FlipFactory®

AUDIO MAPPING IN FLIPFACTORY

This App Note
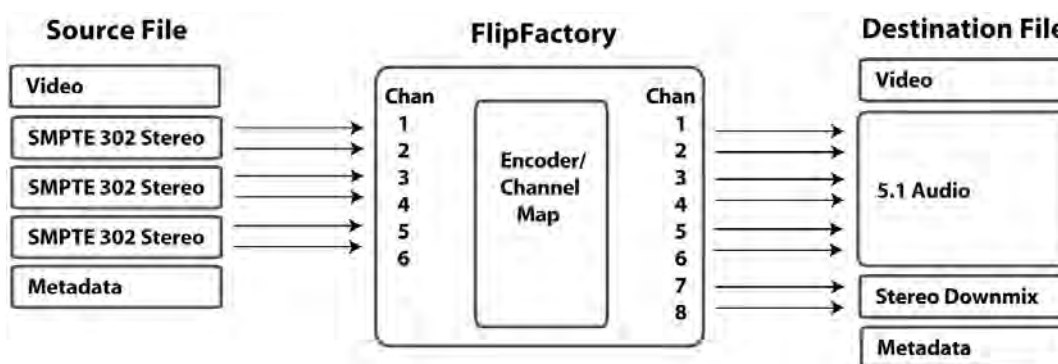applies to
FlipFactory
versions
7.0 & later

Synopsis

The purpose of this app note is to explain how audio can be mapped using FlipFactory, identify some of the abilities and limitations in the decoding and encoding process, and provide some examples to illustrate how mapping can be accomplished.
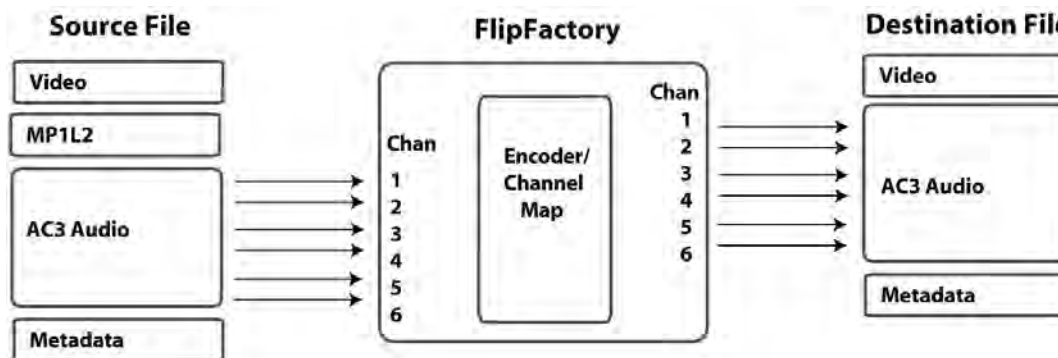
Because of the various audio formats and the manner in which multiple audio channels are contained within audio tracks, there are limitations in how the audio channels in your source media can be re-mapped to other channels in the output media during transcoding by FlipFactory.

Some audio formats have multiple audio tracks (where a "track" can contain multiple audio channels that have been logically grouped). Some circumstances allow audio decoding of multiple tracks, others allow decoding of only one track even if there are multiple tracks in the source file.

For example, an MPEG transport stream may have several tracks of SMPTE 302 audio, each containing two channels. FlipFactory will decode them all: the first track on audio outputs 1 and 2, the second track on 3 and 4, and the third track on 5 and 6:

For Dolby AC-3 audio, FlipFactory will decode one track of AC3 audio but nothing more due to the architectural limitations. In this example the MP1L2 audio is discarded:
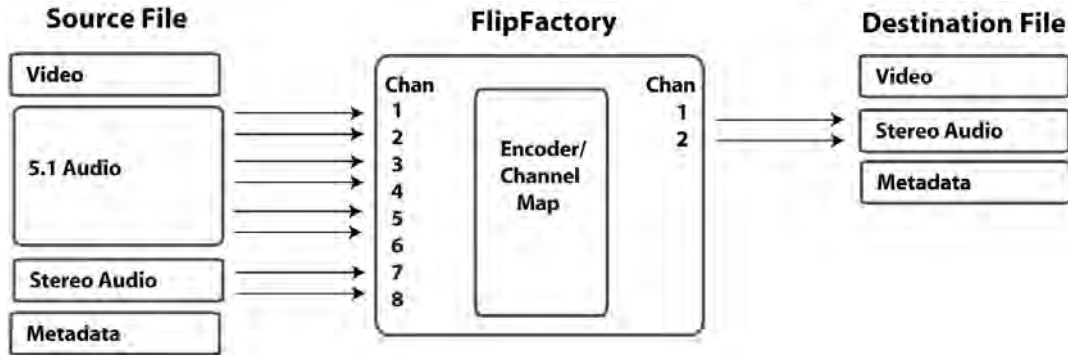

Though many file formats support multiple audio tracks, FlipFactory may not be able to decode all of them. To find out which audio tracks you can decode from your source media file using FlipFactory, contact your Telestream customer support representative.

The two examples provided below demonstrate how to map audio inputs to outputs in FlipFactory. The first example demonstrates how to relocate input audio channels to a different track on the output. The second example down-mixes 5.1 surround audio into stereo and relocates the stereo track in the output.
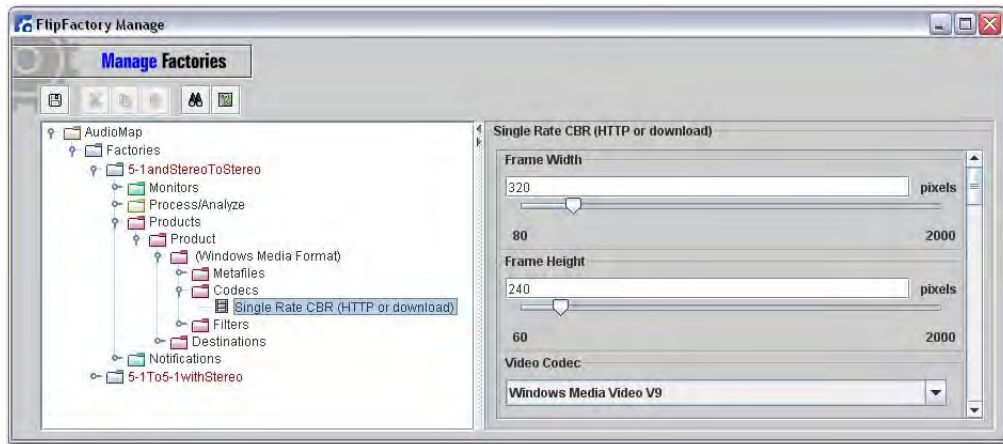
Note: *This app note assumes you know how to create and configure factories in FlipFactory and how to submit jobs. Review the FlipFactory User's Guide for details.*
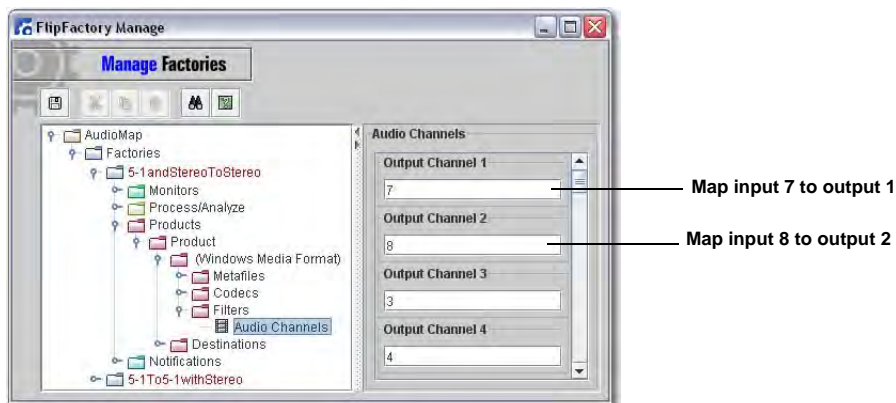

