FlipFactory®

DELIVERING MULTI-BITRATE HTTP STREAMING FILES FOR iPhone

This App Note applies to FlipFactory version 7.1

Synopsis

HTTP live streaming enables video and audio to be sent from a Web server to iPhones, iPods, desktop computers, and other networked devices.

FlipFactory enables you to create and distribute these files. Media streams are encoded, segmented into smaller media files of equal duration, inventoried in an index file, then distributed (with the index file) to a selected destination.

Apple provides an iPhone media streaming guide (*HTTP Live Streaming Overview)* that explains: how the technology works, what formats are supported, how to set up live broadcast or VOD sessions, how to implement encryption and authentication, and how to set up alternate bandwidth streams. This guide can be downloaded from Apple's Web site at: *http://developer.apple.com/ iphone*, then select *iPhone Development Guide.*

The purpose of this app note is to explain how to setup a factory to create iPhone files using FlipFactory. The iPhone files are created using the *IPTV Transport Stream* product for transcoding (multiple products required for multiple rates), segmented using the *iPhone Stream Segmenter Destination* in FlipFactory, then indexed with multiple streams combined by the IPhone notify.

For more information on how to transcode using the *IPTV Transport Stream*, see *Telestream App Note FlipFactory Encoding for IPTV & VOD Applications*, which can be downloaded from the Telestream Web site.

Creating iPhone Multi-bitrate Files

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. You will need an IPTV encoder license to create iPhone files. Please contact Telestream at licensing@telestream.net for assistance.*

To create single-bitrate iPhone streams, only one FlipFactory factory is required. However, to produce multi-bitrate iPhone streams, two factories are required: one factory to perform transcoding at the various required rates (containing a separate IPTV product instance for each bitrate), and another factory to deliver the iPhone multi-bitrate file segments.

Note: *In order for the first factory to have an existing target for its notification process (the delivery mechanism), the second factory must be created first and the Flip Engine restarted.*

There are four main steps that must be taken to create and deliver multi-bitrate iPhone files:

- Build a factory to deliver iPhone segments with an associated index file to a local or remote destination: 1. Delivering iPhone Files (page 3)

- Create a configuration file for each desired bitrate using the Main Concept H.264 configuration program: 2. Creating Configuration Files (page 4)

- Build a FlipFactory factory to use IPTV products (one for each bitrate) to transcode input media sources: 3. Transcoding Media Input Sources (page 6)

- Submit an input media file to be ingested by the two-factory workflow: 4. Submitting Input Media Files (page 8)

1. Delivering iPhone Files

1. Create a factory with a Duplicate Original product. Add a Local Folder destination (or, optionally, a remote destination), then browse and create a new folder. Click the Save icon to save the factory:
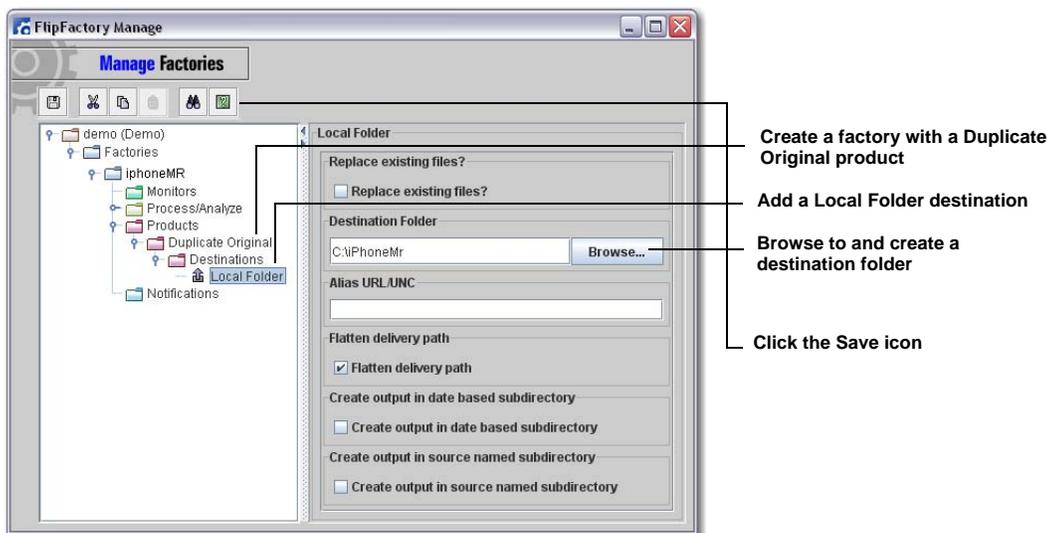
2. The Flip Engine service must be restarted to activate the registry changes. On the desktop click Start > Run, then enter *services.msc* and click OK:

Enter *services.msc*

Click OK

3. In the Services window, select Flip Engine from the list of services and click Restart:

Select Flip Engine

Click Restart
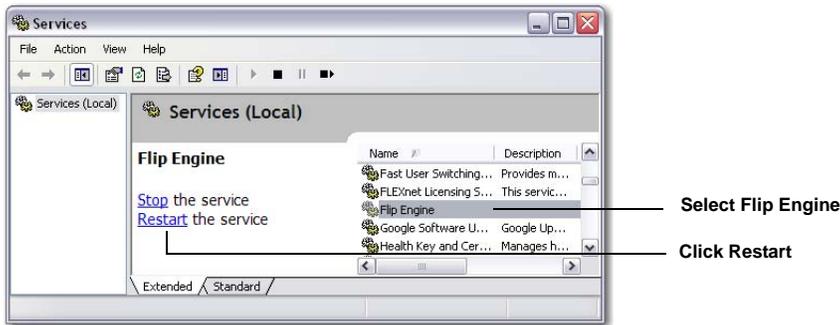
2. Creating Configuration Files

1. Start up the Main Concept configuration tool by navigating to *C:\Program Files\Telestream\FlipFactory\bin,* then run the application file *H264Configuration.exe*:

Navigate to bin directory

Run configuration program
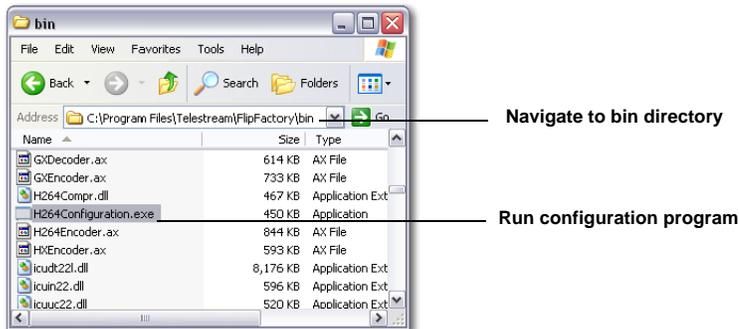
2. When the Notice dialog box displays, Click OK:

This program launches a utility provided by MainConcept GmbH that generates a configuration file to control the Main Concept h.264 video compression libraries. This utility was shipped with a Telestream product to provide an additional tool to help our customers create h.264 files. Telestream does not guarantee that this utility will in all cases create a video essence compatible with its products. Telestream recommends that all workflows and outputs generated using MainConcept configuration files in their products be thoroughly tested by the user prior to operational deployment. For further assistance, please contact Telestream support.

