STREAMING CLIENT

Streaming Client

Network audio decoder firmware for WMA and MP3 streaming (HTTP, UDP, RTP) withautomatic failover and USB playback

User Manual

Firmware V1.50
Released 24. Jan. 2008
Supports:

- **EXSTREAMER (legacy)**
- **EXSTREAMER 100**
- **EXSTREAMER 200**
- **IP Audio Module**
- **IP Audio Module 200**

Table of Contents

1 Introduction

1.1 About the "Streaming Client" firmware

The "Streaming Client" firmware was designed for the professional field: audio bridging, audio distribution, in store and standalone applications.

It is capable of playing MP3 and WMA files using various protocols. Up to three sources can be defined (both streaming over network and playing from a local USB storage) for streaming with automatic failover.

Thanks to easy remote control and monitoring the "Streaming Client" firmware can be used on Barix devices to build a manageable distributed audio network.

The standalone capability (playing from external USB or internal flash memory, without network connection) allows the use of the Barix Exstreamer 100 or the Barix Exstreamer 200 as a simple MP3/WMA player with automatic start on power up.

1.2 Features

- Plays MP3 streams from network (HTTP, BRTP, RTP) and M3U playlists (HTTP)

- Plays WMA streams from network (MMS) and WMA files (HTTP) **

- Plays MP3 files, M3U playlists and WMA files from external USB memory **

- Supports authentication (HTTP, Shoutcast, Icecast)

- Supports up to 3 sources with automatic failover

- Control and configuration using a standard web browser

- Supports automatic remote update of settings, configuration and firmware

- Monitoring using SNMP and MTELL (HTTP,UDP)

- Supports the Barix IR Remote Control

- Automatic network configuration (BOOTP, DHCP, AutoIP and IPzator) as well as manual static IP configuration

- Features SonicIP ® announcing the IP address on power up over the audio outputs

- Supports proxy server (HTTP proxy support)

- Autoplay functions plays all audio files without playlist (standalone mode)

- Stand-by mode to stop playback and save network bandwidth

- Priority port to receive high-priority RTP audio messages

* These features are not available for legacy devices (Exstreamer, Exstreamer Wireless, Exstreamer Digital and Exstreamer Gold) as the USB port is missing.

1.3 Installing the device

For the installation of the Barix Exstreamer 100 or the Barix Exstreamer 200 please refer to the corresponding "Quick Install Guide".
A printed version is included in the box and can also be downloaded from our site www.barix.com.

For the installation of the Barix IP Audio Module or the Barix IP Audio Module 200 please refer to the corresponding "Development Specification" which can be downloaded from our site www.barix.com.

1.4   Additional documents

Technical specifications can be found in the corresponding product sheet which can be downloaded from our site www.barix.com.

For detailed technical information about the CGI application programming interface (API), the remote update server requirements and about the MTELL capabilities please download the "Streaming Client Technical Documentation" from our website.

1.5   Preloaded Firmware

Barix preloads all Exstreamer family devices with the "Standard" firmware version, which suits most home and consumer applications.

Before continuing with this manual the firmware has to be changed from "Standard" to "Streaming Client" firmware. Please proceed to chapter 4 Updating the Firmware.

1.6   About this manual

Links to chapters

References to chapters (e.g. X Chapter name) are red and underlined and serve as direct links when viewed in Adobe Acrobat Viewer. Clickon the link to jump to the referenced chapter, clickon the left arrow icon to jump back to where you came from.

Links to the Dictionary

Some technical terms (e.g. DHCP) are underlined and red. Click on them to jump to the dictionary at the end of this manual, click on the left arrow icon to jump back.

Bookmarks pane in Adobe Acrobat

The complete "Table of Contents" is available in Adobe Acrobat Viewer. Click on the "Bookmarks" pane tab on the left side of Adobe Acrobat Viewer to open it. Click on any bookmark to directly jump to the corresponding part of the manual.

Chapter overview

This manual is divided into the following chapters:

- Standalone Player Mode (explaining the use without network playing from USB memory)

- Device Configuration (explaining all configuration parameters)

- Updating the Firmware (explaining how to update or how to change from "standard firmware")

- Step by step "How To" (explaining confguration for external services and devices)

- IR Remote control (explaining the functionality of the Barix IR Remote control)

- Advanced User section (explaining configuration via Serial cable and reference to the CGI API)

- Dictionary (explaining technical names and expressions used in this manual)

2 Standalone Player Mode

Powering the device without a network cable will switch the Streaming Client firmware into the standalone player mode *****.

A connected USB media (memory stick) will be scanned for a M3U playlist named "playlist.m3u" pointing to the files on the USB media. The audio files contained in the playlist are played if found and skipped if missing.

If "playlist.m3u" is not found, the Streaming Client will play all the MP3 and WMA files found on the USB media using the Autoplay function.

For further details about supported USB media, supported playlist formats and the Autoplay function please refer to chapters:

- 3.2 Streaming settings/ file:// URL syntax
- 3.2 Streaming settings/ M3U playlist URL syntax
- 3.4 Play settings/ USB Autoplay

* With factory default settings the Autoplay is switched on after approx. two minutes. The devicetries to discover a DHCP server. Toprevent the network discovery, either set the IP to a static address or set the IP to "0.0.15.0" and switch off the SonicIP to prevent the announcement of the IP address. This way it starts in Autoplay mode right after start up.

3 Device Configuration

You can adjust network settings, streaming sources, monitoring settings and more with the Web interface. To enter the configuration mode you will need:

• the IP address announced over the audio outputs (see the Quick Install Guide)
• a standard web browser

Open your web browser and type in the IP address of the Barix device in the URL field and hit the "Enter" key.

• Example: "192.168.0.12"

You will see the following window content:
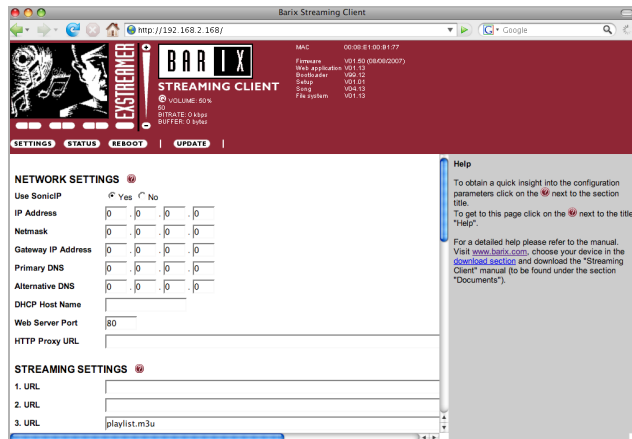
To store changed settings click on Apply button at the end of the page. The device will restart with the new settings.