Mapping 5.1 Plus Stereo To Single Stereo

In this example the input source contains six channels of 5.1 audio and two channels of normal stereo audio, for a total of eight audio channels. In the output the stereo audio is moved from channel 7 and 8 to channels 1 and 2 in the output. The 5.1 input audio is discarded:

This example uses the *Windows Media Format* product and the codec selected is *Single Rate CBR*:
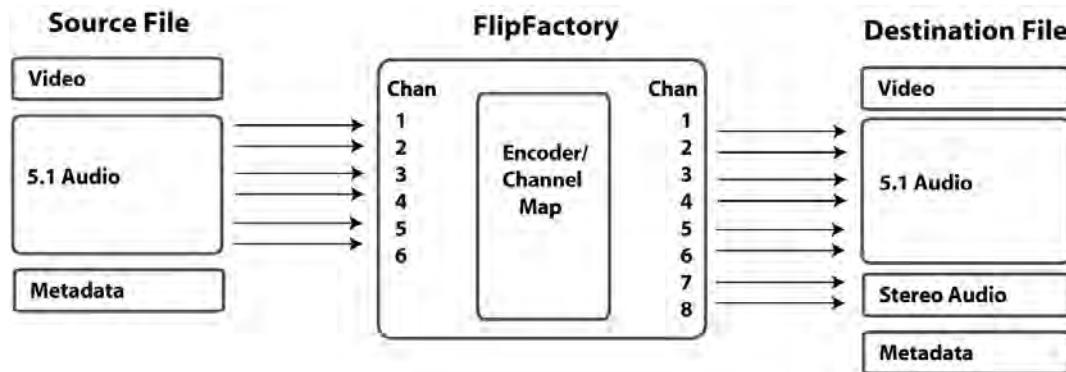

The input source contains 5.1 audio on channels 1 through 6, and stereo audio on channels 7 and 8. Audio channel 7 is mapped to output channel 1, and audio channel 8 is mapped to output channel 2. Since this product has a stereo output only, output channels 3 and 4 are unused:

Note: *The filter processes the input file prior to being passed to the encoder, so mapping is accomplished before any encoding is performed.*
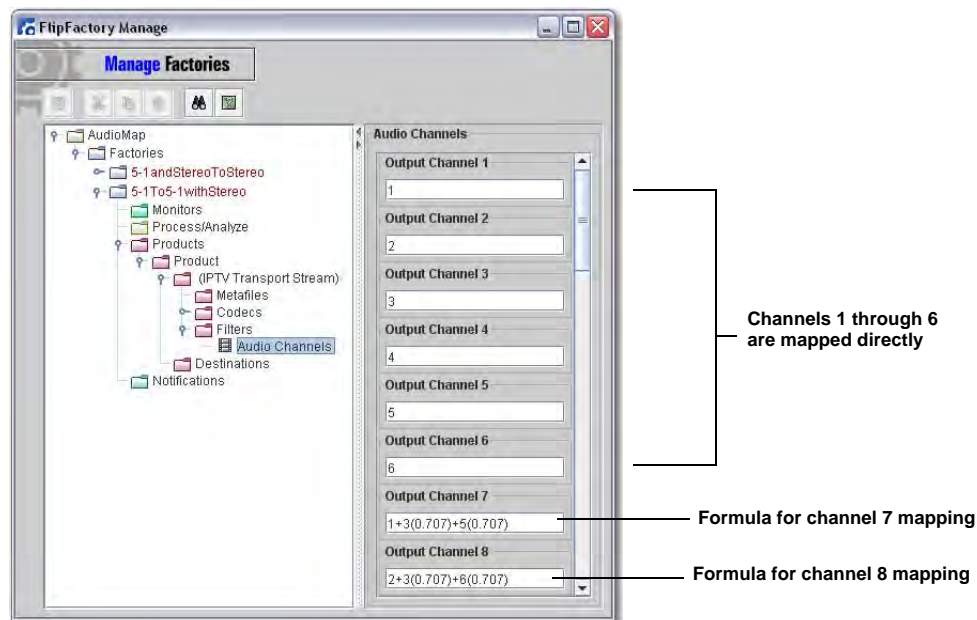
Mapping 5.1 Audio To 5.1 With Stereo

