

MP3-RTP Streamer

Application User Manual

Manual version 1.7

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Supports:

- RTP streaming to Exstreamer and Annunicom devices
- RTP Streaming to Bauplayer iPhone application
- BGM Channels in an iPaging system
- BGM Channels in an ICGraph system

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1 Introduction

1.1 About the MP3RTP Streamer

The MP3RTP Streamer uses the RTP network protocol to stream MP3 files and Internet radio streams, in real time.

This means that you can use it to create your own network based background music distribution system.

The MP3 RTP Streamer is a portable Java application, which takes its input either from an iTunes library format (the .xml file), or from a very simple playlist directory (.m3u / .pls), and generates multiple MP3 RTP streams ("channels").

Streaming can be unicast, multicast, or broadcast. Optional start and stop times can be set for a channel, as well as shuffle and repeat functions. Once a channel is configured, playback starts.

Features:

- Works with iTunes library/playlists
- Can stream mp3 files or Internet Radio
- Channels can be multicast, to reach many destinations, whilst keeping bandwidth usage to a minimum
- Channels can be scheduled by day of the week/time
- Playlist contents can be played randomly
- Broadcasts channel and song information
- Supports the BARP protocol, for ease of integration with other Barix systems

1.2 Before you start

- This is a Java application, the target PC must have an appropriate JRE installed: JRE 6, or later.
- If run from a GUI, for Linux/FreeBSD and other *NIX systems, the

application requires the X-Windows system to be installed.

- The application stores its settings in a default configuration file, MP3_RTP_Streamer.cfg, located in the working folder. Therefore, the working folder of the application should be writable.
- This application sends RTP streams only. In order to play the streams, suitable Barix hardware/software is required e.g. an Exstreamer family device running the Streaming Client firmware.

1.3 Downloading and unpacking

- The application can be downloaded from www.barix.com: go to the 'Software Tools' section under 'Downloads'.
- Select and download the most recent file “MP3_RTP_Streamer_YYYYMM”
- Unzip the file into the target directory of your choice, making sure that this directory is in the Java class path

1.4 Additional documents

The MP3_RTP_Streamer is a streaming source for Barix hardware, for more information about Barix audio devices, please refer to our website www.barix.com.

1.5 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. Click on the link to jump to the referenced chapter, click on 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.

2 MP3RTP Streamer Description

The application has been installed, but before it can stream music, it must be told what music you want to stream, and where it is: the application must be configured.

Configuration details can be created 'on the fly', by running the application without specifying a configuration file, or a preprepared configuration file can be specified.

2.1 Running the application

The application can be run by either by:

- double clicking on the file `mp3_rtp_streamer.jar`. In this case, the default configuration file is used. If the default configuration file does not exist (e.g. The first time the application is run), it will be automatically created.
- by entering the following command on a command line:

```
java -jar MP3_RTP_Streamer.jar [my.cfg] [> console.log]
```

[...] denote optional arguments:

“my.cfg” – The MP3 RTP Streamer can accept settings by specifying a configuration file when it is started. This facility is useful when standard channels are being defined for a number of PCs within a facility, it saves having to manually create channels at each installation.

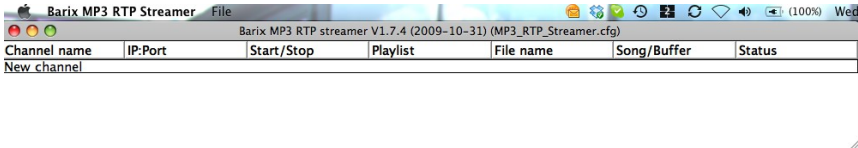
If the specified file exists, the Streamer will use it and adopt the defined channel settings; If the “my.cfg” file does not exist, the application will use this supplied name to create a new configuration file, which will be saved automatically as soon as the first channel has been created.

Multiple installations of the Streamer can be run (with different configuration files) simultaneously, if required. For each instance, the configuration file name is shown in the title bar.

If no configuration file name is specified, the Streamer will look for the default configuration file “MP3_RTP_Streamer.cfg” to define the channels, or will create this file when the first channel is defined, if it did not previously exist.