To obtain a quick insight into the configuration parameters click on the 🔴 icon (red question mark) next to the section title. The help information will show up in the right, grey frame of the browser window.

3.1 Network settings

This chapter explains how to adjust the network settings of the Barix device.
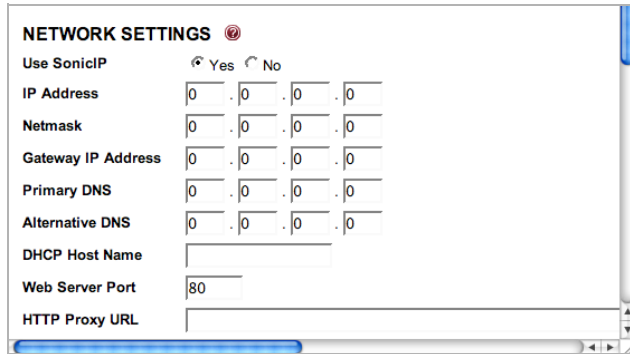
We recommend that you set a Static IP address. With a static (permanent) IP address the device does not have to get a new IP address at power on or reboot.

Use SonicIP

If "Use SonicIP" is set to yes, the device will announce its IP address over the audio output during start up.

IP Address

Enter the 4 values of the desired static IP address e.g.:

• "192.168.0.12" for an internal LAN

Attention: Make sure that you enter a free IP address. The device will check this and will not be available until the device using the same IP is disconnected or switched off. The command Ping can be used to ensure that a specific IP address is unused (i.e. No reply).

The automatic discovery functions are not executed if a static IP address is set.

Enter 4 zeroes to enable it:

- "0.0.0.0" for automatic discovery (Discovery order: BOOTP, DHCP, IPzator, AutoIP)

To enable automatic discovery but disable certain IP discovery functions set all but the third value to zero. For each function you want to disable add the value from the table below:

- "0.0.1.0" to disable AutoIP
- "0.0.2.0" to disable DHCP
- "0.0.4.0" to disable BOOTP
- "0.0.8.0" to disable IPzator

Examples:

- "0.0.3.0" disables AutoIP and DHCP
- "0.0.11.0" disables all but BOOTP

Attention: "0.0.15.0" disables all discovery functions which locks you out unless you reset the device to factory defaults by pressing the reset button for about 10 seconds.

Netmask

Enter the 4 values of the desired Netmask e.g.:

- "0.0.0.0" for a default Netmask depending on the IP Address used
- "255.255.255.0" for a C class network

Note: Try first the Netmask your PC is set to or ask your Network Administrator.

Gateway IP Address

A correct setting of the Gateway IP address is needed to connect to streams from the Internet or from outside your local network (LAN).

Enter the 4 values of the desired Gateway IP address e.g.:

- "0.0.0.0" for no Gateway or automatic discovery
- "192.168.0.1" for a Gateway in a LAN

Note: If you have set the devices IP address to automatic discovery and your server or router has issued an IP address then most probably it also has supplied a valid Gateway address, "0.0.0.0" will then work fine.

If you have set a Static IP address then you will need to configure a valid Gateway address manually. Try first the same Gateway IP address your PC is set to. If it doesn't work then ask your Network Administrator for a correct Gateway IP address.

Primary DNS

A correct setting of the primary DNS IP address is needed to connect to URLs (e.g. "www.radio.com").

Enter the 4 IP address values for the primary DNS e.g.:

- "0.0.0.0" for no DNS
- "192.168.0.111" for a DNS

Note: If you have set the devices IP address to automatic discovery and your server or router has issued an IP address then most probably it also has supplied a valid DNS address, "0.0.0.0" will then work fine.

If you have set a static IP address then you will need to configure a valid DNS address manually. Try first the same DNS IP address your PC is set to. If it doesn't work then check your Network Administrator or your Internet Service Provider for correct DNS addresses.

Alternative DNS

Enter the 4 IP address values of the desired alternative DNS e.g.:

- "0.0.0.0" for no alternative DNS
- "192.168.0.111" for a DNS

Note: An alternative DNS is needed only in case the primary DNS is not reachable.
See also the note in the Primary DNS section above.

DHCP Host Name

Name of the device sent in <u>DHCP</u> request. If not set, a name based on the device's <u>MAC address</u> is automatically generated. Enter up to 15 Characters.

Note: This can help the administration of multiple devices when a descriptive DHCP Host Name is given and the DHCP server can list the attached devices as shown in the picture below (see entry #2).

Web Server Port

The port of the internal Web Server can be adjusted. If set to zero the default port 80 is used. When changing configuration parameters remotely is desired but a web server using port 80 is already installed in the LAN you can change the Web Server Port of the Barix device to a different port (e.g. 8080).

Attention: During an update using a web browser this port has to be set to 0 (see chapter <u>4.3 Web Update</u>)!

HTTP Proxy URL

The HTTP Proxy Server is a server that acts as a broker between the Web browser and the HTTP Server. It is used on many networks, as it can provide caching and/or content filtering. On such networks, connecting to the Internet is usually restricted to the HTTP protocol via HTTP Proxy server.

The Barix Exstreamer can use an Internet connection served by the HTTP Proxy for streaming from HTTP sources, for automatic configuration, firmware update and for MTELL monitoring. Streaming of protocols other than HTTP is not supported by the HTTP proxy.

Enter the URL of the HTTP Proxy in the format

"http://name:password@host:port" e.g.:

- "http://user1:Px2Wu3@proxy.company.com:**8888**"
- "http://user1:Px2Wu3@192.168.0.1:**8888**"

Only basic authentication is supported.

Port is optional, if none is given, default port **8080** is assumed. Name and password can be omitted as well, if proxy is not authenticating e.g.:

- "http://proxy.company.com"

3.2 Streaming settings

This chapter explains how to adjust the way the Barix device gets its streams, files and playlists.
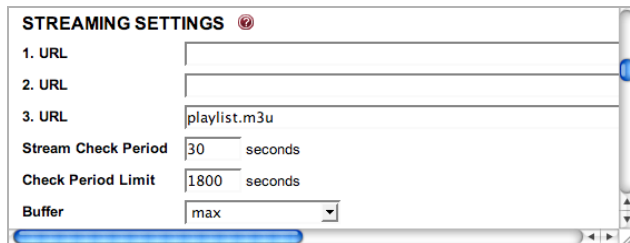
Up to three independent audio sources (URLs) can be set. Each may contain a full address of a playlist, file or a stream. The three entries have different priorities, the first one has the highest priority and the last one has the lowest priority.

