifier, open a browser with the new IP address of the Paging Amplifier.

2.3.5 Configure the SIP Parameters

1. Click **SIP Config** to open the **SIP Configuration** page (Figure 2-19).

Note For specific server configurations, go to the **IP-PBX Server Compatibility** page at: http://www.cyberdata.net/support/server/index.html

Figure 2-19. SIP Configuration Page



2. On the **SIP Configuration** page, you may enter values for the parameters indicated in Table 2-13.

Table 2-13. SIP Configuration Parameters

Web Page Item	Description
Enable SIP Operation	Enables or disables SIP operation.

Table 2-13. SIP Configuration Parameters (continued)

Web Page Item	Description
SIP Settings	
SIP Server*	Type the SIP server represented as either a numeric IP address in dotted decimal notation or the fully qualified host name (64 character limit [FQDN]).
Remote SIP Port*	Type the **Remote SIP Port** number (default 5060) (0 - 65535).
Local SIP Port*	Type the **Local SIP Port** number (default 5060) (0 - 65535).
Outbound Proxy	Type the Outbound Proxy as either a numeric IP address in dotted decimal notation or the fully qualified host name (64 character limit [FQDN]).
Outbound Proxy Port	Type the Outbound Proxy Port number (0 - 65535).
SIP User ID*	Type the **SIP User ID** (up to 25 alphanumeric characters).
Authenticate ID*	Type the **Authenticate ID** (up to 25 alphanumeric characters).
Authenticate Password*	Type the **Authenticate Password** (up to 25 alphanumeric characters).
Register with a SIP Server*	Enable or disable SIP Registration.
Re-registration Interval (in seconds)*	Type the SIP Registration lease time in seconds (default is 120 seconds) (range is 100 - ?).
Unregister on Reboot*	• When selected, the Paging Amplifier automatically unregisters when it is rebooted. • When not selected, the Paging Amplifier remains registered when it is rebooted.
Buffer SIP Calls	When this is enabled, SIP calls to the speaker will be stored in memory and will play when either the call is terminated or the buffer is full. The receive buffer is 2MB in size and this is equal to about four minutes of ulaw encoded audio.
RTP Settings	
RTP Port (even)	Specify the port number used for the RTP stream after establishing a SIP call. The RTP port has to be an even number between 0 and 65534. This port can be programmed for people who are not working on a local LAN, but who want to have outside access. Instead of RTP port being a random port, it will be set up so that only two ports can be opened in a firewall. **Note**: The RTP port number has to be an even number because the control port is always one port number higher. Therefore, audio will go through the port number that you enter into the **RTP port** field, but the RTP control signals will go through a port that is one number higher than the **RTP port** field.
Save	Click the **Save** button to save your configuration settings. **Note**: You need to reboot for changes to take effect.
Reboot	Click on the **Reboot** button to reboot the system.

3. After changing the parameters, click **Save Settings**.

2.3.5.1 Point-to-Point Configuration

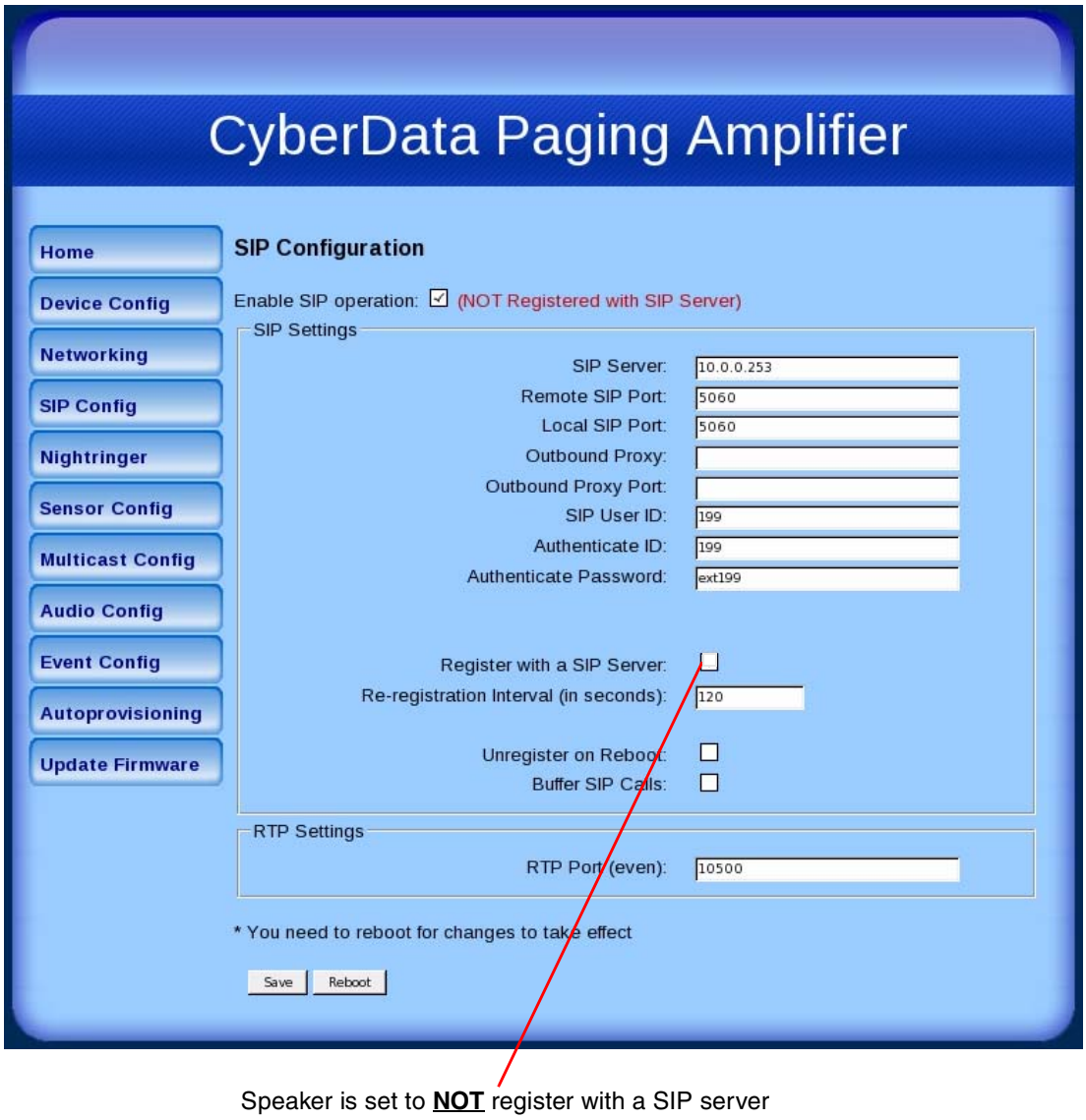
When the board is set to not register with a SIP server, it's possible to set the device to dial out to a single endpoint. To do this, do the following:

1. On the **SIP Configuration** page (Figure 2-20), make sure that the **Register with a SIP Server** parameter is not selected.
2. Type the IP address of the remote device that you want to contact into the **Dial out Extension** field

Note The delayed DTMF functionality is available in the Point-to-Point Mode.

Note Establishing point-to-point SiP calls may not work with all phones.

