STREAMING UNIVERSITY
THE TELOS ALLIANCE®

How to Stream

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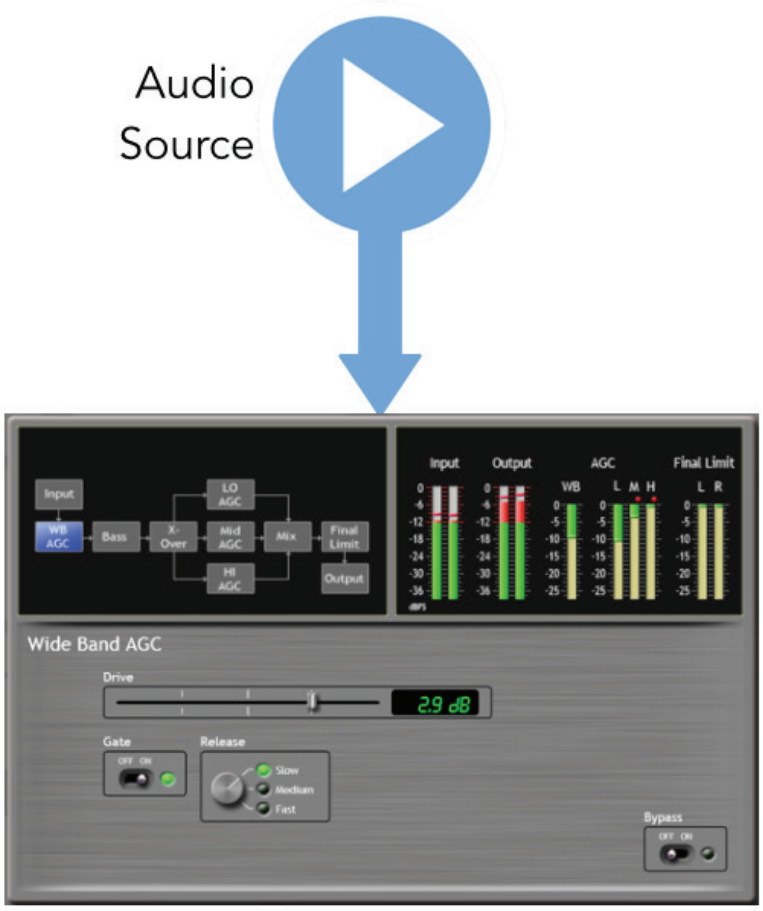
Streaming your radio station or other audio content live to the Internet can bring hundreds, thousands, or hundreds of thousands of listeners to your programming. This short tutorial will give you the confidence to move ahead, understanding the basic process.