The device processes the sources in a loop and tries to connect to the highest priority source available.

For details please refer to the explanation of the parameter "Stream Check Period" towards the end of this chapter.

General Streaming URL Syntax

The stream sources URLs use this general syntax:

"protocol://user:password@host:port/path"

If the protocol is omitted the file:// is assumed.

Note: If the URL contains any unsafe, non-ASCII or reserved characters, they must be escaped using the "%<hex digit><hex digit>" escape sequence according to RFC1738. The dollar sign ($) has to be escaped as "%24" unless it is used as a variable delimiter. The use of variables in the URL is explained in the "Technical Documentation".

Supported protocols vs. audio formats

Depending on the protocol, some parts of the above mentioned general URL syntax are not used. User, password, and port parts are optional for most protocols.

Supported protocols are HTTP, MMS, MMST, RTP, BRTP and FILE. These can be combined with supported audio formats as shown in the following table:

	HTTP	MMS	MMST	RTP	BRTP	FILE
M3U playlist	✓					✓
MP3 stream	✓*			✓	✓	
MP3 file	✓					✓
WMA stream		✓**	✓**			
WMA file	✓					✓

* MP3 stream over HTTP covers the Shoutcast and the Icecast protocol.
** The MMS stands for MMS over HTTP whereas MMST stands for MMS over TCP.

M3U playlist URL syntax

To play a M3U playlist enter the URL in the format

"protocol://user:password@host:port/path/playlist.ext" e.g.:

- "http://user1:Px2Wu3@host.com:80/rock/today.m3u"
- "file://playlist.m3u"

The second example points to a playlist stored on the USB memory device.

M3U playlists are accepted under the following rules:

- Relative Paths in the playlists are accepted.

- Absolute Paths in the playlists are accepted and root directory of the server is treated as their root.

- Playlists must point to media files, not to other playlists

- Comments (lines beginning with '#') are skipped.

- Empty lines are skipped.

- Playlists of up to 2000 entries are supported.

- Allowed line separators are the ASCII characters "CR+LF" (hex 0D, 0A) and "LF" (hex 0A).

- The content of the Playlist will be shuffled if Shuffle is enabled in the configuration or if the playlist is on a local USB media and there is a file shuffle.txt in the root directory of the USB media

- If Autoplay is enabled in the Web Interface and source URL is pointing to a nonexistent playlist on a local USB media, the Streaming Client will try to play the audio files on the USB media using the Autoplay function. A file named shuffle.txt is created on the media and playlist named __exstr.m3u is played. If such a playlist does not exist, the Streaming Client searches the USB media for files with suffices mp3 and wma and creates the playlist __exstr.m3u. The file system tree is searched to the sixth depth level.

- When playing a playlist from a local USB media, the

Streaming Client periodically saves the current playlist position on the USB media into a file named "plist.id" so that streaming can continue with the next playlist item after restart. The Streaming Client also saves the serial ID of the currently used FAT16 file system in memory and the "plist.id" is used only if the same file system is detected after restart.

If the Streaming Client starts without any USB media connected, the file system serial ID is forgotten so that the Streaming Client starts playing from the beginning of the playlist next time regardless of which USB file system is connected.

http:// URL syntax

Both MP3 and WMA files as well as MP3 streams can be played using the HTTP protocol e.g.:

- "http://host.com/topten/song1.mp3"
- "http://host.com/topten/song1.wma"
- "http://host.com/topten/stream"

Full URL is supported; the file to be played can be on a remote server running on an arbitrary port e.g.:

- "http://host.com:12345/topten/song1.mp3"

To support authentication, username and password can be provided e.g.:

- "http://user1:Px2W3@host.com:88/topten/song.mp3"

If the web server specifies the MIME type of the file, this type is considered, otherwise the file type is determined from the extension of the file. MIME types audio/mpeg (audio stream) and audio/x-mpegurl (playlist) are recognized.

Note: The HTTP protocol is influenced by the "HTTP Proxy URL" settings (see chapter and).

mms:// URL syntax

The MMS protocol is the Microsoft HTTP Streaming Protocol (MMS over HTTP) and is used by most Internet radio stations broadcasting in ASF.Only WMA/ASF streaming is supported with this protocol e.g.:

• "mms://host.com/topten/stream.asf"

Full URL is supported; the file to be played can be on a remote server running on an arbitrary port e.g.:

• "mms://host.com:12345/topten/stream.asf"

To support authentication, username and password can be provided e.g.:

• "mms://user1:Px2Wu3@host.com:88/stream.asf"

Notes: There is no "HTTP Proxy server" support for this protocol.
If the WMA stream is not played you should change the protocol to "mmst://…" (see description below) to try if the stream is delivered as MMS over TCP.

mmst:// URL syntax

The MMST protocol is the Microsoft TCP Streaming Protocol (MMS over TCP) and is used by some Internet radio stations broadcasting in ASF.
Only WMA/ASF streaming is supported with this protocol e.g.:

• "mmst://host.com/topten/stream.asf"

Full URL is supported; the file to be played can be on a remote server running on an arbitrary port e.g.:

• "mms://host.com:12345/topten/stream.asf"

To support authentication, username and password can be provided e.g.:

• "mms://user1:Px2Wu3@host.com:88/stream.asf"

rtp:// and brtp:// URL syntax

The RTP and the BRTP protocols are supporting MP3 streams e.g.:

- "rtp://host.com:12345"
- "brtp://host.com:12345"

"BRTP" stands for Barix RTP and is similar to the RTP protocol but modified so that listening to streams is possible even behind a firewall or NAT. There is no need to reconfigure the firewall or the device. BRTP works with common architectures — typical ADSL or cable modems, NAT and firewall devices, which pass data from the local network to the Internet but not vice-versa (see also 5.2 "How to pull a BRTP stream from an Barix Instreamer).
For BRTP the address field of the URL specifies the source address to listen to.