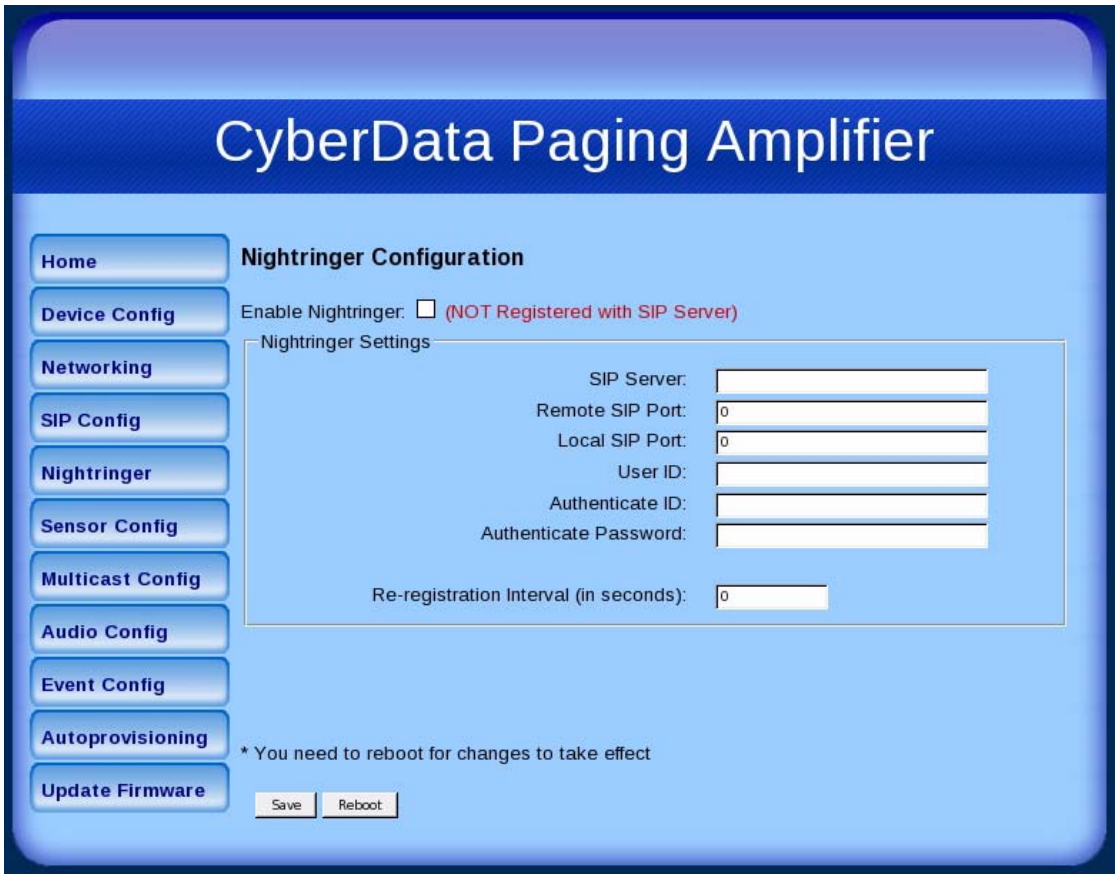
Figure 2-20. SIP Configuration Page Set to Point-to-Point Mode



2.3.6 Configure the Night Ringer Parameters

1. Click on the **Nightringer** button to open the **Nightringer Configuration** page. See Figure 2-23.

Figure 2-21. Nightringer Configuration Setup



2. On the **Nightringer Configuration** page, enter values for the parameters indicated in Table 2-16.

Table 2-14. Nightringer Configuration Parameters

Web Page Item	Description
Enable Nightringer	When the nightringer is enabled, the device will attempt to register a second extension with the SIP server. Any calls made to this extension will play a ringtone.
Nightringer Settings	
SIP Server	Type the SIP server represented as either a numeric IP address in dotted decimal notation.
Remote SIP Port	Type the Remote SIP Port number (default 5060) (8 character limit).
Local SIP Port	Type the Local SIP Port number (default 5060) (8 character limit). **Note**: This value cannot be the same as the **Local SIP Port*** found on the **SIP Configuration Page**.
User ID	Type the **User ID** (up to 64 alphanumeric characters).
Authenticate ID	Type the **Authenticate ID** (up to 64 alphanumeric characters).
Authenticate Password	Type the **Authenticate Password** (up to 64 alphanumeric characters).
Re-registration Interval (in seconds)*	Type the SIP Registration lease time in minutes (default is 60 minutes) (8 character limit). Re-registration Interval (in seconds)*
Save	Click the **Save** button to save your configuration settings. **Note**: You need to reboot for changes to take effect.
Reboot	Click on the **Reboot** button to reboot the system.

3. After changing the parameters, click on the **Save** button.

2.3.7 Configure the Sensor Configuration Parameters

The sensor (pins 1 and 2) on the header can be used to monitor something's open or closed state. There is an option on the **Sensor Configuration** page to trigger on an open or short condition on these pins.

For the sensor there are three actions that the Paging Amplifier can do:

- Activate the relay until the sensor is deactivated
- Loop an audio file until the sensor is deactivated
- Call a preset extension and play a pre-recorded audio file (loops until user hangs up)

Note Calling a preset extension can be set up as a point-to-point call, but currently can't send delayed DTMF tones.

1. Click **Sensor Config** to open the **Sensor Configuration** page (Figure 2-22).

Figure 2-22. Sensor Configuration Page

2. On the **Sensor Configuration** page, enter values for the parameters indicated in Table 2-15.

Table 2-15. Sensor Configuration Parameters

Web Page Item	Description
Sensor Settings	
Sensor Normally Closed	Select the inactive state of the sensors.
Activate Relay	Check this box to activate the relay until the sensor is deactivated.
Play Audio Locally	Check this box to loop an audio file until the sensor is deactivated.
Play Audio Remotely	Check this box to make only one call to a preset extension and play a pre-recorded audio file repeatedly.
Dial Out Extension	Enter the dial-out extension number.
	Use this button to test the sensor.
	Click the **Save** button to save your configuration settings. **Note**: You need to reboot for changes to take effect.
	Click on the **Reboot** button to reboot the system.

3. After changing the parameters, click **Save Settings**.

2.3.8 Configure the Multicast Configuration Parameters

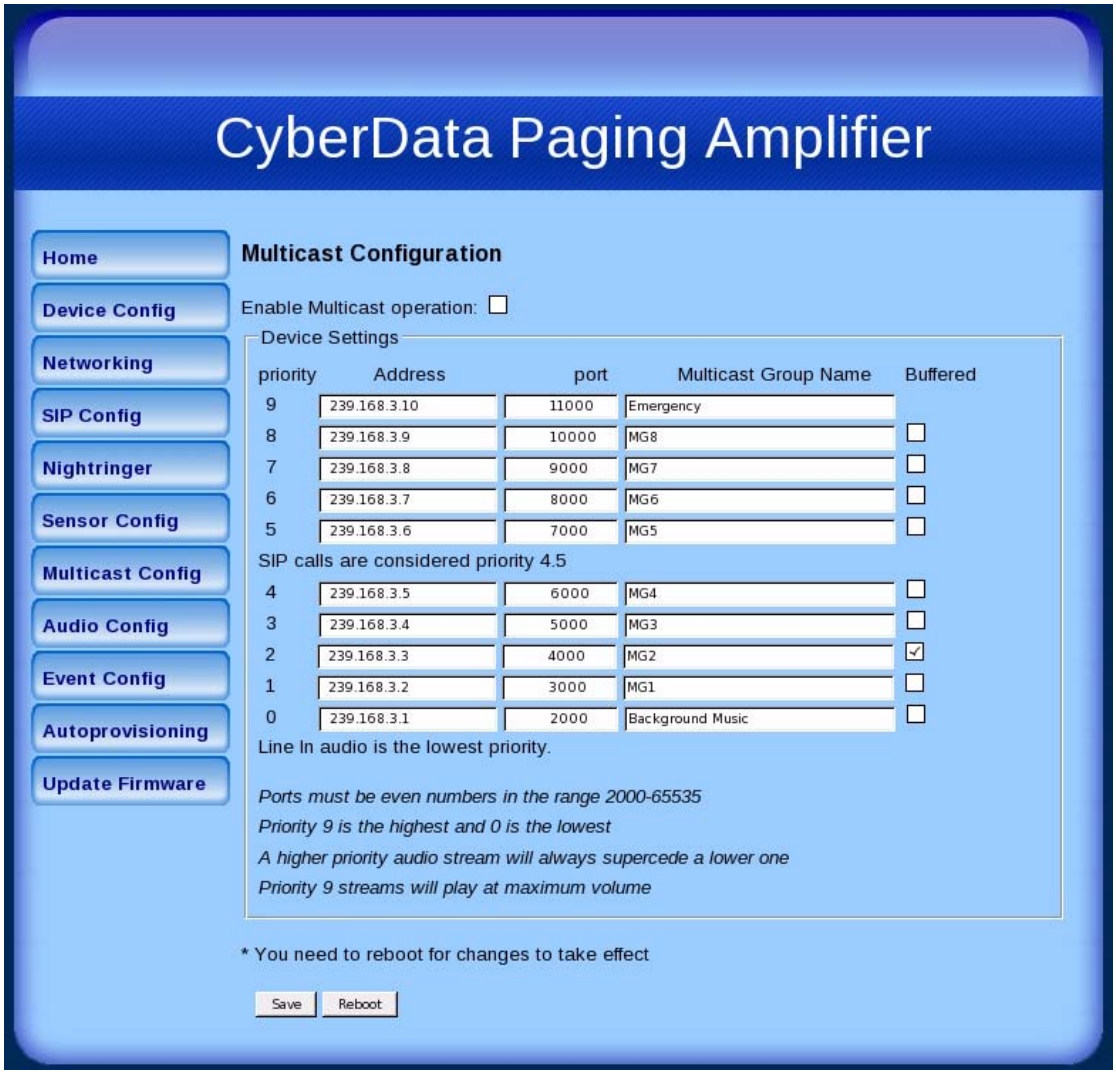
Multicast groups use multicasting to create public address paging zones. Multicasting is based on the concept of a group. Multicast addresses specify an arbitrary group of IP hosts that have joined the group and want to receive traffic sent to the group. Group members send IGMP messages to their local multicast routers, allowing the group traffic traversal from the source.