1. Audio Source

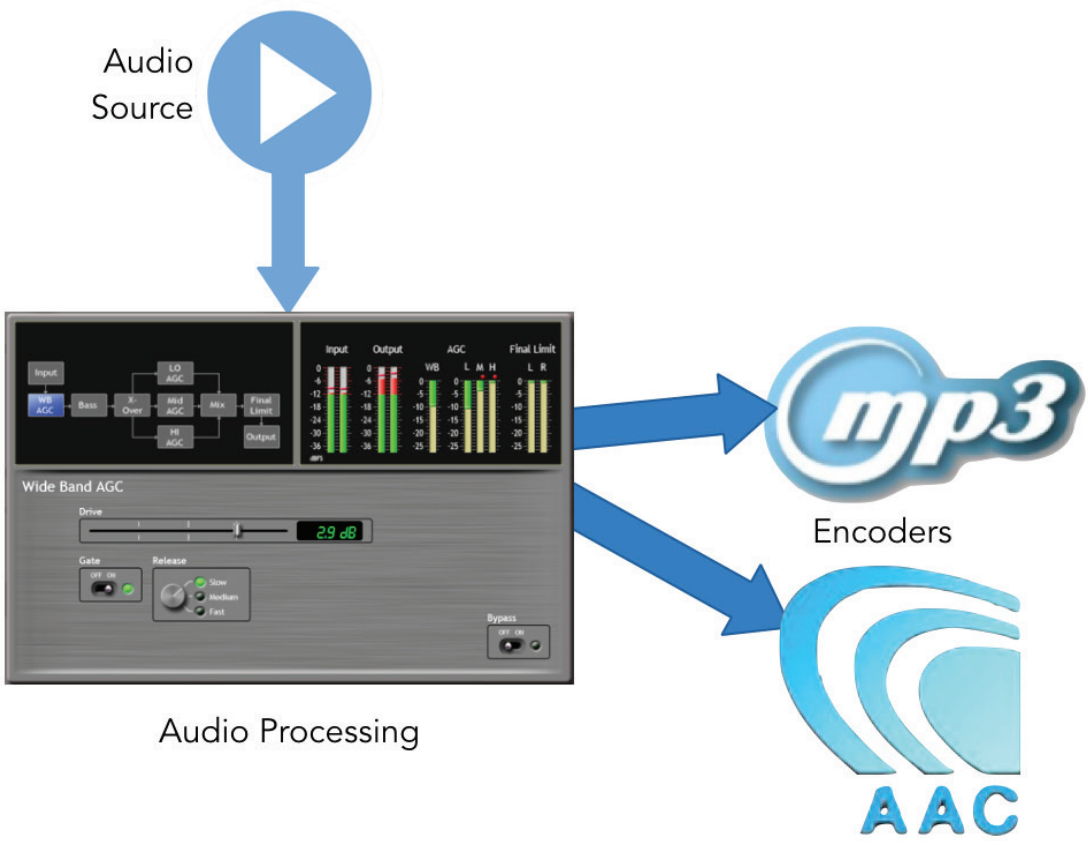
We begin with a source of audio programming. This is typically your control room console output or an automation system output.



Audio Processing

2. Processing

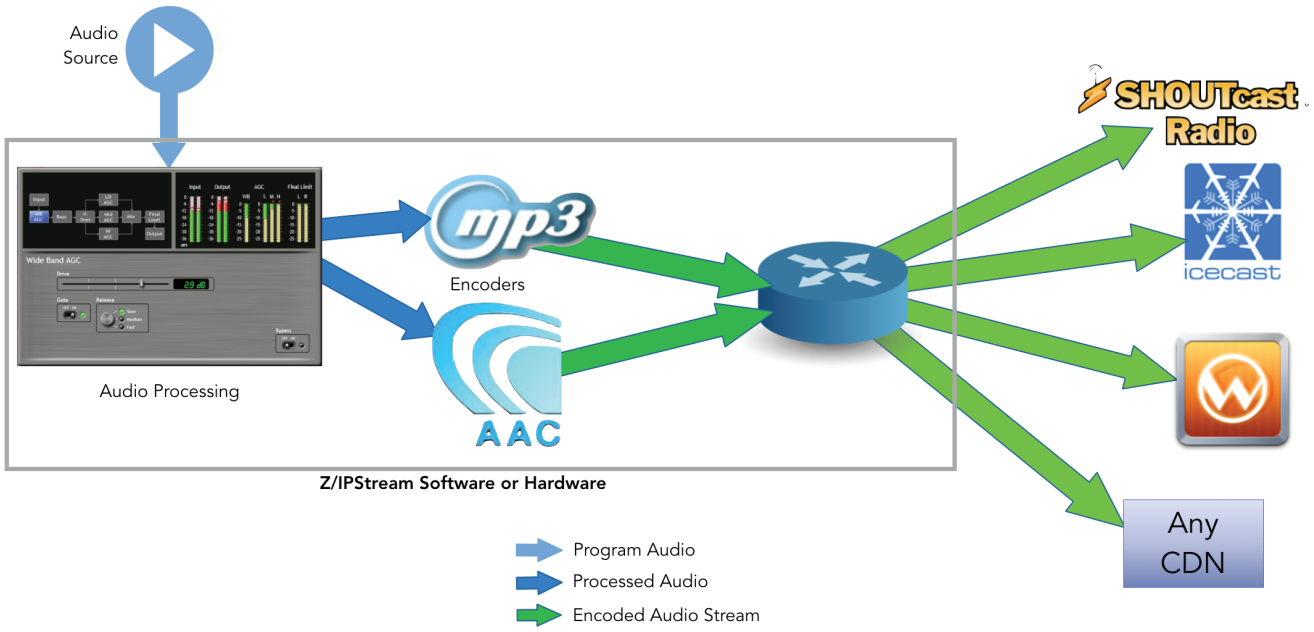
Next is the all-important audio processor. It's tempting to use a spare or retired AM or FM audio processor for your Internet stream. Don't succumb to this easy mistake. Your web stream will be encoded, most likely with the MP3 or AAC coding algorithm. These codecs will, in a sense, throw away ninety percent or more of the audio data, coding only the most important audio cues. For the clearest and most consistent audio quality, it's critical to use an audio processor designed expressly for streaming audio. Most Omnia FM audio processors are available with a parallel processing chain for your web streams. This is often called the "HD Audio" processing option, as the processing goals for HD Radio are the same as for web streaming. To make it easy, all Z/IPStream audio encoders - whether in hardware or software form - include the Omnia 3-band ("A/X") audio processor. Some Z/IPStream encoders make more powerful Omnia.9 processing available as an option.