In RTP mode there are two uses of the address field:

- If a specific address is entered, the Streaming Client will only accept streams originating from this address.
- Enter "0.0.0.0" to accept any incoming stream on the given port (e.g. "rtp://0.0.0.0:12345", where 12345 is the port number)

The port number must be specified in both protocols.

file:// URL syntax

For the file protocol only protocol and path parts can be used to play a M3U playlist, a MP3 or WMA file e.g.:

- "file://folder1/playlist.m3u"
- "file://folder1/song1.mp3"
- "file://folder1/song1.wma"

When the protocol part is omitted then the file:// protocol is assumed automatically e.g.:

- "folder1/song1.mp3"

- "song1.wma"

Path should determine a file stored on a USB media connected to the Client. Filenames and directory names can be up to 255 characters long and should contain only ISO-8859-1 characters (Western European character set). The USB media must conform to the USB Mass Storage Standard. Only files on the first partition can be played and this partition should use the FAT12, FAT16, VFAT12 or VFAT16 file system.

Note: The Streaming Client will restart the device every time you connect or disconnect a USB media.

Stream Check Period

The Barix device processes the URL sources in a loop and tries to connect to the highest priority source available. This value sets the amount of time (in seconds) that a URL with a higher priority has to be available before the device will switch from a lower priority URL.

Default: "30" seconds

Notes: If the lower priority URL is a file then the file will be played to the end before switching. This value works only if more than one URL is configured. The selected value is used when the higher priority URL is interrupted the first time. To prevent frequent switchingbetween URLs (due to network drop outs) the value is multiplied by 4 on every further drop out up to the value of "Check Period Limit" (see below).

Check Period Limit

To preventfrequent switching between URLs (due to network drop outs) the "Stream Check Period" value is increased (multiplied by 4) on every drop out up to the "Stream Check Limit" value in seconds. Every time the higher priority URL becomes available the current value is decreased (divided by 4) until it drops to the configured "Stream Check Period" (see above).
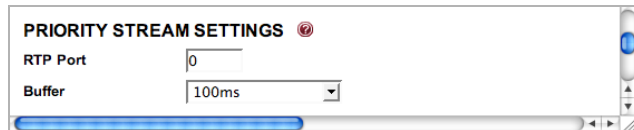
Default: "1800" seconds

Buffer

> For smooth playing the stream or file is buffered in
> memory (up to 64kB). The Buffer value sets the period of
> time stored before starting the playback. Increase this
> value to prevent sound interruptions caused by network
> problems. Decrease the value to shorten the playback
> start delay when switching between streaming URL's. The
> "max" value uses all the buffer available.
>
> Default: "max"

3.3 Priority stream settings

> For public address, announcements or evacuation
> messages the current stream or file play can be
> interrupted by a received priority RTP stream.

RTP Port

> Configure the RTP streaming listen port on which the
> device will listen for a priority stream. A received priority
> stream will be buffered (see below) and played back until
> the priority stream stops, forcing the device to switch
> back to the previously played stream.
>
> Default: "0" (disabled)

Buffer

> For smooth playing the priority stream is buffered in
> memory (up to 64kB). The Buffer value sets the period of
> time stored before starting the playback. Increase this
> value to prevent sound interruptions caused by network
> problems. Decrease the value to shorten the playback
> start delay when switching to the priority stream.
>
> Default: "100ms"

3.4 Play settings

This chapter explains how to adjust the way the Barix Exstreamer gets its streams, files and playlists.
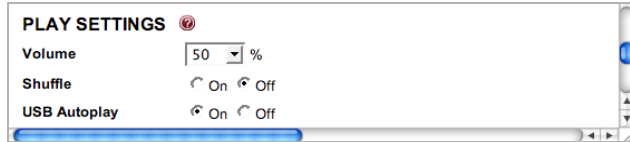
Volume

Select the preferred output volume (Headphone out, RCA Line out, Speaker out) to be adjusted at power up.

Default: "50" percent

Shuffle

This feature works only when playing from a playlist. When Shuffle is enabled the play order of songs in a playlist is randomized (shuffled).

Default: "Off"

Exception: When playing from the local USB memory and a file called "shuffle.txt" is present then shuffling is enabled regardless of the "Shuffle" setting (see USB Autoplay).

USB Autoplay

This feature enables the automatic creation and playback of a playlist containing all MP3 and WMA songs on a connected USB media (in case the active URL is pointing to a missing playlist). The songs found are stored in the playlist named "__exstr.m3u" and a file called "shuffle.txt" is created to enable the shuffled play back of the songs. To prevent the play back of the same song after a power failure the number of the current file played is stored in the file "plist.id".
A connected USB media (memory stick) will be scanned

for a M3U playlist named "playlist.m3u" pointing to the files on the USB media. The audio files contained in the playlist are played if found and skipped if missing.

Default: "On"

3.5 Remote management settings

This chapter explains how to adjust the way the Barix device can be configured and update remotely as well as how to configure it for current status information delivery. For detailed information about the remote update server requirements refer to the "Technical Documentation".

REMOTE MANAGEMENT / MONITORING SETTINGS ⊚

Update URL	
Remote Update Period	720 minutes
MTELL URL	
MTELL UDP Port	0
MTELL Report Period	5 minutes
SNMP Trap Receiver	0 . 0 . 0 . 0

Update URL

Enter the URL of the web server (http) containing the "configuration meta file" which can be used to remotely change the configuration and / or to update the firmware.

Remote Update Period

Enter the time interval (in minutes) for the periodic update check.

Default: "720" minutes

MTELL URL

Devices can be monitored using the MTELL technology (see www.mtell.de). Enter the URL of the MTELL server.

MTELL UDP Port

> Enter the port on which the current status of the device can be discovered using the MTELL over UDP protocol. Setting the port to "0" disables this function.
>
> Default: "0" (disabled)

MTELL Report Period

> Enter the time interval (in minutes) for the periodic sending of the monitoring report.
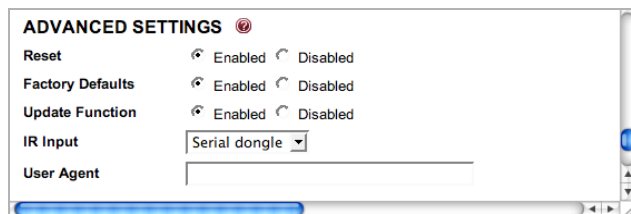>
> Default: "5" minutes

SNMP Trap Receiver

> Enter the IP address of the desired SNMP Trap receiver e.g.:
>
> - "0.0.0.0" for no receiver
> - "192.168.0.12" for a specific receiver

3.6 Advanced settings

> This chapter explains how to adjust advanced functions.