Multicast configuration provides the ability to join up to 10 paging zones. A paging zone can consist of one, or many, CyberData multicast group-enabled Paging Amplifiers. There is no limit to how many Paging Amplifiers can be in a given paging zone. Each multicast group is defined by a multicast address and port number. Each multicast group is also assigned a priority, allowing simultaneously arriving pages to be serviced based on importance. Multicast groups are compatible with IGMP through version 3.

Note The Paging Amplifier supports simultaneous SIP and Multicast.

1. Click on the **Multicast Configuration** button to open the **Multicast Configuration** page. See Figure 2-23.

Figure 2-23. Multicast Configuration Setup



2. On the **Multicast Configuration** page, enter values for the parameters indicated in Table 2-16.

Table 2-16. Multicast Configuration Parameters

Web Page Item	Description
Enable Multicast Operation	Enables or disables multicast operation.
Device Settings	
Priority	Indicates the priority for the multicast group. Priority **9** is the highest (emergency streams). **0** is the lowest (background music). See Section 2.3.8.1, "Assigning Priority" for more details.
Address	Enter the multicast IP Address for this multicast group (15 character limit).
Port (range can be from 2000 to 65535)	Enter the port number for this multicast group (5 character limit). **Note**: The multicast ports have to be even values. The webpage will enforce this restriction.
Multicast Group Name	Assign a descriptive name for this multicast group (25 character limit).
Buffered	When buffering is enabled for a multicast stream, it will store any audio received on this socket to memory and play it back when the stream is stopped or the buffer is full.
Save	Click the **Save** button to save your configuration settings. **Note**: You need to reboot for changes to take effect.
Reboot	Click on the **Reboot** button to reboot the system.

3. After changing the parameters, click on the **Save** button.

2.3.8.1 Assigning Priority

When playing multicast streams, audio on different streams will preempt each other according to their priority in the list. An audio stream with a higher priority will interrupt a stream with a lower priority.

If both SIP and Multicast is enabled, SIP audio streams are considered priority **4.5**. SIP audio will interrupt multicast streams with priority **0** through **4** and will be interrupted by multicast streams with priority **5** through **9**.

During priority **9** multicast streams, the analog volume control is bypassed and the volume level is set to maximum.

Line In audio is considered the lowest priority, so it will be muted if there are any multicast or SIP audio streams playing.

For example, if the test audio button on the Device Config page is pressed while music is playing via the Enabled Line In feature, the music will be muted during the test audio message.

Note SIP calls, buffered SIP calls, multicast streams, buffered multicast streams, ring tones, ringback tones, and nightring tones are all prioritized.

Ringtones and Nightringtones

Ringtones all play at the same priority level. This means that it is possible to have a nightring tone and a normal ringtone playing at the same time.

The maximum ringtone duration is 2,097,152 bytes or about four minutes of ulaw audio.

Lengthy Pages

Concerning how lengthy pages are handled (where someone puts the phone down for 15 minutes), after the 2MB limit is reached, further data will be thrown away while the audio file is played back. When the file is done playing, it will stop throwing away input and begin buffering data for another four minutes.

Therefore, with the buffered mode enabled on a stream playing background music, you will hear the following sequence of events:

1. Four minutes of silence.

2. Music from 0:00 through 4:00.

3. Four minutes of silence.

4. Music from 8:00 through 12:00 and so on.

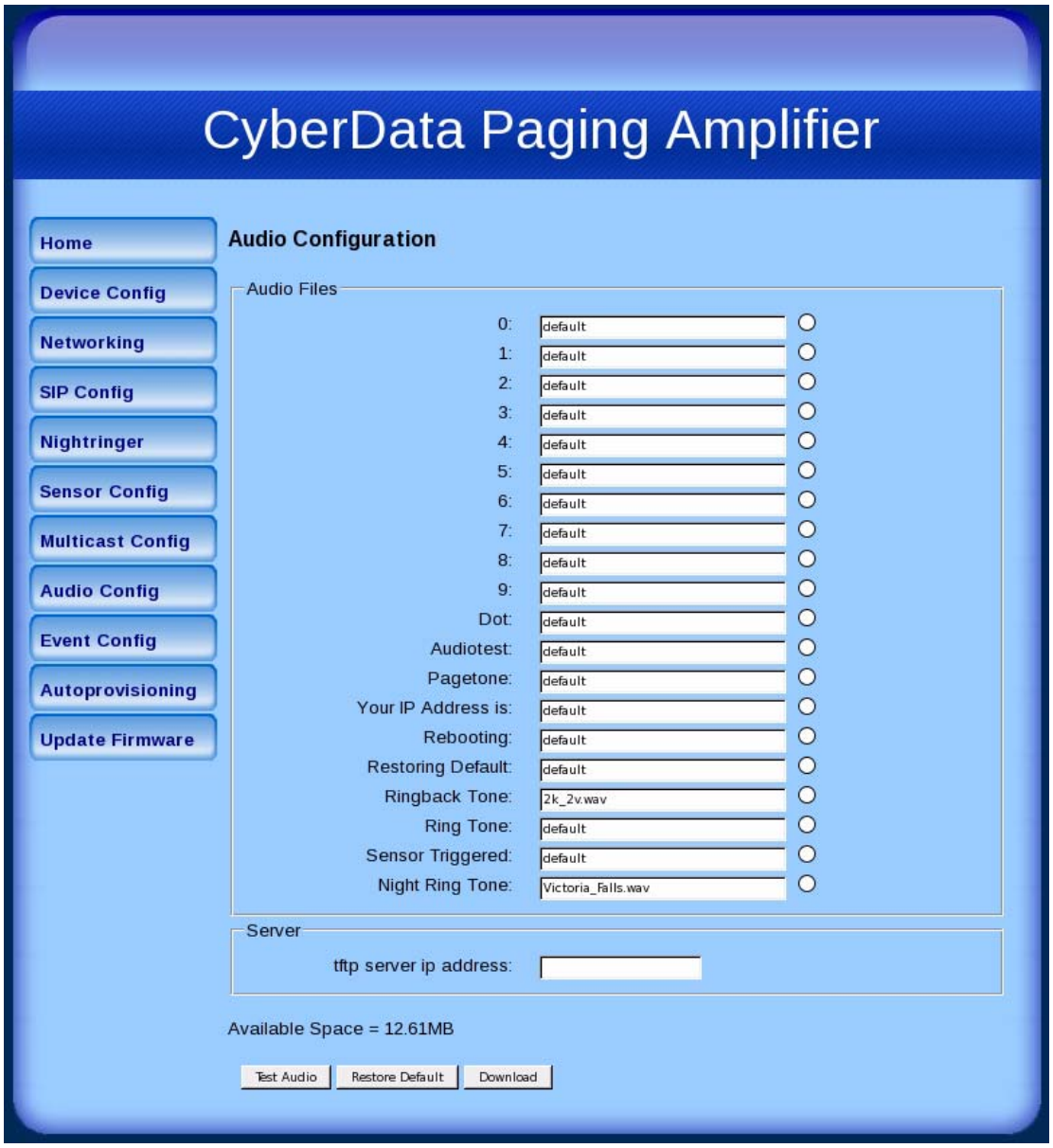
Buffered Audio

When the device is playing back buffered audio and this buffered audio is interrupted by a higher priority stream, once the higher priority streams is finished, the deevice will restart the lower priority stream from the beginning.