This example mixes a 5.1 audio input into stereo audio channels 7 and 8 in the output. It also passes the 5.1 audio through unchanged:

The first six channels of audio input represent the six channels of 5.1 audio: left (1), right (2), center (3), low frequency (4), left surround (5), right surround (6). Thus the mapping of audio input to output is direct. However, in order to down-mix the 5.1 audio to channels 7 and 8, down-mix fomulas are entered for output channels 7 and 8.
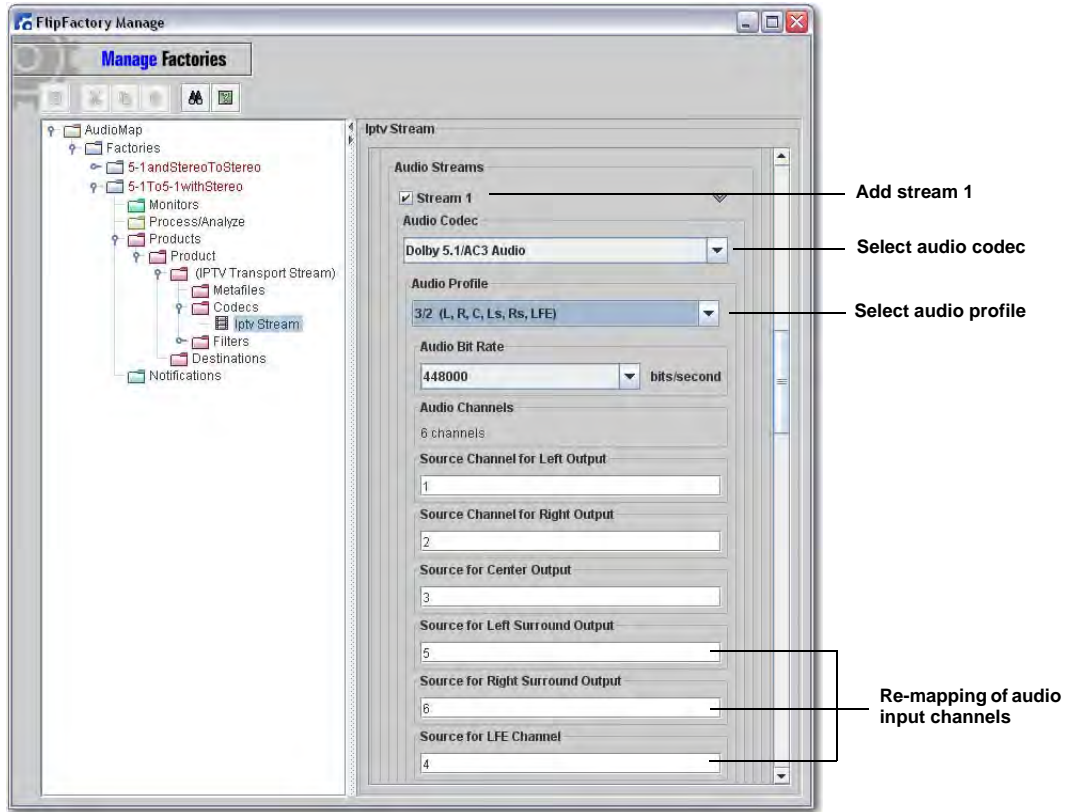
The formula used for output channel 7 is: `1 + 3 (0.707) + 5 (0.707)`, and is defined as: right channel + half power of center channel + half power of right surround channel.