Reset

> Enable or disable the "Reset" function on the Reset button. In order to restart the device, press the Reset button once.
>
> Default: "enabled"

Factory Defaults

Enable or disable the "Factory Defaults" function on the Reset button. Toreset the configuration to factory defaults keep the Reset button pressed until the red LED starts blinking (approx. 10 seconds).

Default: "enabled"

Update Function

Enable or disable the Update function of the device. If you disable the Update function, the WEB Update as well as the Remote Update will be completely disabled (no firmware update, no setup update, no remote command execution). If the Update function is disabled, the only way to update the firmware is to use serial rescue, documented in section 4.2.

Default: "enabled"

IR Input

For reception of IR commands select between external "Serial Dongle" (from Barix) and "Built-in" (built-in IR receiver available on some devices such as the Barix Exstreamer 200). For details about IR functionality please refer to chapter 6 IR Remote control.

Default: "Serial Dongle"

User Agent

When connecting to a HTTP/Icecast/Shoutcast server a so called "User Agent" identifier string is sent. If left empty the string "Barix Streaming Client" is sent instead.

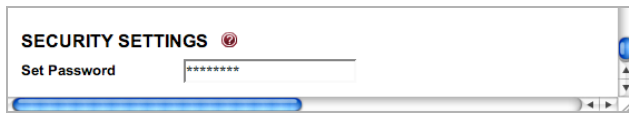Default: empty (automatic: "Barix Streaming Client")

3.7 Security settings

This chapter explains how to configure and to use the security features of the "Streaming Client" firmware.
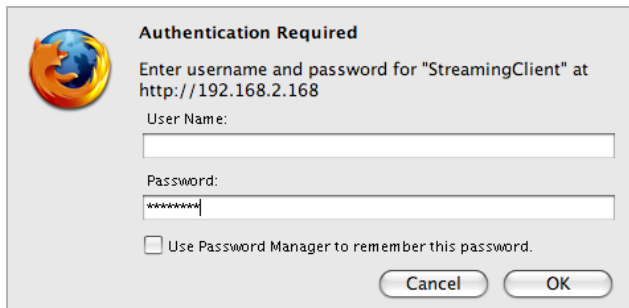

Set Password

This is visible as long as no password is set.
Enter a password (up to 25 characters) and hit the "Apply" button.

After the restart you will be asked to supply user name and password.

The user name can be omitted but the password has to be supplied in order to see the web configuration.

Once logged in you will see the "Logout" button at the top of the configuration frame. Click on it to log out.

Note that only one user at a time can be logged in. Any

further request will be refused.
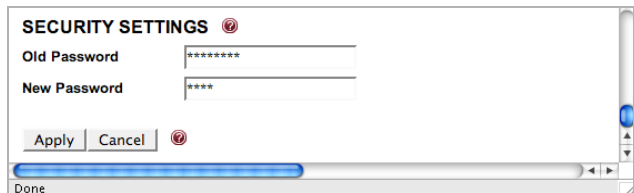

Old Password / New Password

These fields are visible as long as a password is set.

To allow free access (clearing the password) enter the old password and leave the field "New Password" empty. Enter the old password in the password field above the "Apply" button as well and then hit the "Apply" button.
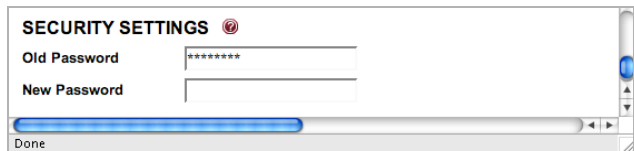
After the restart you will not be asked for user name and password any more.

To change the password enter the old password in the "Old Password" field and enter the new password in the "New Password" field. Hit the "Apply" button.

After the restart you will be asked for user name and password. The user name can be omitted but the new password has to be supplied in order to see the web configuration.

3.8 APPLY and CANCEL buttons

APPLY

To store changed settings click on "Apply". The device will restart with the new settings.

Exception: When security is enabled a password has to be entered. See previous chapter for details.
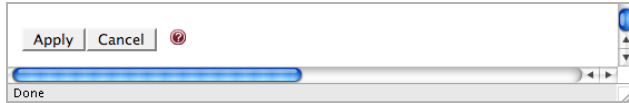
CANCEL

To disregard changes click on "Cancel".
The page will reload with the current settings.

4 Updating the Firmware

Barix preloads all Exstreamer family devices with the "standard firmware" version, which suites most home and consumer applications.

Barix recommends the use of the "Serial Rescue" method when changing from "Standard" to "Streaming Client" firmware.

For the alternative method "Web Update" the "Web server port" has to be set to "0" or "80" to work properly (0 will set the default port "80").

If the web update is interrupted during the process (power or network loss) the device might become unreachable. In that case the "Serial Rescue" procedure is the only remedy. Please keep that in mind when planning a remote update.

4.1 Downloading the latest firmware

To download the latest "Streaming Client" firmware version please visit www.barix.com.

- In the menu on the left side click on **"downloads"**

- In the center column select one of the Barix Exstreamer devices and click on the name of the device.

- Click in the section **"Firmware"** on the "Streaming Client Update Kit" link to download it.

- Save the ZIP file and unpack it to a local drive.

- Read the "_readme1st.txt" file for detailed instructions.

4.2 Serial Rescue

The "Serial Rescue" procedure loads the entire firmware and resets the device to factory default settings (current configuration is overwritten).

It is therefore helpful to note the current setting. Printing out the "status" page is the quickest way as the page contains all configuration parameters.
Open your web browser and type in the IP address of the Barix device in the URL field followed by "/status" and hit the "Enter" key.

• Example: "192.168.0.12/status"

To apply the Rescue using the supplied serial cross cable and a PC running Windows 2000, Windows XP or Linux.

Follow the steps in the "_readme1st.txt" carefully as there are several different applications (batch files) to be started depending on the Barix hardware (new or legacy) and the PCs COM port number used.

Calculate approximately 2 minutes to complete the "Serial Rescue" procedure. After a successful rescue the device is ready for configuration according to your needs (see chapter 3 Device Configuration).

4.3 Web Update

To apply the "Web Update" procedure you will need a standard web browser and the IP address of the device (announced by the SonicIP feature).

Make sure that the "Web server port" is set to "80" before starting the procedure.

Calculate approximately 2 minutes to complete the "Web Update" procedure.