2.3.9 Configure the Audio Parameters

Click the **Audio Config** button to open the **Audio Configuration** page. The **Audio Configuration** page is used to add custom audio to the board. User uploaded audio will take precedence over the audio files shipped with the Paging Amplifier.

Figure 2-24. Audio Configuration Page



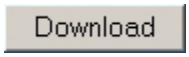
On the **Audio Configuration** page, enter values for the parameters indicated in Table 2-17.

Note Each entry on the **Audio Configuration** page replaces one of the stock audio files on the board. When the input box displays the word **default**, the Paging Amplifier is using the stock audio file. If that file is replaced with a user file, it will display the uploaded filename.

Table 2-17. Audio Configuration Parameters

Web Page Item	Description
Audio Files	
Radio button (to the right of each input box)	For each entry, if the user selects the radio button to the right of the input box they have several options: The **Test Audio** button will play that audio file. The **Restore Default** button will delete any user uploaded audio and restore the stock audio file. The **Download** button will download a new user audio file to the board. It will delete any pre-existing user uploaded audio files.
0-9	The name of the audio configuration option is the same as the spoken audio that plays on the board (24 character limit). '0' corresponds to the spoken word “zero.” '1' corresponds to the spoken word “one.” '2' corresponds to the spoken word “two.” '3' corresponds to the spoken word “three.” '4' corresponds to the spoken word “four.” '5' corresponds to the spoken word “five.” '6' corresponds to the spoken word “six.” '7' corresponds to the spoken word “seven.” '8' corresponds to the spoken word “eight.” '9' corresponds to the spoken word “nine.”
Dot	Corresponds to the spoken word “dot.” (24 character limit)
Audiotest	Corresponds to the audio message “This is the CyberData IP speaker test message...” (24 character limit)
Pagetone	Corresponds to a simple tone that is unused by default (24 character limit).
Your IP Address is	Corresponds to the message “Your IP address is...” (24 character limit).
Rebooting	Corresponds to the spoken word “Rebooting” (24 character limit).
Restoring default	Corresponds to the message “Restoring default” (24 character limit).
Ringback Tone	This is the ringback tone that plays when calling a remote extension (24 character limit).
Ring Tone	This is the tone that plays when set to ring when receiving a call (24 character limit).
Sensor Triggered	This is the audio that plays when the sensor is triggered (24 character limit).
Night Ring Tone	Specifies the ringtone for nightring. By default this parameter uses the same audio file that is selected for the **Ring Tone** parameter.

Table 2-17. Audio Configuration Parameters (continued)

Web Page Item	Description
Server	
TFTP Server IP address	Enter the IP address of your TFTP server into the **TFTP Server IP** parameter field (15 character limit).
Available Space =	Indicates how much space is left in the internal non-volatile memory.
	Click on the **Test Audio** button to test the audio. **Note**: If the test audio button on the **Device Config** page is pressed while music is playing via the **Enabled Line In** feature, the music will be muted during the test audio message.
	Click on the **Restore Default** button to restore the default settings.
	Click on the **Download** button to download a file from a TFTP server at the address specified on the **Update Firmware** page. **Note**: Downloading large files can sometimes take a long time. It's not recommended to interrupt the process once it has started.

2.3.10 User-created Audio Files

User created audio files should be saved in the following format:

RIFF (little-endian) data, WAVE audio, Microsoft PCM, 16 bit, mono 8000 Hz

You can use the free utility *Audacity* to convert audio files into this format. See Figure 2-25 through Figure 2-27.

Figure 2-25. Audacity 1

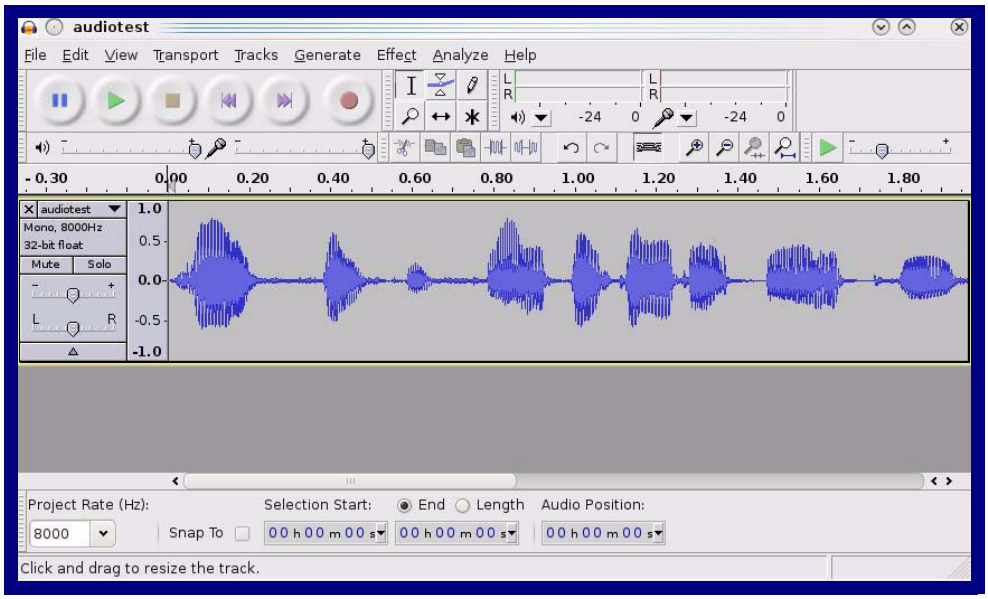
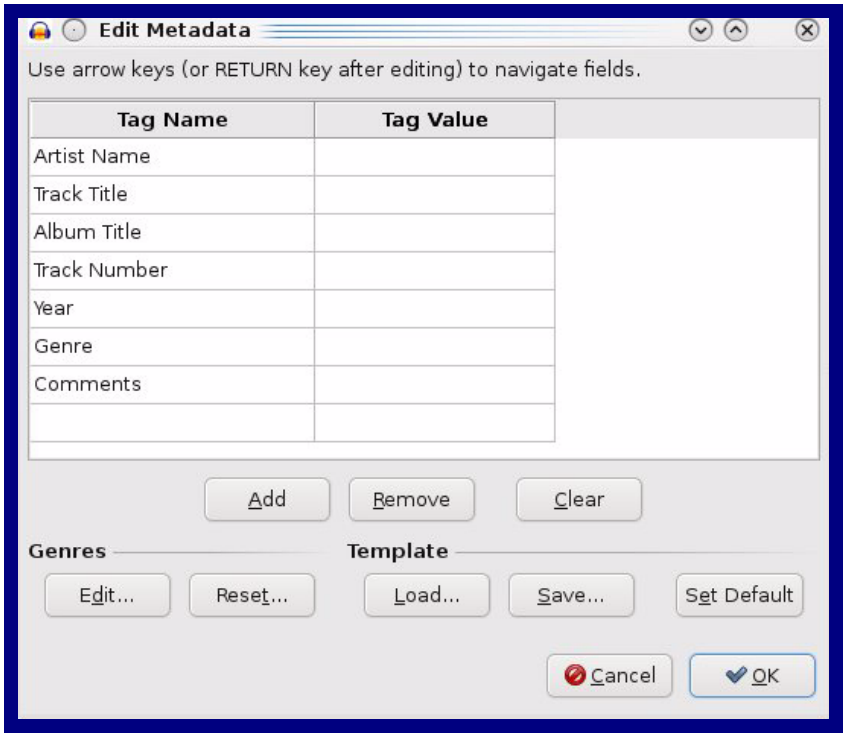