OK

3. Select H264_iPOD_640x480 from the Preset drop-down list, click the Basic Settings tab, and set the bitrate:
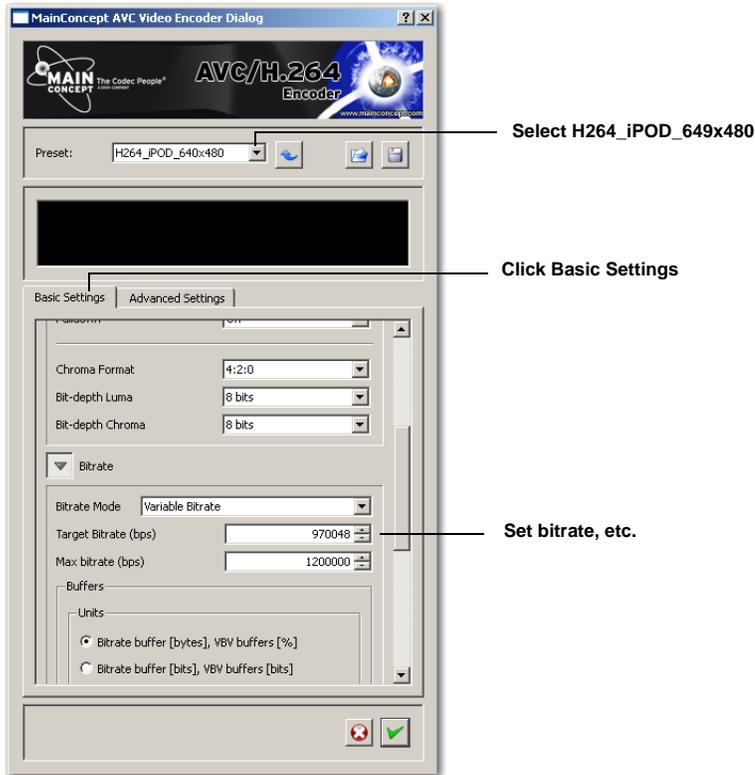
4. Select the Advanced Settings tab, select *Baseline* from the Profile drop-down list and *3.0* from the Level drop-down list, then click the Save icon:
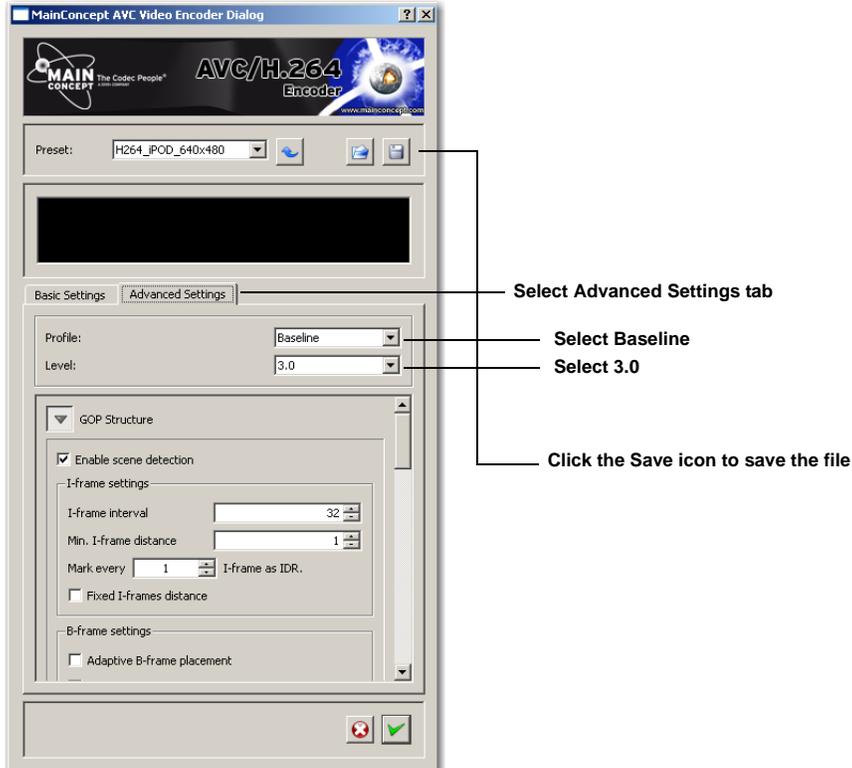
Note: *H264_iPOD_649x480 forces a specific configuration of settings. Other configurations can be created by modifying these settings as needed.*

5. When the Save dialog box displays, enter a .cfg file name and click Save:

Enter a .cfg file name

Click Save
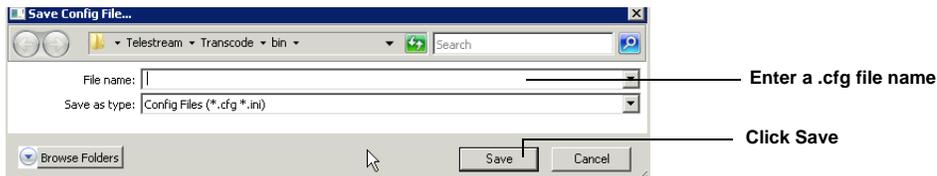
6. Repeat steps 4 and 5 above to create other required configuration files (one for each desired bitrate), then click the green check mark to close the configuration program:

Click green check mark to close
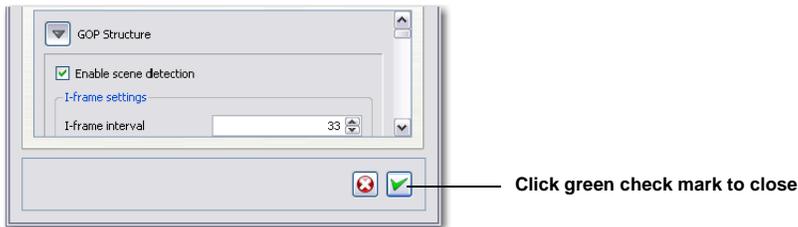
3. Transcoding Media Input Sources

To create a factory and configure it to produce multi-bitrate iPhone files, follow these steps:

1. Create a new factory and name it (*Multirate iPhone,* for example)*,* then add a monitor that will detect media files to be submitted.