3. Encoding

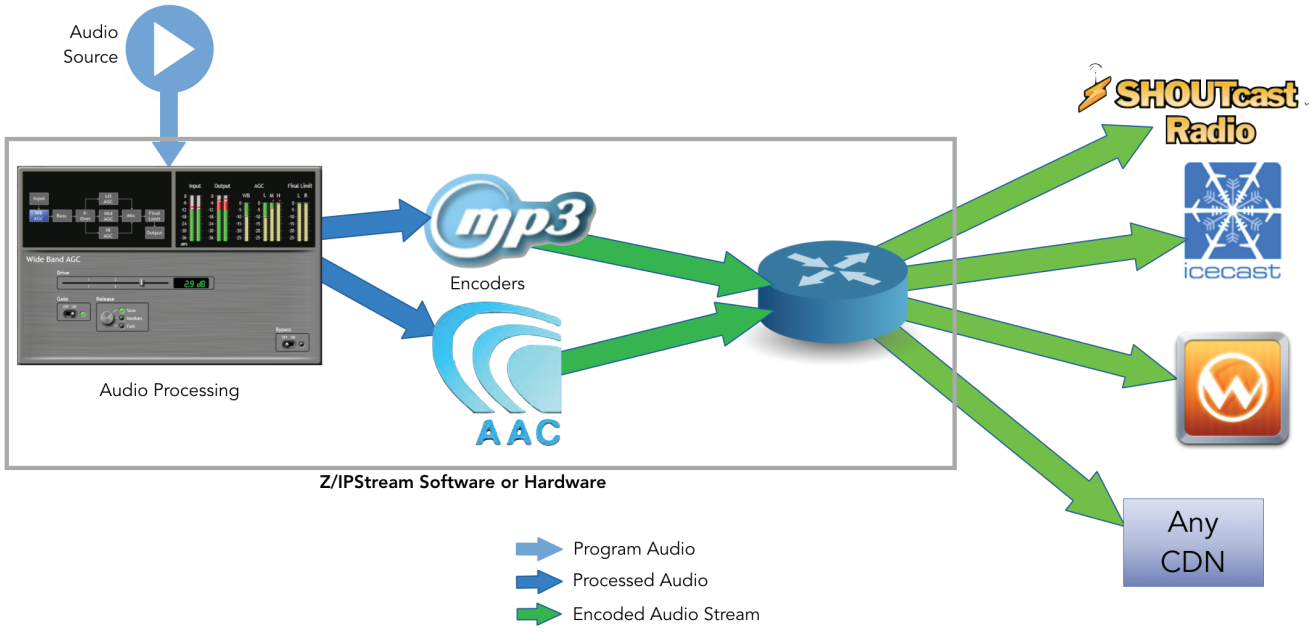
Once the audio is properly processed, it's ready for the MP3 and/or AAC encoder(s). These may be set to the desired coding algorithms, such as MP3 or AAC. They are also set to the desired bit rate or different bit rates. Higher bit rates equal better audio quality. The trade-off is that lower bit rates are easier to deliver to mobile devices and through slower Internet connections.