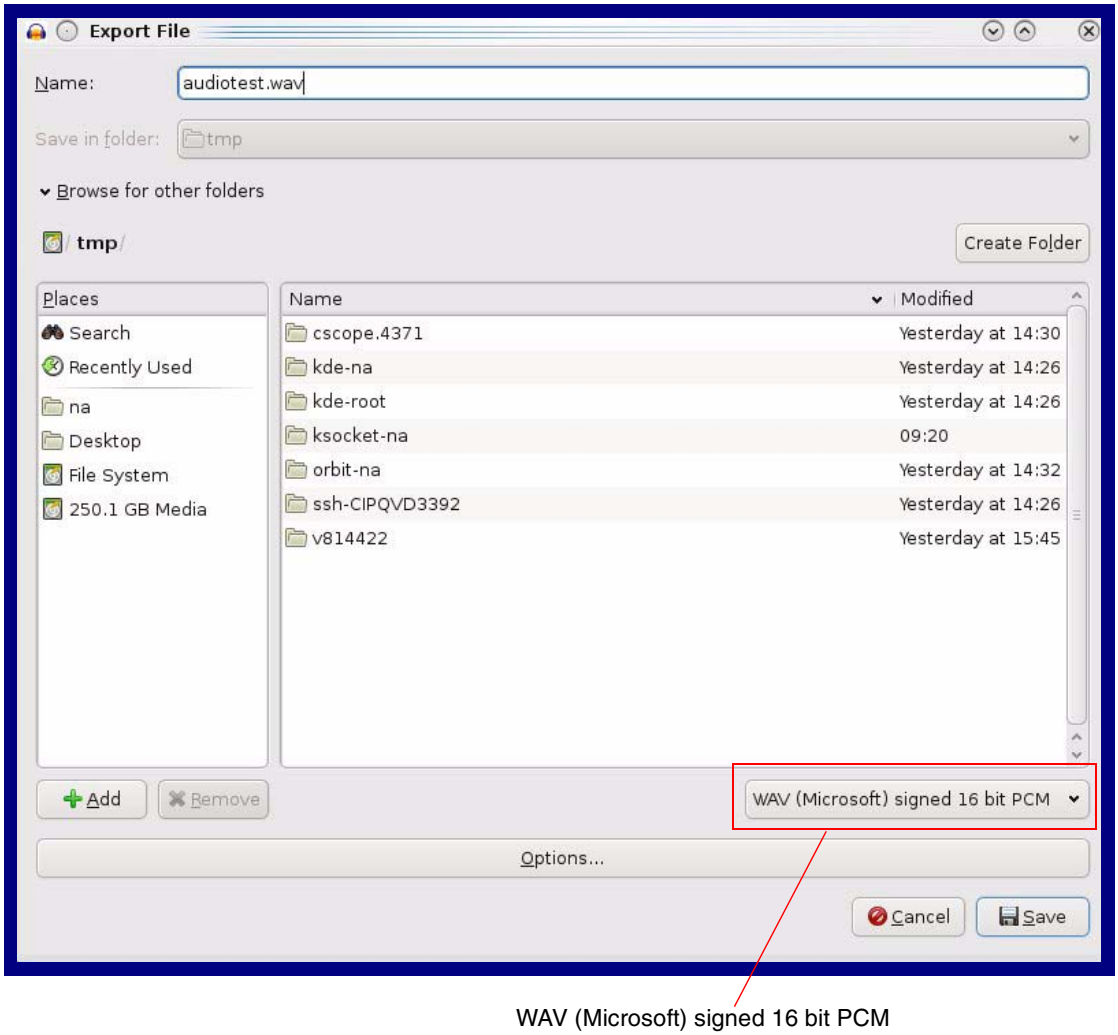
Figure 2-26. Audacity 2



When you export an audio file with Audacity, save the output as:

- **WAV (Microsoft) signed 16 bit PCM**.

Figure 2-27. WAV (Microsoft) signed 16 bit PCM



2.3.11 Configure the Event Parameters

Click the **Event Config** button to open the **Event Configuration** page (Figure 2-28). The **Event Configuration** page specifies a remote server that can be used to receive HTTP POST events when actions take place on the board.

Figure 2-28. Event Configuration Page

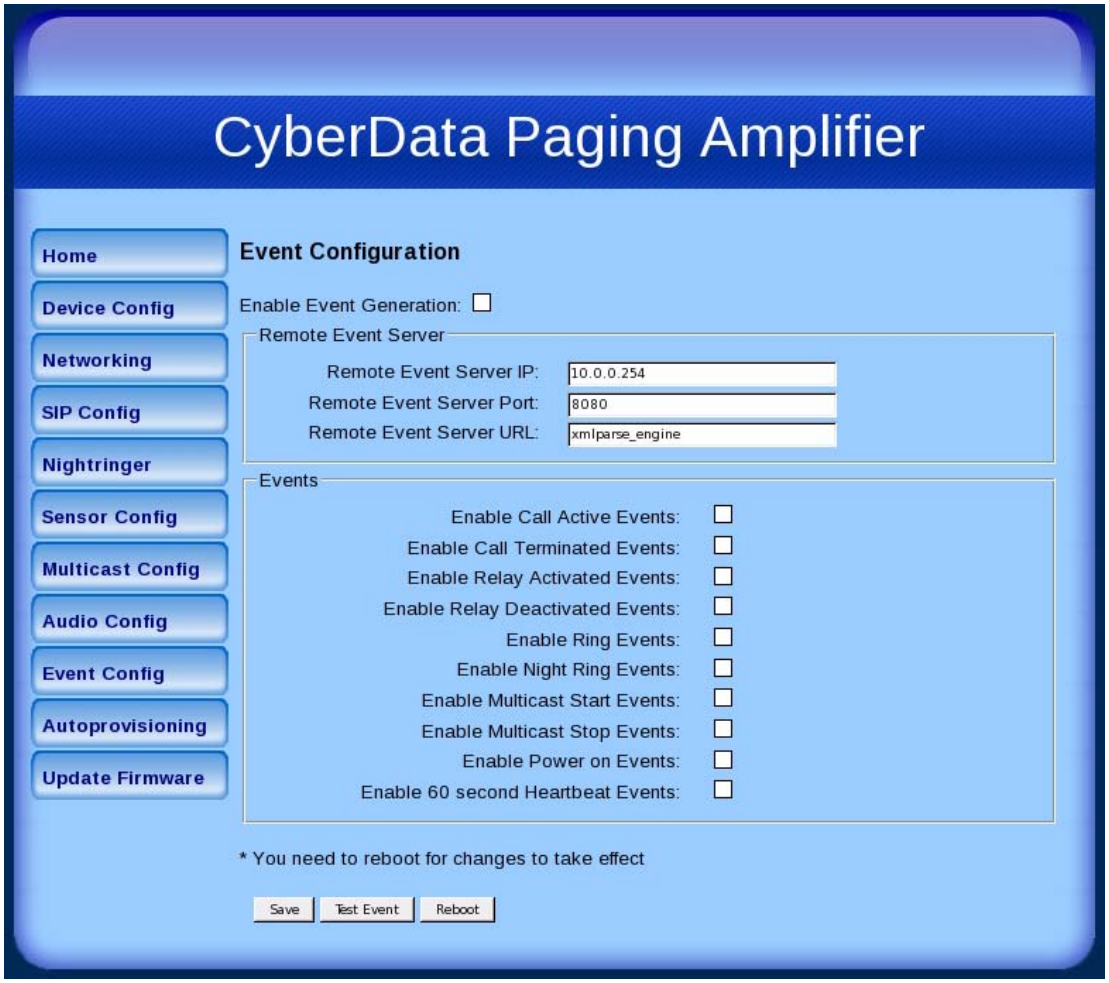


Table 2-18 shows the web page items on the **Event Configuration** page.

Table 2-18. Event Configuration

Web Page Item	Description
Enable Event Generation	When selected, Event Generation is enabled.
Remote Event Server	
Remote Event Server IP	Type the Remote Event Server IP address. (64 character limit)
Remote Event Server Port	Type the Remote Event Server port number. (0 - 65535)
Remote Event Server URL	Type the Remote Event Server URL. (127 character limit)
Events	
Enable Call Active Events	When selected, Call Active Events are enabled.
Enable Call Terminated Events	When selected, Call Terminated Events are enabled.
Enable Relay Activated Events	When selected, Relay Activated Events are enabled.
Enable Relay Deactivated Events	When selected, Relay Deactivated Events are enabled.
Enable Ring Events	When selected, Ring Events are enabled.
Enable Night Ring Events	When selected, there is a notification when the device receives a night ring.
Enable Multicast Start Events	When selected, Multicast Start Events are enabled.
Enable Multicast Stop Events	When selected, Multicast Stop Events are enabled.
Enable Power On Events	When selected, Power On Events are enabled.
Enable 60 Second Heartbeat Events	When selected, 60 Second Heartbeat Events are enabled.
Save	Click the **Save** button to save your configuration settings. **Note**: You need to reboot for changes to take effect.
Test Event	Click on the **Test Event** button to test an event.
Reboot	Click on the **Reboot** button to reboot the system.