2. Add an *IPTV Transport Stream* product to transcode the input media file. This does not encode the media into the iPhone format, which is accomplished in the next section 1. Delivering iPhone Files (page 3):

Add *IPTV Transport Stream*
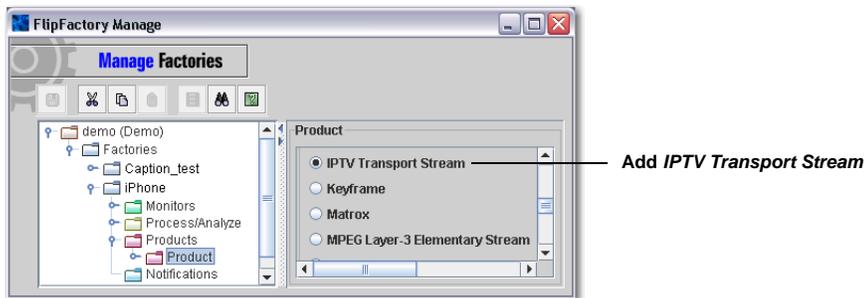
3. Select *H.264 Configuration File Import* for the Video Codec. Browse to and select the configuration file for the desired bitrate:

Select H.264 Configuration File Import

Browse to location of configuration file
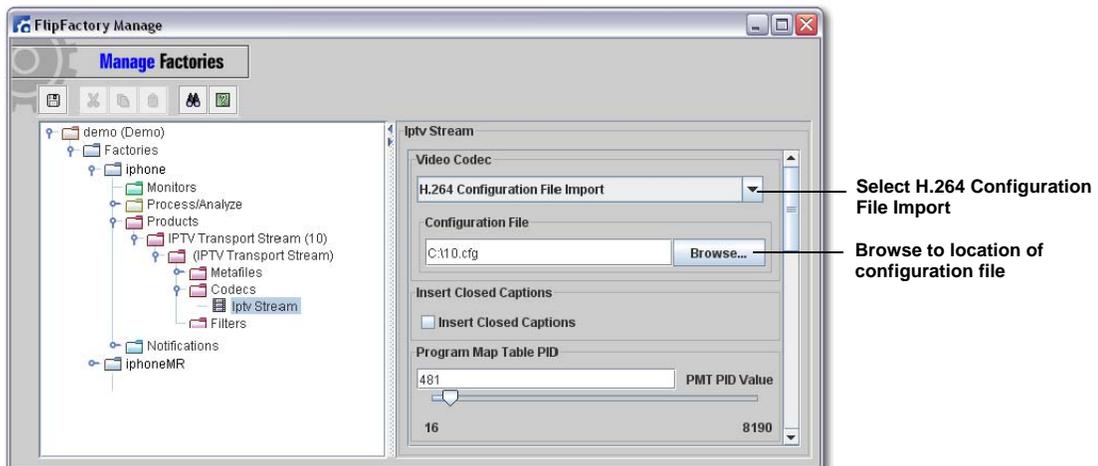
4. Scroll down in the IPTV configuration window to Audio Streams and check Stream 1 (and make sure the other streams are unchecked), then click the **<** icon to open Stream 1 configuration:
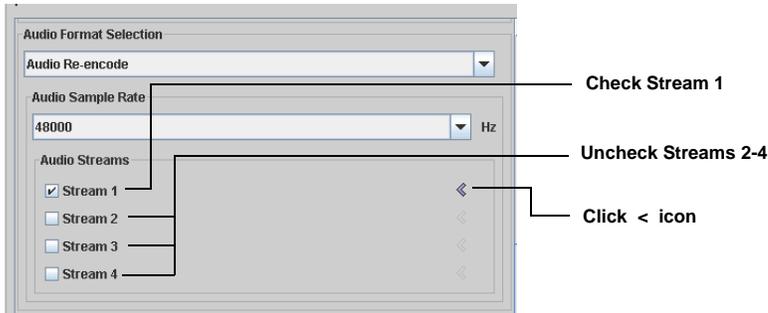
5. Set Audio Codec to Advanced Audio Coding (AAC):