“> console.log” – To be used when trying to identify problems with

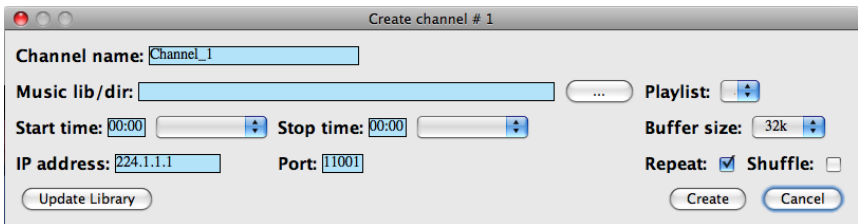
streaming. Records console output and LOG file entries. You can use it to log info about streaming and as an error report, if needed. In normal operation, this option is not necessary and should not be used as over an extended period of time it could create a large file.



2.2 Channel configuration via UI

If you started the application with no configuration, it is necessary to define channels.

Double click anywhere on the 'New Channel' line entry of the UI, this will bring up a dialogue box:


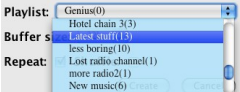


Create channel dialogue; first channel

As this is the first channel to be defined, the 'Music lib / dir' entry is empty, for subsequent channels, this will be auto-filled: the application uses the same library/directory for all channels. Under **no** circumstances should channels be set up with different libraries.

The table below explains each of the fields and how to use them:

Field	Description
Channel Name	The display name for the channel. Default is 'Channel_1'. Freeform text. If the MP3RTP Streamer is being used with other applications, this is the name that will be provided to

Field	Description
	<p>them for display. If the default channel names are used, this auto increments for each subsequent channel.</p>
<p>Music Lib / Dir</p>	<p>This is the music library, or directory that holds the music / playlists e.g. “.../iTunes music library.xml”, or “.../mymusic/myplaylists” To select the Music Library/Directory, click on the 'dotted button'  this will launch the standard 'Open' window for your operating system. Locate and select the appropriate library / directory</p>
<p>Playlist</p> 	<p>Once the Music Lib / Dir has been selected, the application will automatically identify all playlists at that location: choose the one that is needed for the channel by clicking on the up/down arrow to reveal the list: Scroll down as necessary and select the playlist with a single click. A playlist can be an iTunes playlist format, .m3u with files or a single internet radio station. N.B. to stream an internet radio station from iTunes, it is necessary to create a playlist for the station and then drag and drop the station details into this playlist: stations cannot be chosen from the iTunes library 'Radio' entry.</p>
<p>Start time / Stop time</p> <p>Start time: <input type="text" value="09:00"/> <input type="text" value="Monday"/></p> <p>Stop time: <input type="text" value="17:00"/> <input type="text" value="Friday"/></p>	<p>With these inputs, it is possible to configure the active period for the channel. The channel will be streamed from the Start Time to the Stop Time. The time fields each have a drop down selection field on their right, clicking on this allows the user to select a start/stop day, selection by a single click as for playlists. In the example on the left the channel would be streamed from 9am Monday to 5pm on Friday.</p>
<p>Buffer size</p>	<p>For internet radio playlists, a suitable buffer size should be selected from the drop down list – this is to allow for variations in the quality of the internet link, to enable the channel to be played back properly. The larger the buffer, the longer the latency (delay) before playback.</p>
<p>IP Address</p>	<p>The uni/multi/broadcast IP address, or DNS name to broadcast the channel on.</p>
<p>Port</p>	<p>The port number, used in combination with the IP address to define the full path</p>

Field	Description
Repeat	repeat mode (default YES, i.e. the playlist will be repeated, as long as the current time is within the 'start / stop' time parameters)
Shuffle	shuffle mode; if yes, the files in the playlist will be played psuedo randomly (default NO i.e. files will be played in order)
Update Library	Clicking on this button allows the user to see changes made to the library used by the application e.g. If new playlists have been added.
Create	Creates the channel with the parameters supplied. The channel will start automatically if the current time is within the configured start/stop time/days.
Cancel	Abandon the channel creation.

If the application was started without a configuration file, it automatically saves the defined channels into a default configuration file "mp3_rtp_streamer.cfg", this file will automatically be used the next time the MP3RTP Streamer is run, if no configuration file is specified.

If the application was started using a specific configuration file, any configuration changes will be dynamically saved into this file, there is no need to save the file before exiting.

2.3 The file menu

Clicking on the 'file' entry in the application menu bar gives the user the following options:

2.3.1 'About'

Select this option to see which version of the application is running, typically needed when receiving help from the support team.

2.3.2 'Open Configuration'

Use this option to load a preprepared configuration file; selecting the option causes the standard 'open file' dialogue to appear.