2.3.11.1 Example Packets for Events

The server and port are used to point to the listening server and the 'Remote Event Server URL' is the destination URL (typically the script running on the remote server that's used to parse and process the POST events).

Note The XML is URL-encoded before transmission so the following examples are not completely accurate.

Here are example packets for every event:

```
POST xmlparse_engine HTTP/1.1
Host: 10.0.3.79
User-Agent: CyberData/1.0.0
Content-Length: 197
Content-Type: application/x-www-form-urlencoded

<?xml version="1.0" encoding="ISO-8859-1"?>
<cyberdata NAME='CyberData VoIP Device' MAC='0020f70015b6'>
<event>POWERON</event>
</cyberdata>


POST xmlparse_engine HTTP/1.1
Host: 10.0.3.79
User-Agent: CyberData/1.0.0
Content-Length: 199
Content-Type: application/x-www-form-urlencoded

<?xml version="1.0" encoding="ISO-8859-1"?>
<cyberdata NAME='CyberData VoIP Device' MAC='0020f70015b6'>
<event>HEARTBEAT</event>
</cyberdata>


POST xmlparse_engine HTTP/1.1
Host: 10.0.3.79
User-Agent: CyberData/1.0.0
Content-Length: 196
Content-Type: application/x-www-form-urlencoded

<?xml version="1.0" encoding="ISO-8859-1"?>
<cyberdata NAME='CyberData VoIP Device' MAC='0020f70015b6'>
<event>BUTTON</event>
</cyberdata>

POST xmlparse_engine HTTP/1.1
Host: 10.0.3.79
User-Agent: CyberData/1.0.0
Content-Length: 201
Content-Type: application/x-www-form-urlencoded

<?xml version="1.0" encoding="ISO-8859-1"?>
<cyberdata NAME='CyberData VoIP Device' MAC='0020f70015b6'>
<event>CALL_ACTIVE</event>
</cyberdata>
POST xmlparse_engine HTTP/1.1
Host: 10.0.3.79
```

```
User-Agent: CyberData/1.0.0
Content-Length: 205
Content-Type: application/x-www-form-urlencoded

<?xml version="1.0" encoding="ISO-8859-1"?>
<cyberdata NAME='CyberData VoIP Device' MAC='0020f70015b6'>
<event>CALL_TERMINATED</event>
</cyberdata>


POST xmlparse_engine HTTP/1.1
Host: 10.0.3.79
User-Agent: CyberData/1.0.0
Content-Length: 197
Content-Type: application/x-www-form-urlencoded

<?xml version="1.0" encoding="ISO-8859-1"?>
<cyberdata NAME='CyberData VoIP Device' MAC='0020f70015b6'>
<event>RINGING</event>
</cyberdata>


POST xmlparse_engine HTTP/1.1
Host: 10.0.3.79
User-Agent: CyberData/1.0.0
Content-Length: 234
Content-Type: application/x-www-form-urlencoded

<?xml version="1.0" encoding="ISO-8859-1"?>
<cyberdata NAME='CyberData VoIP Device' MAC='0020f70015b6'>
<event>MULTICAST_START</event>
<index>8</index>
</cyberdata>

POST xmlparse_engine HTTP/1.1
Host: 10.0.3.79
User-Agent: CyberData/1.0.0
Content-Length: 233
Content-Type: application/x-www-form-urlencoded

<?xml version="1.0" encoding="ISO-8859-1"?>
<cyberdata NAME='CyberData VoIP Device' MAC='0020f70015b6'>
<event>MULTICAST_STOP</event>
<index>8</index>
</cyberdata>

POST xmlparse_engine HTTP/1.1
Host: 10.0.3.79
User-Agent: CyberData/1.0.0
Content-Length: 234
Content-Type: application/x-www-form-urlencoded
<?xml version="1.0" encoding="ISO-8859-1"?>
<cyberdata NAME='CyberData VoIP Device' MAC='0020f70015b6'>
<event>RELAY_ACTIVATED</event>
</cyberdata>
POST xmlparse_engine HTTP/1.1
Host: 10.0.3.79
```

```
User-Agent: CyberData/1.0.0
Content-Length: 234
Content-Type: application/x-www-form-urlencoded
<?xml version="1.0" encoding="ISO-8859-1"?>
<cyberdata NAME='CyberData VoIP Device' MAC='0020f70015b6'>
<event>RELAY_DEACTIVATED</event>
</cyberdata>

POST xmlparse_engine HTTP/1.1
Host: 10.0.3.79
User-Agent: CyberData/1.0.0
Content-Length: 234
Content-Type: application/x-www-form-urlencoded
<?xml version="1.0" encoding="ISO-8859-1"?>
<cyberdata NAME='CyberData VoIP Device' MAC='0020f70015b6'>
<event>NIGHTRINGING</event>
</cyberdata>
```

2.3.12 Configure the Autoprovisioning Parameters

1. Click the **Autoprovisioning** button to open the **Autoprovisioning Configuration** page. See Figure 2-17.

Figure 2-29. Autoprovisioning Configuration Page

2. On the **Autoprovisioning Configuration** page, you may enter values for the parameters indicated in Table 2-11.

Table 2-19. Autoprovisioning Configuration Parameters

Web Page Item	Description
Autoprovisioning	
Enable Autoprovisioning	See Section 2.3.12.1, "Autoprovisioning".
Get Autoprovisioning from DHCP	See Section 2.3.12.1, "Autoprovisioning".
Autoprovisioning Server (IP Address)	See Section 2.3.12.1, "Autoprovisioning" (15 character limit).
Autoprovisioning Autoupdate (in minutes)	Type the desired time (in minutes) that you want the Autoprovisioning feature to update (6 character limit).
Save	Click the **Save** button to save your configuration settings. **Note**: You need to reboot for changes to take effect.
Reboot	Click on the **Reboot** button to reboot the system.

3. After changing the parameters, click the **Save** button.

2.3.12.1 Autoprovisioning

Enable Autoprovisioning Option

With autoprovisioning enabled, the board will get its configuration from a remote TFTP server on startup or periodically on a scheduled delay. Autoprovisioned values will override values stored in on-board memory and will be visible on the web page. The board gets its autoprovisioning information from an XML-formatted file hosted from a TFTP server. CyberData will provide a template for this XML file and the user can modify it for their own use.

To use autoprovisioning, create a copy of the autoprovisioning template with the desired settings and name this file with the mac address of the device to configure (for example: **0020f7350058.config**). Put this file into your TFTP server directory and manually set the TFTP server address on the board.

It is not necessary to set every option found in the autoprovisioning template. As long as the XML is valid, the file can contain any subset. Options not autoprovisioned will default to the values stored in the on board memory. For example if you only wanted to modify the device name, the following would be a valid autoprovisioning file:

```
<?xml version="1.0" encoding="utf-8" ?>
<specific>
    <MiscSettings>
        <DeviceName>auto V2 Paging Amplifier</DeviceName>
    </MiscSettings>

</specific>
```

Networking

The board will only apply networking settings or firmware upgrades after a reboot.

Get Autoprovisioning from DHCP

When this option is checked, the device will automatically fetch its autoprovisioning server address from the DHCP server. The device will use the address specified in **OPTION 150** (TFTP-server-name) or **OPTION 66**. If both options are set, the device will use **OPTION 150**.

Refer to the documentation of your DHCP server for setting up **OPTION 150**.

To set up a Linux DHCPD server to serve autoprovisioning information (in this case using both option 66 and 150), here's an example dhcpd.conf:

```
# dhcpd.conf
#
# Configuration file for ISC dhcpd (see 'man dhcpd.conf')
#
ddns-update-style ad-hoc;

option option-150 code 150 = ip-address;

subnet 10.0.0.0 netmask 255.0.0.0 {
        max-lease-time 120;
        default-lease-time 120;

        option routers                  10.0.0.1;
        option subnet-mask              255.0.0.0;

        option domain-name              "voiplab";
        option domain-name-servers       10.0.0.1;

        option time-offset              -8;     # Pacific Standard Time

        option tftp-server-name         "10.0.0.254";

        option option-150               10.0.0.254;

        range 10.10.0.1 10.10.2.1;}
```

Autoprovisioning Server (IP Address)

Instead of using DHCP to provide the autoprovisioning tftp server address, you can specify an address manually.