6. Add an iPhone Stream Segmenter destination for _each_ IPTV Transport Stream product. In each iPhone Stream Segmenter destination, browse to and select the location of the destination folder. Set the location of the index file, then set the length of each segment and the bitrate:
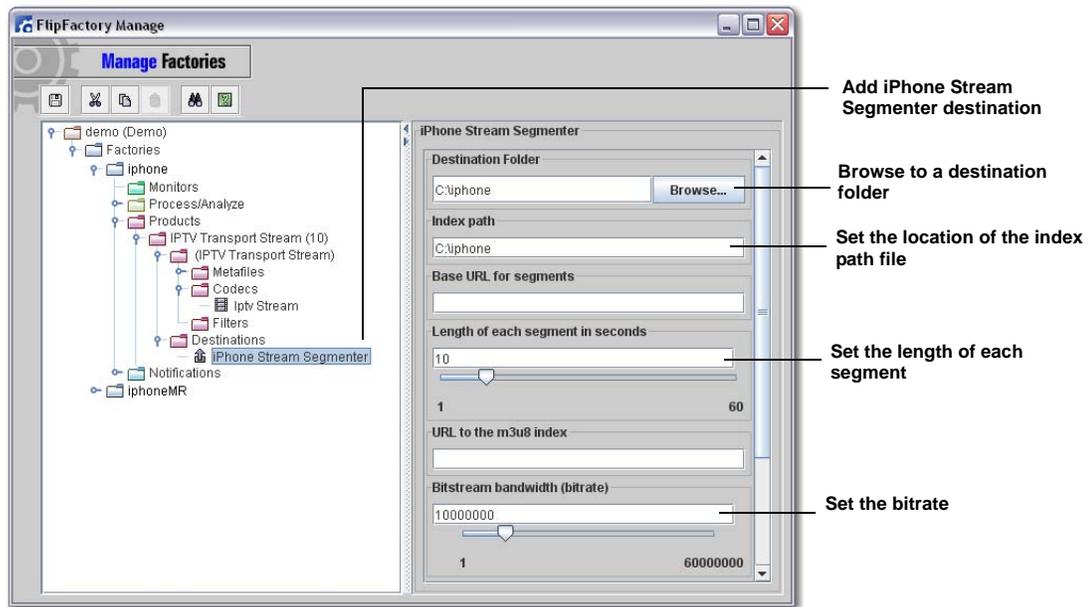
Note: *The Base URL is usually the same for multiple bitrates, but not required. The Filename suffix is used to distinguish files of different bitrates and should be unique for each bitrate.*

7. Add additional IPTV products (one for each bitrate), as needed:

Add more IPTV products, one for each bitrate
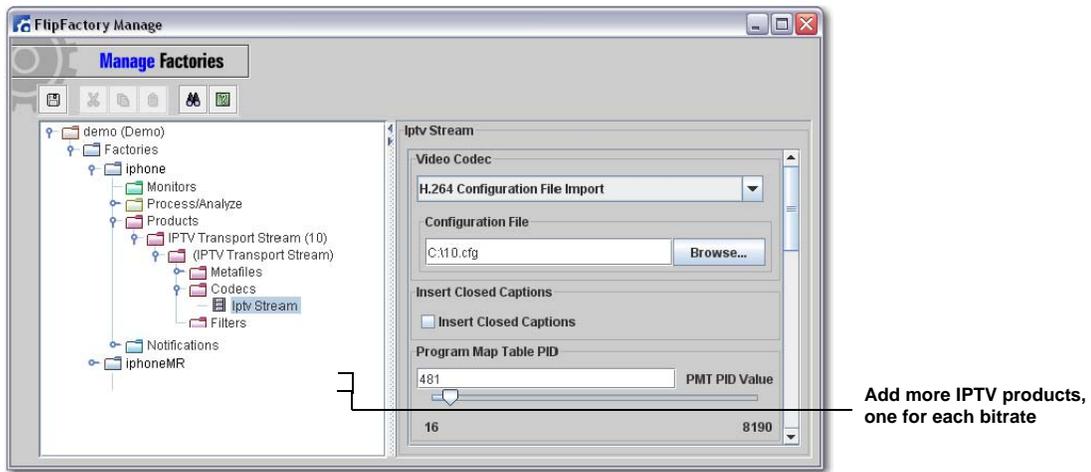
8. To make the results of this factory available to the second factory, add the iPhone Multi-Rate Forward notification and select the iPhoneMR factory. Browse to and create the Variant Index folder where the index file is stored:

Add iPhone Multi-Rate notification

Select iPhoneMR factory

Browse to and create the Variant Index folder
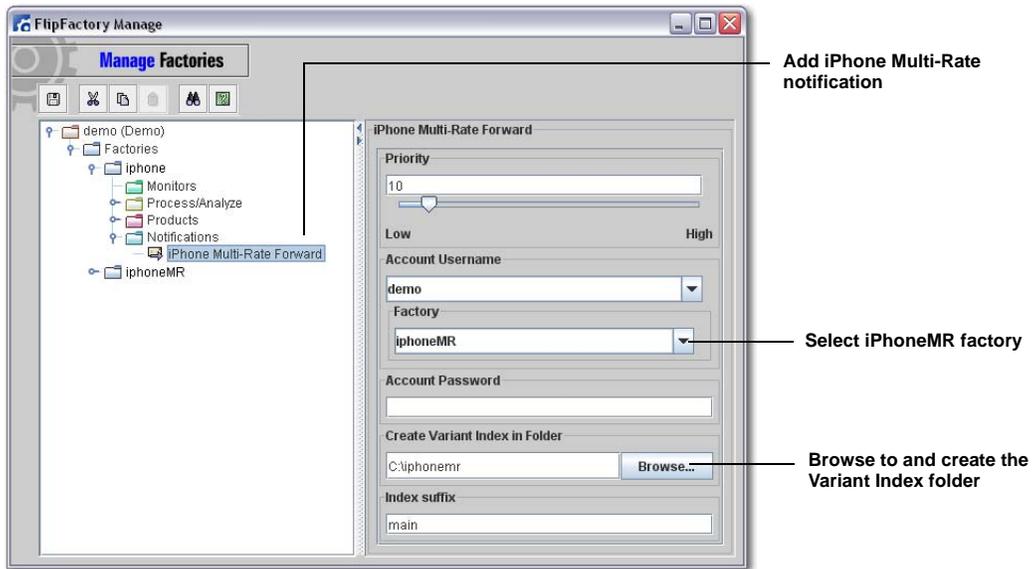
4. Submitting Input Media Files

1. To test this two-factory workflow, submit a media file to the monitor folder of the first factory:

Submit a media file
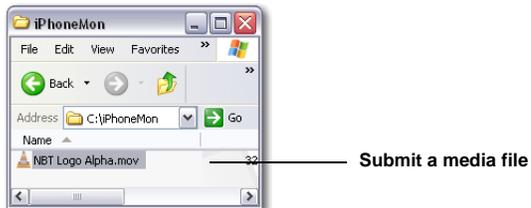
2. Open the job status window and wait for both factories to report *Complete*:
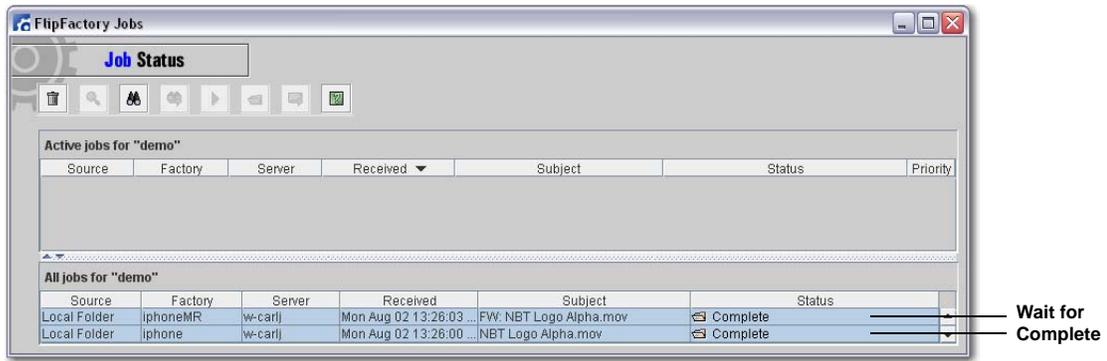
3. Examine the destination folder to ensure the iPhone segmented files are present:
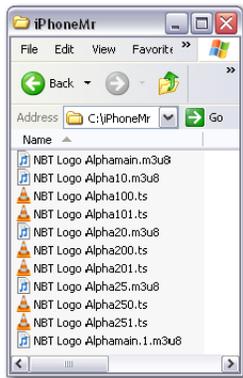
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