STEP 1
Open your web browser

STEP 2

Type in the IP address of the Barix device and press Enter

• Example: "192.168.0.12"

STEP 3

Click on the "Config" link if you see one. If you do not see that link (you are already running "Streaming Client" firmware on your device), proceed to step 4.
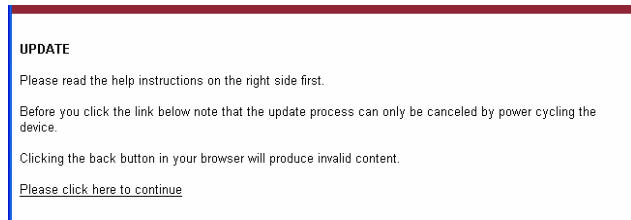

STEP 4

Click on the UPDATE button to enter the update page.
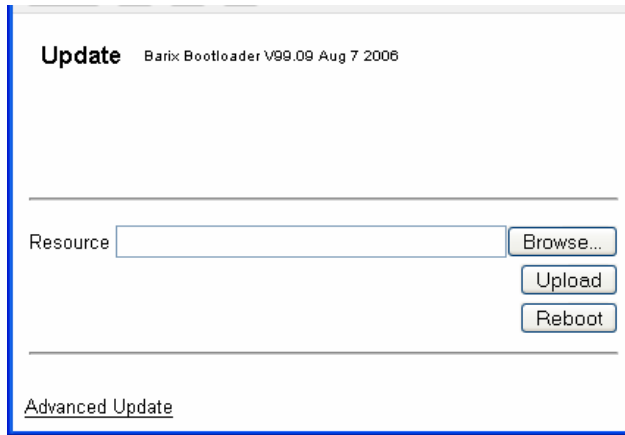

You will see the following screen:

UPDATE

Please read the help instructions on the right side first.

Before you click the link below note that the update process can only be canceled by power cycling the device.

Clicking the back button in your browser will produce invalid content.

Please click here to continue

STEP 5

Click on "Please click here to continue" to launch the update process. The device will restart in a special mode called "Boot loader" and the following screen appears showing a number counting down from 4 to 0.

The device is restarting now. Please wait.

I

Please click here after the countdown if your browser doesn't support forwarding.
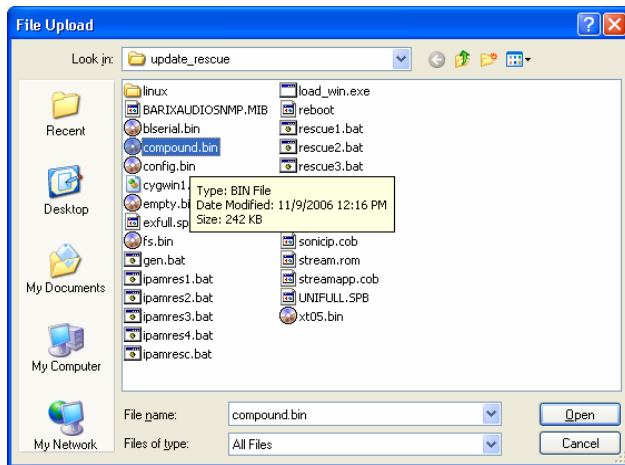
Upon start up the following screen appears:

STEP 6
Click on "Browse..." to select the file you want to update.

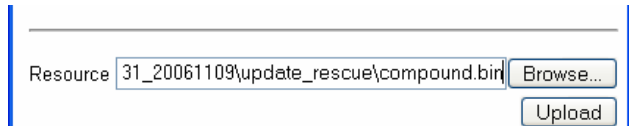The file is named **compound.bin** located in the folder "update_rescue".

Select the file and click on the "Open" button.

STEP 7

Attention: If you load the wrong file the device will not work and the "Serial Rescue Procedure" must be applied!

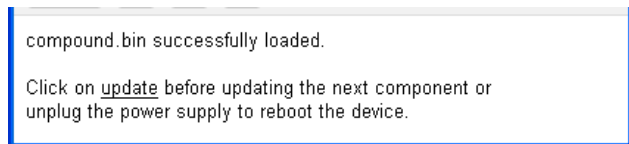Click on "Upload" to start the upload process which will take approximately 2 minutes.

Resource `31_20061109\update_rescue\compound.bin` [Browse...]

[Upload]

Warning:
If the web update is interrupted during the process (power or network loss) the device might become unreachable. In that case the "Serial Rescue" procedure is the only remedy. Please keep that in mind when planning a remote update.

After a successful upload the following window appears:

compound.bin successfully loaded.

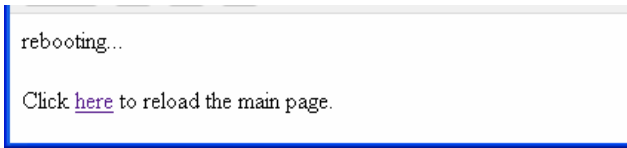Click on update before updating the next component or unplug the power supply to reboot the device.

STEP 8
Click on the update link and then click on the "Reboot" button in the following window:

Resource [   ] [Browse...]

[Upload]

[Reboot]

The following screen appears:

rebooting...

Click here to reload the main page.

STEP 9
After the device has rebooted click on the "here" link to reload the main page.

The device is now ready for configuration according to your needs (see chapter 3 Device Configuration).

Note: The "Web Update" procedure does not change the current configuration. Barix recommends nevertheless checking for correct parameters in the configuration as well as to set parameters for newly added features.
If you observe strange behavior after an update Barix recommends resetting the configuration to factory defaults by keeping the Reset button pressed until the red LED starts blinking (approx. 10 seconds) and to start over with the configuration of the device.

5   Step by step "How To"

5.1   How to pull a stream from an Internet radio station

As a company based in Switzerland we are happy to bring you modern Swiss music with this configuration example. We assume that you have connected the device to your network switch or hub which is linked to the Internet.

STEP 1   Open your Web Browser

STEP 2   Enter the IP address of the Barix device (as announced over the audio outputs by SonicIP) and press Enter. Example: 192.168.0.12

STEP 3   Look at the section NETWORK SETTINGS. If the IP Address is set to 0.0.0.0 (Automatic discovery) you can proceed to step 6 further below.

STEP 4   Enter the Gateway IP address Example: 192.168.0.1

STEP 5   Enter the primary DNS IP address Example: 192.168.0.1

STEP 6   Scroll to the section STREAMING SETTINGS. In the "1. URL" field enter the following: mms://dms-cl-017.skypro.tv/virus

STEP 7   Select "2s" for two seconds in the "Buffer" selection.