Autoprovisioning Autoupdate

If **Autoprovisioning** is enabled and the **Autoprovisioning Autoupdate** value is something other than **0** minutes, a service is started on startup that will wait the configured number of minutes and then try to re-download its autoprovisioning file. It will compare its previously autoprovisioned file with this new file and if there are differences, it will reboot the board.

Autoprovisioned Firmware Upgrades

An Autoprovisioned firmware upgrade only happens after a reboot, will take roughly three minutes, and the web page will be unresponsive during this time.

The '**FirmwareVersion'** value in the xml file *must* match the version stored in the '**FirmwareFile**'.

```
<FirmwareVersion>v5.0.5b01</FirmwareVersion>
<FirmwareFile>505b01-uImage-ceilingspeak</FirmwareFile>
```

If these values are mismatched, the board can get stuck in a loop where it goes through the following sequence of actions:

1. The board downloads and writes a new firmware file.
2. After the next reboot, the board recognizes that the firmware version does not match.
3. The board downloads and writes the firmware file again.

CyberData has timed a firmware upgrade at 140 seconds. Therefore, if you suspect the board is stuck in a loop, either remove or comment out the **FirmwareVersion** line in the XML file and let the board boot as it normally does.

Autoprovisioned Audio Files

Audio files are stored in non-volatile memory and an autoprovisioned audio file will only have to be downloaded once for each device. Loading many audio files to the device from the web page could cause it to appear unresponsive. If this happens, wait until the transfer is complete and then refresh the page.

The device uses the file name to determine when to download a new audio file. This means that if you used autoprovisioning to upload a file and then changed the contents of this file at the TFTP server, the device will not recognize that the file has changed (because the file name is the same).

Since audio files are stored in non-volatile memory, if autoprovisioning is disabled after they have been loaded to the board, the audio file settings will not change. You can force a change to the audio files on the board by clicking **Restore Default** on the **Audio Configuration** page or by changing the autoprovisioning file with "**default**" set as the file name.

2.3.13 Upgrade the Firmware and Reboot the Paging Amplifier

To upload the Paging Amplifier firmware from your PC:

1. Set up a TFTP server.

   If you do not already have a TFTP server running on your network, see Appendix B, "Setting up a TFTP Server".

2. Retrieve the latest Paging Amplifier firmware from the VoIP V2 Paging Amplifier **Downloads** page at:

   http://www.cyberdata.net/products/voip/digitalanalog/pagingampv2/downloads.html

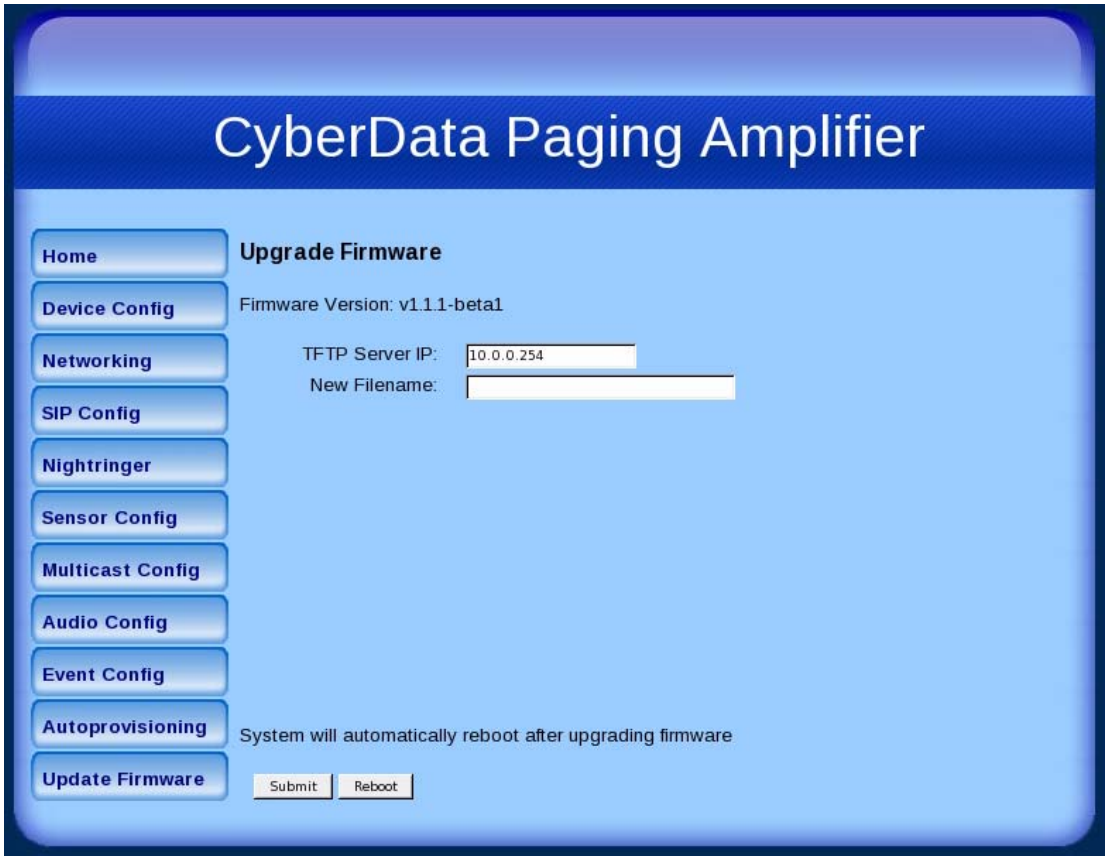
3. Unzip the Paging Amplifier version file. This file may contain the following:
   - Firmware file
   - Release notes

4. Copy the firmware files to be upgraded to the appropriate TFTP server directory:
   - c:\tftp-root\for Windows
   - /tftpboot/for Linux

5. Log in to the Paging Amplifier home page as instructed in Section 2.3.2, "Log in to the Configuration Home Page".

6. Click the **Update Firmware** button to open the **Upgrade Firmware** page. See Figure 2-30.

Figure 2-30. Firmware Upgrade Page



7. Enter the IP address of your TFTP server into the **TFTP Server IP** parameter field.
8. Enter the firmware filename of the file to be uploaded into the **New Filename** parameter field.

   For example, kernel filename **100-uImage-pagingamp.bin**.
9. Click **Upload File**.

Note This starts the upload process. Once the Paging Amplifier has uploaded the file, the **Uploading Firmware** countdown page appears, indicating that the firmware is being written to flash. The Paging Amplifier will automatically reboot when the upload is complete. When the countdown finishes, the **Upgrade Firmware** page will refresh. The uploaded firmware filename should be displayed in the system configuration (indicating successful upload and reboot).

Table 2-20 shows the web page items on the **Upgrade Firmware** page.