2.3.3 'Save Configuration as'

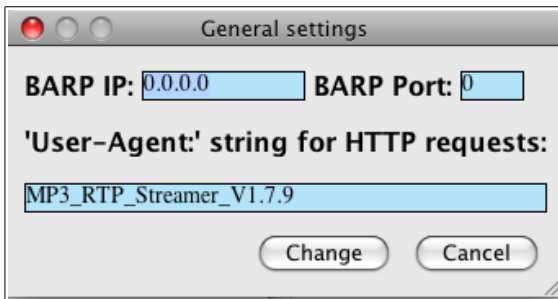
Selecting this option allows the user to save the current channel definition and configuration options into a file name of their choice. For instance, at special times of year, or for special events, different mood channels may be appropriate, but only relevant for a defined period.

2.3.4 “Settings” menu option - For advanced users only.

On BARP based systems (listener device) this option can be used to limit the network bandwidth the application uses, by ensuring that it only sends when it has listeners. This menu option also allows you to define a 'User Agent' field, to be used in HTTP stream requests; in the case where stream request validation is being performed by the sender.

When using this option, then all listeners must be BARP compliant : i.e. the iClient and Paging Client ABCL applications. The Streaming Client application is not BARP compliant and cannot be used in this configuration.

Clicking on “Settings” brings up the pop up below:



Setting the BARP IP and port both to 0 configures the application to “stream always”, setting any other combination means that MP3RTP Streamer will listen on the specified address for BARP status messages indicating that there are listeners for specific channels, and stream only those channels accordingly.

If no BARP status messages are detected, the streaming is stopped and the display shows:

Channel name	IP:Port	Start/Stop	Playlist	File name	Song/Buffer	Status
Channel 1	224.1.1.1:11001	00:00/00:00	less_boring(10+)			Stopped (BARP block)
Channel 2	224.1.1.1:11002	00:00/00:00	aaa Barix Radio X-m...			Stopped (BARP block)
Channel 3	224.1.1.1:11004	09:00 Mon 17:00 Fri	Library(1394+)	Dancing Queen (#1)	0.0%	Stopped (BARP block)
Channel 4	224.1.1.1:11005	01:00/19:00	Hotel chain 1(6+)	Seven seas of rhyme (...)	0.0%	Stopped (BARP block)
New channel						

Note that by default both the MP3RTP Streamer and the iPaging Client applications use a convention of 0.0.0.0 in the IP address to indicate using a Broadcast address (255.255.255.255).

Configuring iPaging

When using the BARP protocol to minimize the bandwidth used to stream background music channels, not only the MP3 RTP Streamer must be configured, the playback device must also be configured.

Typically, this will be an Exstreamer with the iPaging application loaded. There are two steps;

- first, the BARP (IP address and) Port in the MP3 RTP Streamer 'settings' dialogue must be set to the same IP and Port as the “BARP Configuration” BARP IP Address and Status Port: this will ensure that the MP3 RTP Streamer will 'hear' the playback devices telling it which channels they want to listen to.

BARP CONFIGURATION

BARP IP Address . . .

Use Emergency Port No Yes

Audio Port

Control Port

Status Port

iPaging web UI: configure BARP status message information

- Then, the iPaging device must be told of the base address and port used for background music distribution, and also the number of channels available.

BACKGROUND MUSIC							
BGM broadcast address	<input type="text" value="224"/>	.	<input type="text" value="1"/>	.	<input type="text" value="1"/>	.	<input type="text" value="1"/>
BGM broadcast Port	<input type="text" value="11001"/>						
Available Channels	<input type="text" value="5"/>						
BGM Start Channel	<input type="text" value="1"/>						

iPaging, defining base address and port for BGM

2.3.5 Quit

Exits the application, on confirmation via pop up dialogue.

3 Other system components

3.1 Required firmware in playback devices

Barix preload all their products with standard applications. To receive audio from the MP3_RTP_Streamer, all relevant devices in the system must have an appropriate firmware loaded. Suitable firmwares are:

- Streaming Client: non BARP sending only.
- iPaging Client
- Paging Client

Note that the Exstreamer Standard firmware does not support receiving RTP multicasts and is therefore not suitable for use with the MP3_RTP_Streamer.

3.2 Updating firmware in devices

Barix preloads all Annunicom and Exstreamer devices with firmware which is current at the day of production, however Barix constantly enhances the capabilities and functions and recommends to keep the firmware on the device up-to-date. Additionally, if your device is pre-loaded with a different firmware than the one you need, it must be updated.

Barix recommends the use of the “Update over network” method to update the firmware using TFTP.

We strongly recommend use of the supplied batch files which are included in the “Update Kit” to perform a serial update, especially the first time that the application is loaded onto each device.

If the network 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 over network”.