One or more audio streams are now available from one or more encoders. However, a stream straight out of an MP3 or AAC encoder is not quite ready to send to listeners. At least one more step is required - formatting a copy of the encoded audio stream to match a common Internet streaming protocol. We'll further explain protocol selection below.



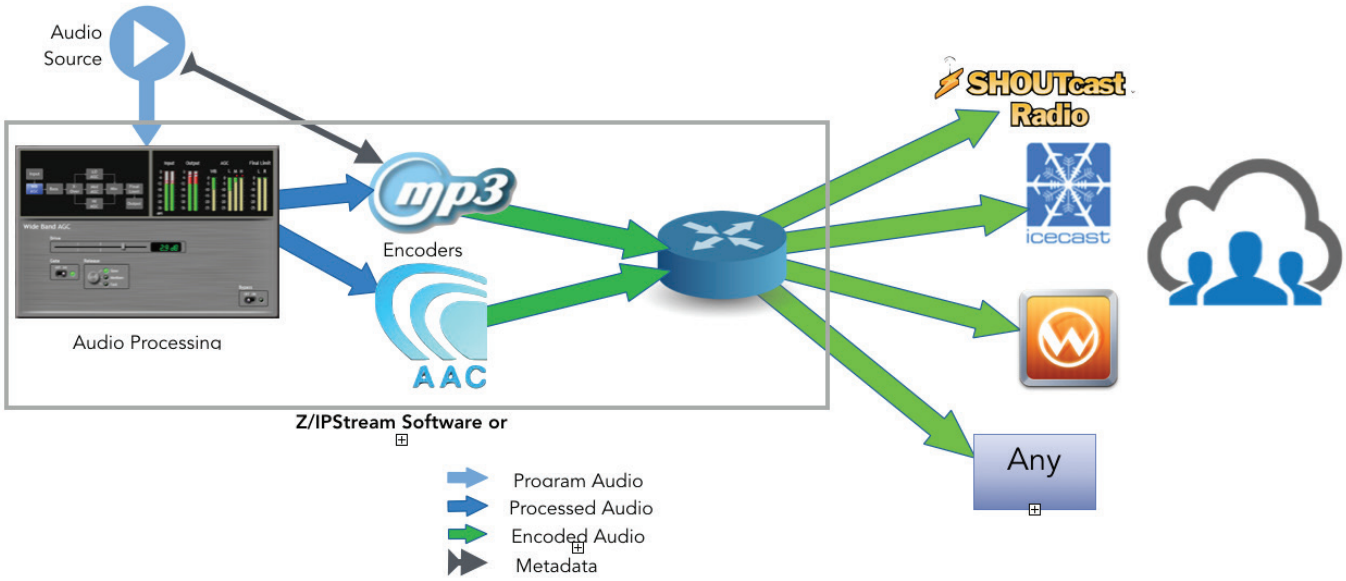
4. Formatting

The encoded MP3 and/or AAC streams are selectable and switchable to several stream outputs. Each stream output is individually configurable to send to the type of local or remote streaming server desired. Z/IPStream encoders are compatible with all popular streaming server technologies. These include SHOUTcast, ICECAST, RTMP (for Wowza servers), and Adobe Flash Media Server. With all Z/IPStream encoders, you may send parallel streams of any or all these formats to different CDN servers. It's the CDN servers to which your stream listeners will actually connect.



5. Metadata

Finally, there is metadata. This is textual data - typically artist and title information about the song currently playing. Metadata can also contain programming notes, promotional messages, advertising, and even emergency messages such as for severe weather. Metadata can be ingested from the audio source or from 3rd party middle-ware and is added to the audio streaming data by the Z/IPStream. Metadata for your Internet stream can be derived from the same automation or middle-ware sources that you may be using to feed FM RDS data. Streaming offers more data capacity than RDS, so some graphics such as album art and station logos are also possible.



6. Content Distribution Network (CDN)

You'll very likely be sending your stream over the Internet to a Content Distribution Network, or "CDN". A CDN's servers are located in data centers, offering enough bandwidth to serve from hundreds to hundreds of thousands of listeners. Even if you expect only a few dozen listeners at a time, a good CDN's services are vital to the success of your web streaming efforts.