STEP 8   Click on "APPLY" button at the end of the page. The device will restart, and after some seconds you will hear the Swiss national radio channel "VIRUS". Here the complete list of the national channels (We are a very small country so only 4 channels):

DRS 1   mms://dms-cl-021.skypro-media.net/drs1
DRS 2   mms://dms-cl-021.skypro-media.net/drs2
DRS 3   mms://dms-cl-021.skypro-media.net/drs3
Virus   mms://dms-cl-021.skypro-media.net/virus

5.2 How to pull a BRTP stream from an Barix Instreamer

For applications where an audio stream has to be sent over the Internet the Barix Instreamer can be used as an audio encoder. "BRTP" stands for Barix RTP and is similar to the RTP protocol but modified so that listening to streams is possible even behind a firewall or NAT. Only the firewall on the Instreamer side has to be configured to allow the UDP port access from outside.
In this example we will use port 4040 but you are not restricted to this port number.

Instreamer Configuration

STEP 1   Configure your Instreamer to "BRTP 0.0.0.0 :4040" in the first "stream to" entry (only the first supports BRTP) in the Streaming configuration tab.

STEP 2   Configure your Router/Modem/Firewall to pass UDP port 4040 from outside to the IP of your Instreamer.

STEP 3   Check in your Router what public IP address you have or configure "Dynamic DNS" if you plan to use a URL name instead of an IP number.

Exstreamer Configuration

STEP 1   Open your Web Browser

STEP 2   Enter the IP address of the Exstreamer (as announced over the audio outputs by SonicIP) and press Enter. Example: 192.168.0.12

STEP 3   Look at the section NETWORK SETTINGS.
If the IP Address is set to 0.0.0.0 (Automatic discovery) you can proceed to step 6 further below.

STEP 4   Enter the Gateway IP address. Example: 192.168.0.1

STEP 5   Enter the primary DNS IP address. Example: 192.168.0.1

STEP 6   Scroll to the section STREAMING SETTINGS. In the "1. URL" field enter the following (replace the IP by the

current public IP of the Router on the Instreamer side):
brtp://208.144.116.12:4040
If you configured "Dynamic DNS" the used URL name
e.g.: brtp://mystudio.dyndns.org:4040

STEP 7   Select "2s" for two seconds in the "Buffer" selection.

STEP 8   Click on "APPLY" button at the end of the page.
                The device will restart, and after some seconds you will
                hear the audio that is encoded by the Instreamer.

5.3   How to receive a RTP stream from an Barix Instreamer

For applications where an audio stream has to be sent
over the internal network (LAN) the Barix Instreamer
can be used as an audio encoder.
In this example we will use port 4040 but you are not
restricted to this port number.

Instreamer Configuration

STEP 1   Configure your Instreamer to "RTP 0.0.0.0 : 4040" in an
                entry in the Streaming configuration tab.
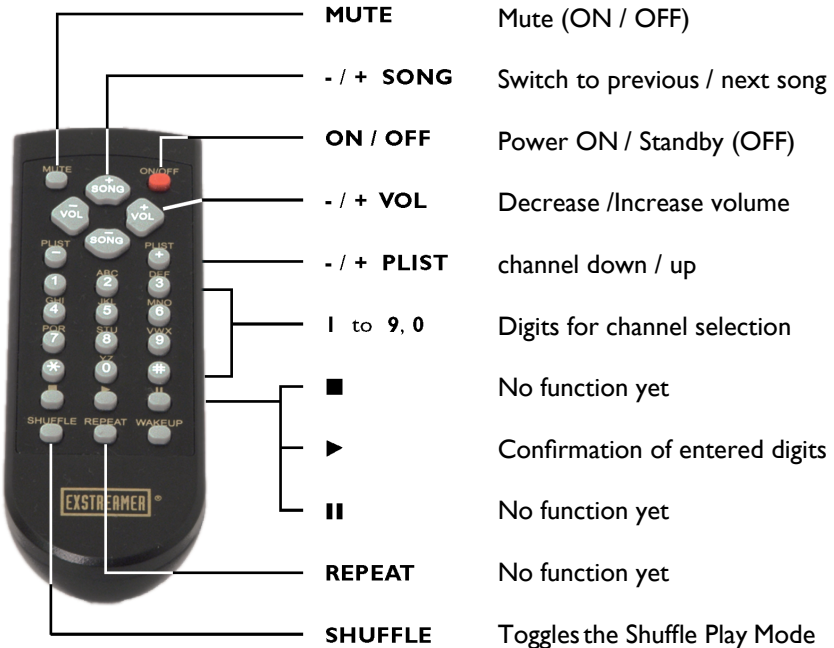
Exstreamer Configuration

STEP 1   Open your Web Browser

STEP 2   Enter the IP address of the Exstreamer (as announced
                over the audio outputs by SonicIP) and press Enter.
                Example: 192.168.0.12

STEP 3   Scroll to the section STREAMING SETTINGS. In the "1.
                URL" field enter the following (replace the IP by the IP of
                the Instreamer): rtp://192.168.0.33:4040

STEP 4   Select "500ms" for half a second in the "Buffer" selection.

STEP 5   Click on "APPLY" button at the end of the page. The
                device will restart, and after some seconds you will hear
                the audio that is encoded by the Instreamer.

6 IR Remote control

Follow the instructions below if the IR Remote control was included or if you purchased the optional IR Remote kit.

6.1 IR key functions

MUTE	Mute (ON / OFF)
- / + SONG	Switch to previous / next song
ON / OFF	Power ON / Standby (OFF)
- / + VOL	Decrease /Increase volume
- / + PLIST	channel down / up
1 to **9**, **0**	Digits for channel selection
■	No function yet
►	Confirmation of entered digits
II	No function yet
REPEAT	No function yet
SHUFFLE	Toggles the Shuffle Play Mode

To prepare the IR Remote Control for usage open the battery compartment and check the signs of polarity. Insert the two batteries accordingly into the IR remote control. The IR Remote Control is now ready to operate. For details on how to use the channel selection please refer to the "Technical Documentation".

6.2 Serial IR receiver

For the Barix Exstreamer 110 and the Exstreamer 200 you can skip this section as the IR receiver is built into the front of the device.
The use of the serial IR receiver makes sense only if the device will be placed hidden (behind a wall, above the ceiling etc.)

Plug the serial connector of the IR Serial receiver into the serial port of the Barix Exstreamer. Make sure you have line of sight with the IR receiver from where you want to use the IR remote control.