The formula used for output channel 8 is: `2 + 3 (0.707) + 6 (0.707)`, and is defined as: left channel + half power of center channel + half power of left surround channel:
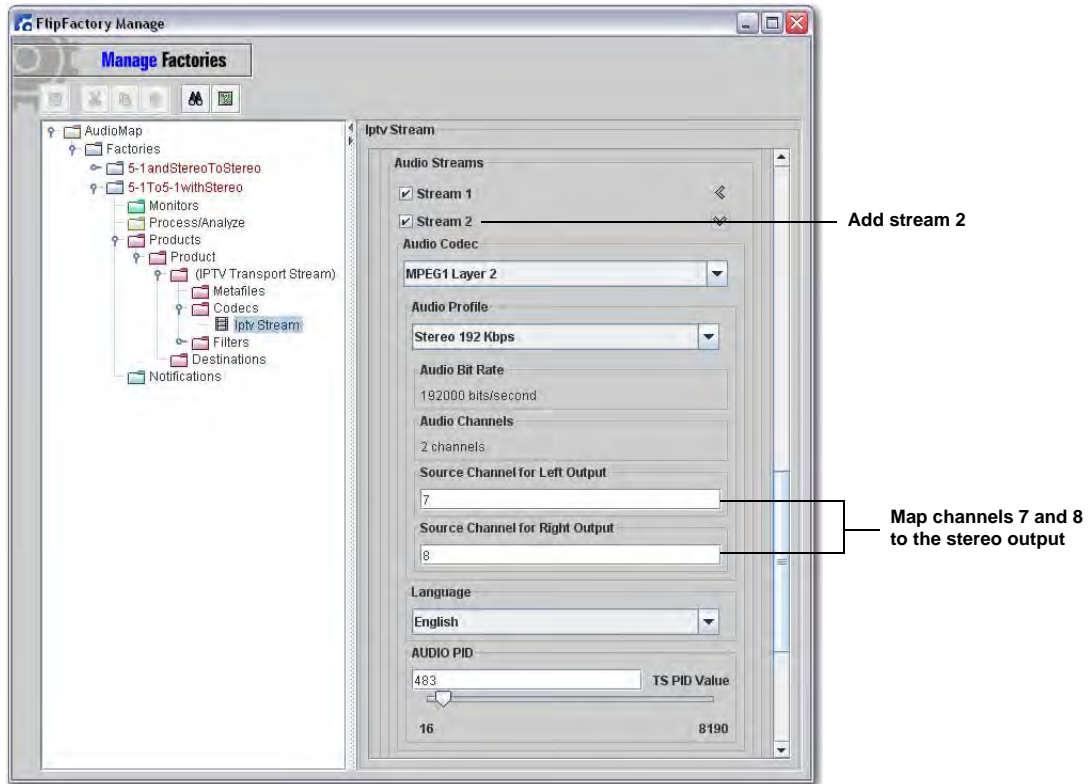

This example uses the *IPTV Transport Stream* product and the codec is *iptv Stream*. This product defines the 5.1 channels differently than the input 5.1 audio source: left (1), right (2), center (3), left surround (4), right surround (5), low frequency (6). Notice that the low frequency channel is last in

this configuration. To correct this, the input audio channels are re-mapped into the IPTV configuration in Stream 1:

Stream 2 maps the down-mix from channels 7 and 8 to the stereo output:

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FlipFactory has been designed for professionals skilled in the art of digital media transformation and workflow automation, to facilitate the automation of complex media operations and workflow that require a multitude of input and output media formats, delivery to numerous types of media devices and file systems, and notification of media systems including broadcast automation systems and media asset management systems.

The FlipFactory architecture and user interface is designed to provide maximum flexibility in the setup and configuration of these complex media transformations and workflow. In providing this high degree of flexibility, it is possible for media transformation and workflow processes to be configured that are impractical, likely to result in unexpected or unintended results, or beyond the limits of FlipFactory to perform satisfactorily. Additionally, FlipFactory may be executed on a platform that lacks the performance or capacity to perform the media transformations and workflow you've configured, which is your responsibility to specify. Telestream has chosen to implement FlipFactory to provide the greatest flexibility without limiting its functionality to only those transformations and workflow that are known with certainty to be within its performance capabilities, including those limits imposed by the platform upon which you have installed FlipFactory.

Therefore, you acknowledge that you may create transformations and workflow that are impractical or beyond your FlipFactory installation's limits, and Telestream does not warrant that each transformation or workflow you specify or use will complete without error.

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