# How to configure a Instreamer - Exstreamer audio connection

There are different modes how to send analog (line-in) or digital (S/PDIF) audio from a Barix Instreamer over the network to the Barix Exstreamer where your speakers could be connected. Additional to the below mentioned modes you can send audio from the Instreamer or the Annuncicom IC to the Exstreamer´s "Priority Ports" , this works in all Exstreamer modes.

There is also a separate guide (the "Barix STL connection over internet.pdf") existing for Instreamer-Exstreamer connection over internet !
Also a separate RTP guide existing on our homepage, which explains RTP more in detail !

Chapter 1 & 2 show the configuration with the "Standard" firmware for the Exstreamer, in chapter 3 are examples for the Extstreamer Streaming Client firmware (available on www.barix.com).

First you always should assign fix IP addresses to each unit. DHCP is also possible but a fix IP has some advantages.

**Delay / Latency**

In the Exstreamer web setup on parameter "Start Threshold" (under Streaming) you can adjust the delay. The delay can be from below 200 ms up to serveral seconds, depending from the used audio bandwidth (Codec, frequency/quality) in the Instreamer and the audio buffer (Start Threshold) in the Exstreamer. A higher audio bandwidth fills the buffer faster and causes a lower delay.

Calculation example with a 128 kbit stream and a default buffer of 60000 byte:
128000 / 8 = 16000 bytes /s  60000 / 16000 = 3,75 s
The start delay is approx. 3,75 seconds plus network delay, which is almost nothing in a local LAN .
In our test lab we have reached by using MP3 a lowest possible delay of 175 ms , lower delays are possible by using PCM or G.711 .
A delay of 200 – 250 ms by using MP3 should run in the most LANs stable .

## 1; HTTP Pulling

The Instreamer supports up to 6 http connections at the same time.
For this you need the following configuration:

**Instreamer:**
**Streaming / "Radio Path"** **= /xstream**
**Streaming / "Stream to"** **= Internet Radio : 0.0.0.0 : 80**
Both are default values. The default Port 0 together with "Internet Radio" in the "Stream to" line would mean also port 80.

**Exstreamer:**
**Streaming / "Mode"** **= 3 Streaming Puller**
**Streaming / "Server IP address"** **= (IP of the Instreamer)**
**Streaming / "Server Port"** **= 80**
**Streaming / "Server Path"** **= /xstream**

## 2; Receiving

For this mode you can use RAW UDP , RAW TCP or RTP.
Our favorite mode is RTP streaming (more details in our RTP guide) !! RTP is UDP based which is the best for realtime streaming with lowest latency. RAW TCP is limited to max 8 connections.
With UDP / RTP you can send the stream to max.8 Exstreamers directly or also as broadcast or to a multicast address to all Exstreamers in your network (could be 100 or more).
Using broadcast or multicast addresses causes also a syncron playback on all Exstreamers if the same Buffer (UDP – Start Threshold) size is used.

**RTP:**

**Instreamer:** (needs minimum Firmware 2.02)
**Audio / "Bit Reservoir Mode" = kept empty**
**Streaming / "Stream to" = RTP : (Exstreamer´s IP): 4444**
This works also with a Broadcast (e.g. 192.168.1.255) or a Multicast (e.g. 224.0.0.1) IP address !

**Exstreamer:**
**Streaming / "Mode" = 4 Streaming Receiver**
**Streaming / "RTP Receive Port" = 4444**

**RAW TCP:**

**Instreamer :**
**Streaming / "Stream to" = RAW TCP : (Exstreamer´s IP) : 2020**

**Exstreamer:**
**Streaming / "Mode" = 4 Streaming Receiver**
**Streaming / "TCP Streaming Listen Port" = 2020**
The Instreamer could send the RAW TCP stream also to the Exstreamer`s "TCP Priority Streaming Listen Port". Note, don`t use two times the same port number one the same Exstreamer !

**RAW UDP:**

**Instreamer :**
**Streaming / "Stream to" = RAW UDP : (Exstreamer´s IP) : 3030**

**Exstreamer:**
**Streaming / "Mode" = 4 Streaming Receiver**
**Streaming / "UDP Streaming Listen Port" = 3030**
The Instreamer could send the RAW UDP stream also to the Exstreamer`s "UDP Priority Streaming Listen Port". Note, don`t use two times the same port number one the same Exstreamer !

## 3; Using the Exstreamer Streaming Client firmware

This firmware is special firmware which can run on all Exstreamer platforms.
It´s a dedicated streaming application with enhanced monitoring features and stream backup feature !
This firmware is downloadable from www.barix.com (under downloads) .

**RTP:**

**Instreamer:**
**Audio / "Bit Reservoir Mode"** **= kept empty**
**Streaming / "Stream to"** **= RTP : (Exstreamer´s IP): 4444**
This works also with a Broadcast (e.g. 192.168.1.255) or a Multicast (e.g. 224.0.0.1) IP address !

**Exstreamer Streaming Client:**
**1. URL :** **= rtp://0.0.0.0:4444**

**BRTP:**

**Instreamer:** (needs min. Firmware 2.06 !)
**Audio / "Bit Reservoir Mode"** **= kept empty**
**Streaming / "Stream to"** **= BRTP : 0.0.0.0: 5555**
Note, this is only on the first "Stream to" entry available, not on the entries 2-8 !!!
This opens a BRTP listen port where multiple Exstreamers can pull a stream from !

**Exstreamer Streaming Client:**
**1. URL :** **= brtp://Instreamer-IP:5555**

**HTTP:**

**Instreamer:**
**Streaming / "Radio Path"** **= /xstream**
**Streaming / "Stream to"** **= Internet Radio : 0.0.0.0 : 80**
Both are default values. The default Port 0 together with "Internet Radio" in the "Stream to" line would mean also port 80.

**Exstreamer:**
**Exstreamer Streaming Client:**
**1. URL** **= http://Instreamer-IP/xstream**
If you have changed the port number on the Instreamer´s "Stream to" entry to anything else than 0 or 80 (e.g to 3333) then you have to use the following URL line : http://Instreamer-IP:3333/xstream