On power up the red LED will be on until the Barix Exstreamer has set the network and announced the IP Address. Configure the IR input for the "Serial Dongle" (see chapter 3.6 Advanced settings)

Note: On the Exstreamer 100 the old Serial Dongle (blue LED, produced in 2003) will not work. Use a new Dongle instead (red LED, produced since 2006)

7 Advanced user section

## 7.1 Network configuration using supplied serial cable

STEP 1   Open a Terminal program.

STEP 2   Go to the settings menu and adjust the following settings: Speed 9600 bit/sec, 8 Data Bits, no Parity and 1 Stop Bit.

STEP 3   Unplug the power supply of the Barix Exstreamer.

STEP 4   Connect the supplied serial cable to your PC's COM port and to the serial port of the Barix Exstreamer.

STEP 5   Keep the Reset button pushed and plug in the power supply.

                     Release the Reset button as soon as you see following screen:
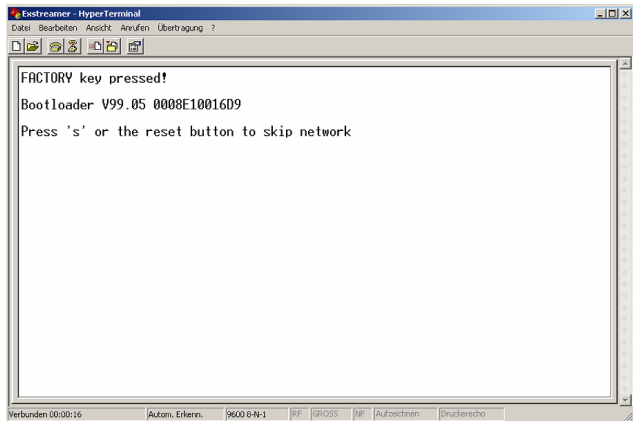
STEP 6   Hit <s> to skip network discovery if not connected to a
                      network and the following screen appears:
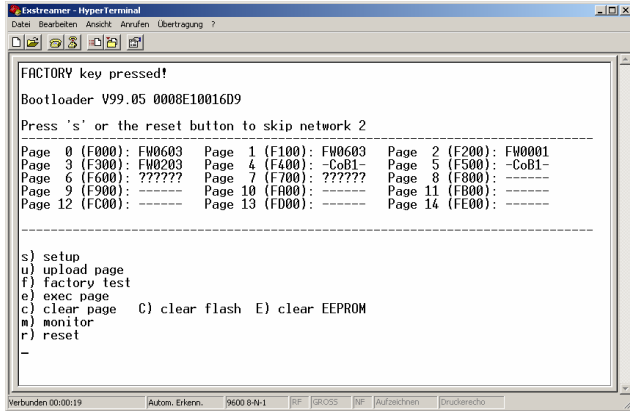
STEP 7 Hit <s> to get to the Barix Exstreamer´s setup.
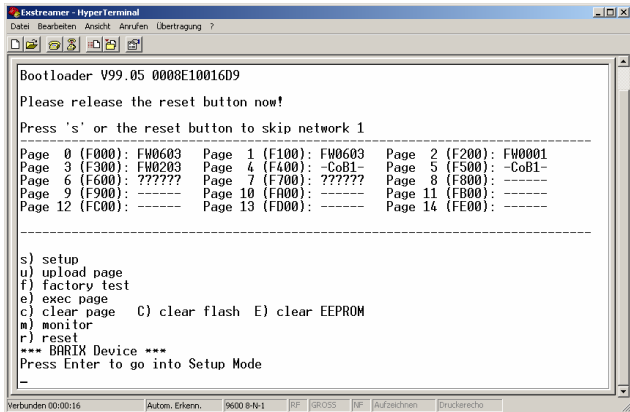
STEP 8   Hit <enter> to enter the Barix Exstreamer setup mode.

STEP 9   Type in <0> and hit <enter> to enter the network configuration. Enter all requested values:

STEP 10   Type in <9> and hit <enter> to save the network configuration.

7.2 Control API (CGI)

For integration of the Barix device into various control applications and home automation systems, Barix has developed a control API (Application Protocol Interface) for the control using CGI in a web browser.

For a detailed list of the CGI API commands refer to the "Streaming Client Technical Documentation" available on the Barix website www.barix.com

8 Dictionary

DHCP
Short for Dynamic Host Configuration Protocol, a protocol used to assign an IP address to a device connected to a Network.

IP
Short for Internet Protocol, the IP is an address of a computer or other network device on a network using IP or TCP/IP. Every device on an IP-based network requires an IP address to identify its location or address on the network. Example: 192.168.2.10

IPzator
Barix IPzator™ technology is designed for the purpose that the Barix device can create its own IP address according to the network structure in case it can't receive one from your network. If DHCP, AUTOIP or BOOTP fail, IPzator will create an IP address within the subnet and test it. If the address works and is not being used by another device on the network, it will give the address to the Barix device.

MAC address
Abbreviation for Medium Access Control, a MAC is a unique address number formatted in hexadecimal format and given to each computer and/or network device on a computer network. Because a MAC address is a unique address a computer network will not have the same MAC address assigned to more than one computer or network device. Example: A1:B2:C3:D4:E5:F6

Netmask
A number used to identify a sub network so that an IP address can be shared on a LAN (Local Area Network). A mask is used to determine what subnet an IP address belongs to. An IP address has two components, the network address and the host address. For example, consider the IP address 150.215.17.009. Assuming this is part of a Class B network, the first two numbers (150.2) represent the Class B network address, and the second two numbers (.017.009) identify a particular host on this network. The Netmask would then be 255.255.0.0 .

Ping
Ping is a basic Internet program that lets you verify that a particular IP address exists and can accept requests. Example: ping 192.168.2.10

SonicIP   Barix SonicIP® technology is designed to vocally
                       announce the Barix devices current IP address. This
                       makes it easier and faster to obtain the necessary
                       network information. To make use of SonicIP plug in the
                       included earphone into RCA audio out, connect the
                       network and plug in the power supply. It will announce
                       the address over the earphones right after power up.

Static IP   A Static IP is a fixed IP address that you assign manually
                       to a device on the network. It remains valid until you
                       disable it.

Telnet   Telnet is a user command and an underlying TCP/IP
                       protocol for accessing remote computers. On the Web,
                       HTTP and FTP protocols allow you to request specific
                       files from remote computers, but not to actually be
                       logged on as a user of that computer. With Telnet, you log
                       on as a regular user with whatever privileges you may
                       have been granted to the specific application and data on
                       that computer. Example: telnet 192.168.2.10

9 Legal Information

For information about our devices and the latest version of this manual please visit www.barix.com.

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