Table 2-20. Firmware Upgrade Parameters

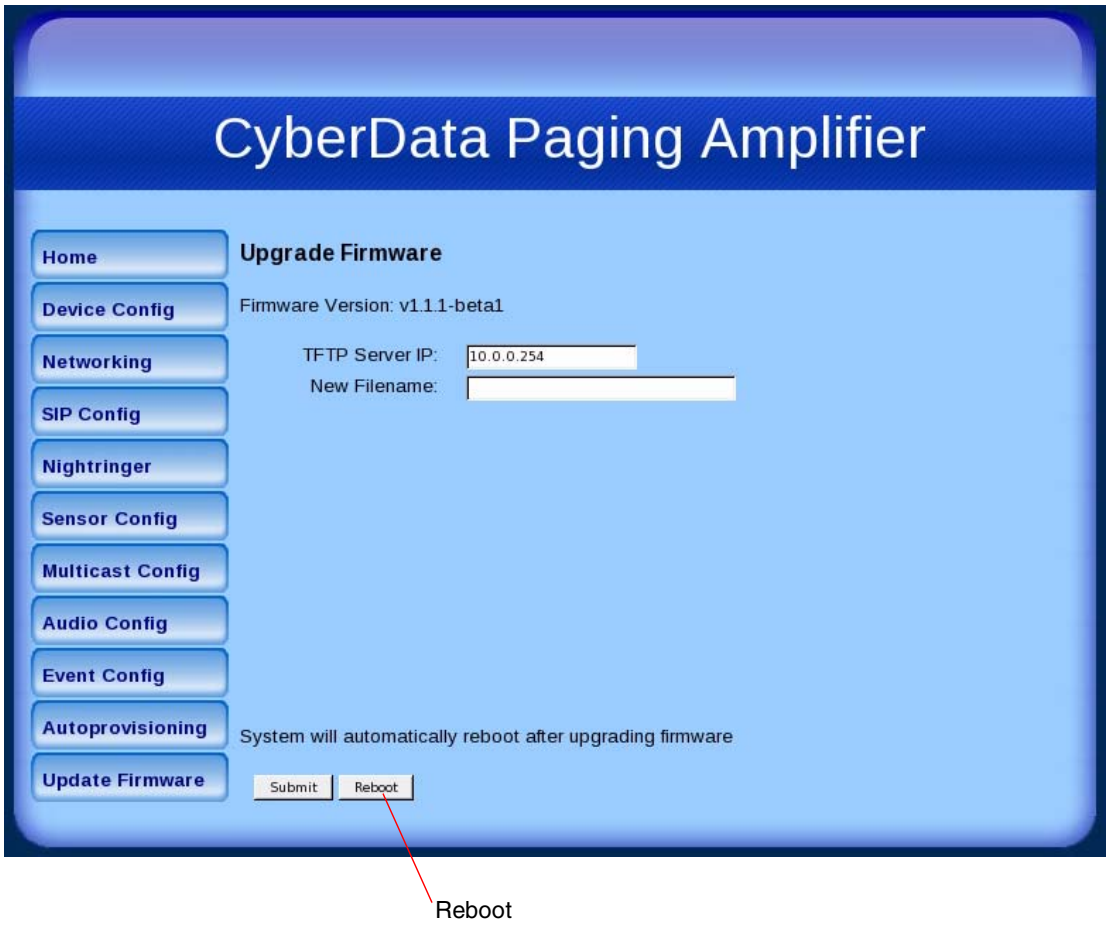
Web Page Item	Description
Firmware Version	Shows the current firmware version.
TFTP Server IP address	Enter the IP address of your TFTP server into the **TFTP Server IP** parameter field (15 character limit).
New Filename	Use this field to enter the new file name for the firmware file that you are uploading (25 character limit).
Submit	Click on the **Submit** button to automatically upload the selected firmware and reboot the system.
Reboot	Click on the **Reboot** button to reboot the system.

2.3.14 Reboot the Paging Amplifier

To reboot a Paging Amplifier, log in to the web page as instructed in Section 2.3.2, "Log in to the Configuration Home Page".

1. Click **Update Firmware** to open the **Upgrade Firmware** page (Figure 2-31).

Figure 2-31. Reboot System Section



2. Click **Reboot**. A normal restart will occur and you will see the following Reboot page.

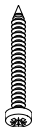
Figure 2-32. Reboot Page

Appendix A: Mounting the Amplifier

A.1 Mount the Amplifier

Before you mount the enclosure, make sure that you have received all of the parts for each enclosure. Refer to Table A-21.

Table A-21. Wall Mounting Components (Part of the Accessory Kit)

Quantity	Part Name	Illustration
2	Plastic Ribbed Anchors	
2	#6 Sheet Metal Screws	

Note The V2 Paging Amplifier was designed for indoor use. Mounting it on the external part of a building will require additional hardware for weatherproofing, cabling access, and lightning suppression. Consult a certified electrician for details.

Note For mounting, use the two **#6 SHEET METAL SCREWS** to secure the enclosure.

Appendix B: Setting up a TFTP Server

B.1 Set up a TFTP Server

Upgrading the VoIP V2 Paging Amplifier firmware requires a TFTP server on which you access the Web interface where you can upload the firmware files.

B.1.1 In a LINUX Environment

To set up a TFTP server on LINUX:

1. Create a directory dedicated to the TFTP server, and move the files to be uploaded to that directory.
2. Run the following command where `/tftpboot/` is the path to the directory you created in Step 1: the directory that contains the files to be uploaded. For example:

   ```
   in.tftpd -l -s /tftpboot/your_directory_name
   ```

B.1.2 In a Windows Environment

You can find several options online for setting up a Windows TFTP server. This example explains how to use the Solarwinds freeware TFTP server, which you can download at:

http://www.cyberdata.net/support/voip/solarwinds.html

To set up a TFTP server on Windows:

1. Install and start the software.
2. Select **File/Configure/Security** tab/**Transmit Only**.
3. Make a note of the default directory name, and then move the firmware files to be uploaded to that directory.

Appendix C: Troubleshooting/Technical Support

C.1 Frequently Asked Questions (FAQ)

To see a list of frequently asked questions for your product, do the following:

1. Go to the following URL:

http://www.cyberdata.net/products/voip/digitalanalog/pagingampv2/faqs.html

2. Go to the support page for your product, and click on the **FAQs** tab.

C.2 Documentation

The documentation for this product is released in an English language version only. You can download PDF copies of CyberData product documentation by doing the following:

1. Go to the following URL:

http://www.cyberdata.net/products/voip/digitalanalog/pagingampv2/docs.html

2. Go to the support page for your product, and click on the **Documentation** tab.

C.3 Contact Information

Contact	CyberData Corporation 2555 Garden Road Monterey, CA 93940 USA www.CyberData.net Phone: 800-CYBERDATA (800-292-3732) Fax: 831-373-4193
Sales	Sales 831-373-2601 Extension 334
Technical Support	Phone: 831-373-2601 Extension 333 Web: **http://www.cyberdata.net/support/contactsupportvoip.html**
Returned Materials Authorization	To return the product, contact the CyberData Returned Materials Authorization (RMA) department at: Phone: 831-373-2601, Extension 136 Email: RMA@CyberData.net When returning a product to CyberData, an approved CyberData RMA number must be printed on the outside of the original shipping package. No product will be accepted for return without an approved RMA number. Send the product, in its original package, to the following address: CyberData Corporation 2555 Garden Road Monterey, CA 93940 Attention: RMA "your RMA number"
RMA Status Form	If you need to inquire about the repair status of your product(s), please use the CyberData RMA Status form at the following web address: **http://www.cyberdata.net/support/rmastatus.html**

C.4 Warranty

CyberData warrants its product against defects in material or workmanship for a period of two years from the date of purchase. Should the product fail within the warranty period, CyberData will repair or replace the product free of charge. This warranty includes all parts and labor.

Should the product fail out-of-warranty, a flat rate repair charge of one half of the purchase price of the product will be assessed. Repairs that are in warranty but are damaged by improper modifications or abuse, will be charged at the out-of-warranty rate. Products shipped to CyberData, both in and out-of-warranty, are shipped at the expense of the customer. Shipping charges for repaired products shipped back to the customer by CyberData, will be paid by CyberData.

CyberData shall not under any circumstances be liable to any person for any special, incidental, indirect or consequential damages, including without limitation, damages resulting from use or malfunction of the products, loss of profits or revenues or costs of replacement goods, even if CyberData is informed in advance of the possibility of such damages.

C.4.1 Warranty & RMA Returns within the United States

If service is required, you must contact CyberData Technical Support prior to returning any products to CyberData. Our Technical Support staff will determine if your product should be returned to us for further inspection. If Technical Support determines that your product needs to be returned to CyberData, an RMA number will be issued to you at this point.

Your issued RMA number must be printed on the outside of the shipping box. No product will be accepted for return without an approved RMA number. The product in its original package should be sent to the following address:

CyberData Corporation

2555 Garden Rd.

Monterey, CA 93940

Attn: RMA "xxxxxx"

C.4.2 Warranty & RMA Returns Outside of the United States

If you purchased your equipment through an authorized international distributor or reseller, please contact them directly for product repairs.

C.4.3 Spare in the Air Policy

CyberData now offers a *Spare in the Air* no wait policy for warranty returns within the United States and Canada. More information about the *Spare in the Air* policy is available at the following web address:

http://www.cyberdata.net/support/warranty/spareintheair.html

C.4.4 Return and Restocking Policy

For our authorized distributors and resellers, please refer to your CyberData Service Agreement for information on our return guidelines and procedures.

For End Users, please contact the company that you purchased your equipment from for their return policy.

C.4.5 Warranty and RMA Returns Page

The most recent warranty and RMA information is available at the CyberData Warranty and RMA Returns Page at the following web address:

http://www.cyberdata.net/support/warranty/index.html

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