4 Known Issues V1.7.11

At the time of publishing this document, the following are the known issues documented for the MP3RTP Streamer application:

1. Barix reference: 73.44: mp3 files with bitrate 228kbps cause playback of file based channels to stop in 'Stream always' (i.e. non-BARP controlled) playback.

Symptoms are:

- loss of audio from file based channels,
- radio stream channels are unaffected,
- CPU usage of 100% on Windows systems
- %age played figures and file names flick through very quickly on the UI

For that reason it's recommended to use MP3 audio files with 128 kbit/s (no higher bit rates) and without ID3 tags for best reliability !

5 Dictionary

BGM

Back Ground Music, means the device will play a lower priority audio stream (e.g. music) when not used for higher priority audio (e.g. announcements).

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**
See also chapter [IP Address, Netmask etc.](#)

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 (starting with **x.x.x.168** and if occupied incrementing by one). If the address works and is not being used by another device on the network, it will give the address to the Barix device.

JRE

Java Runtime Environment; Java programs are platform independent: the same code can run on multiple, differing, hardware environments. The JRE is that part of the Java platform that allows the platform independent program to operate on a specific hardware. To run a Java program on a specific computer, you must first install the JRE for that hardware.

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 **150.215.017.009**. 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** . See also chapter [IP Address, Netmask etc.](#)

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**

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 an 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 on that computer.

Example: telnet **192.168.2.10**

6 Network appendix

IP Addressing

An IP address is a 32 bit value, divided into four octets of eight bits each. The standard representation is four decimal numbers (in the range of 0..255), divided by dots.

- Example: **192.2.1.123**

This is called decimal-dot notation. The IP address is divided in two parts: a network and a host part. To support different needs, five “network classes” have been defined. Depending on the network class, the last one, two or last three bytes define the host, while the remaining part defines the network. In the following text, ‘**x**’ stands for the host part of the IP address.

Class A network

IP address range **1.x.x.x** to **127.x.x.x**

Only 127 different networks of this class exist. These have a very large number of potential connected devices (up to 16'777'216)

- Example: **10.0.0.1** (network **10**, host **0.0.1**)

Class B network

IP address range **128.0.x.x** to **191.255.x.x**

These networks are used for large company networks. Every network can consist of up to 65534 devices.

- Example: **172.1.3.2** (network **172.1**, host **3.2**)

Class C network

IP address range **192.0.0.x** to **223.255.255.x**

Class C networks are most common and for smaller companies. These networks can consist of a maximum number of 254hosts.

- Example: **192.7.1.9** (network **192.7.1**, host **9**)

Class D network

The remaining addresses **224.x.x.x** - **239.x.x.x** are

defined as "Class D" and are used as multicast addresses.

Class E network

No addresses are allowed with the four highest order bits set to "1" (240.x.x.x – 254.x.x.x).

These addresses, called "class E", are reserved.

Network Address

The host address with all host bits set to "0" is used to address the network as a whole (for example in routing entries).

- Example: **192.168.0.0**

Network addresses can not be used as a host address!

Broadcast Address

The address with the host part bits all set to "1" is the broadcast address, meaning "for every host".

- Example: **192.168.0.255**

Broadcast addresses can not be used as a host address!

IP Netmask

The Netmask is used to divide the IP address differently from the standard defined by the classes A,B and C.

Entering a Netmask, it is possible to define how many bits from the IP address are to be taken as the network part and how many bits are to be taken as the host part.

Standard IP network Netmask:

Class	Network bits	Host bits	Netmask
A	8	24	255.0.0.0
B	16	16	255.255.0.0
C	24	8	255.255.255.0

Netmask examples:

Netmask	Host bits
255.255.255.252	2
255.255.255.248	3
255.255.255.240	4
255.255.255.224	5
255.255.255.192	6
255.255.255.128	7
255.255.255.0	8
255.255.254.0	9
255.255.252.0	10
255.255.248.0	11
.	.
.	.
255.128.0.0	23
255.0.0.0	24

Private IP Networks and the Internet

If your network is not connected to the Internet and there are no plans to make such a connection you may use any IP address you wish.

However if you are not connected to the Internet and have plans to connect to the Internet or you are connected to the Internet and want to operate your Barix Barionet on an intranet you should use one of the sub-networks below for your network. These network numbers have been reserved for such networks. If you have any questions about IP assignment ask your Network Administrator.

Private IP networks by class:

Class	Network
A	10.x.x.x
B	172.16.x.x
C	192.168.0.x

Network RFC's

For more information regarding IP addressing see the following documents. They can be found on the Internet:

7 Legal Information

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