FlipFactory® Using YouTube Fingerprinting With FlipFactory

This App Note applies to FlipFactory versions 7.0 & later

Synopsis2
Establishing a Partnership with YouTube3
Installing YouTube Fingerprinting Software4
Creating Fingerprints of Video Files7
Fingerprinting Live Feeds 11
Fingerprinting a Video Clip from Tape14
Copyright and Trademark Notice16
Limited Warranty and Disclaimers16

Synopsis

Using sophisticated audio and video fingerprinting technology, YouTube can scan user uploads to detect matches from Rights Holders' references.

Telestream customers include the largest owners of video assets in the world, many of whom have an interest in blocking, tracking, and monetizing their content on YouTube even if they didn't upload it. Integrating YouTube fingerprinting directly in FlipFactory provides users with greater control over the publication of their video content without adding any steps or costs to their workflow.

YouTube fingerprinting works with both live and file-based workflows. When a video file or a live video feed is submitted to FlipFactory, a fingerprint reference file (Content ID file) that uniquely identifies this video input is produced. Users can use FlipFactory and, optionally, Pipeline to implement YouTube fingerprinting to ensure content identification and tracking.

The YouTube fingerprinting process creates a "digital fingerprint" and saves it in a file. This fingerprint can then be compared to video on the YouTube site to block, track, or monetize media. Video can be fingerprinted by FlipFactory for any file that FlipFactory can transcode (via monitored folders or manually submitted). When combined with Pipeline, FlipFactory can fingerprint video content from an even wider variety of sources:

- Live SDI capture using crash record
- SDI capture from tape including deck control
- SDI capture on a 24-hour schedule which generates Fingerprint files periodically
- SDI capture triggered by web services API calls.

After each fingerprint file has been created, FlipFactory can:

- Deliver the fingerprint file using all types of FlipFactory delivery/notification operations including secure FTP to YouTube
- Report all fingerprint files generated for accounting purposes.



Note: This app note assumes that you know how to create and configure factories in FlipFactory and how to submit jobs. Review the FlipFactory User's Guide for details.

Establishing a Partnership with YouTube

In order to provide fingerprint files of video for YouTube, providers must first establish a partnership with YouTube. Benefits include:

- A way to discover the presence of any particular video content posted on YouTube
- Allow the original owner of any video content to request removal of the video from YouTube
- Allow, alternatively, a means for the original owner to share in revenues generated from the posting.

After establishing a partnership with YouTube content owners can obtain:

- Library to unlock fingerprinting in FlipFactory (from YouTube)
- License for YouTube Fingerprinting in FlipFactory
- FlipFactory Fingerprinting updates.

To establish a partnership with YouTube contact a Technical Account Manager at YouTube:

- New partners should go to: http://www.youtube.com/content_id_signup
- Existing partners can contact their current partner manager or send E-mail to: copyright@youtube.com

Installing YouTube Fingerprinting Software

Note: Make sure you are using FlipFactory version 7.0 (or later), and temporarily disable any anti-virus programs before installing YouTube Fingerprinting Software. Additionally, make certain that you obtain and install the **google_telestream.dll** (step one below) before continuing installation.

To install YouTube Fingerprinting software for FlipFactory, follow these steps:

- 1. Obtain the *google_telestream.dll* from your YouTube Technical Account Manager and copy it into the *c:\program files\telestream\flipfactory\bin* directory.
- CAUTION: The google_telestream.dll <u>must</u> be installed first. Failure to do so will prevent YouTube Fingerprinting from operating correctly in FlipFactory. If you install the YouTube Fingerprinting patch first (step two below) you must uninstall it and proceed from step one above.
- 2. To download the YouTube Fingerprinting patch from Telestream go to http://www.telestream.net and click Downloads:



3. Double click on the FlipFactory icon:



4. Log In using your user name and password. If you do not have a Telestream account, click *Create an Account* to create a new account:

Telestrean	n Downloads Login - Windows	nternet Explorer					
0-1	http://dynamic.telestream.net/do	wnloads/login.asp?pro	did=flipfactory8	smess 💌 🍫 🗙	bing Bing		2
Favorites	Telestream Downloads Login						
						Home	Store Log
-	TELESTREAM	SOLUTIONS	PRODUCTS	DOWNLOADS	BUY COMPANY	SUPPORT	Search
De	ownload FlipFa	ctory				н	ome >> Dowr
	Welcome to our Dov	vnload Center			Returnin	g Members Login Her	8:
	If this is your first time her	e please create ar	account to	receive:	Log	n:	
	a dile lo your met dille loi	o, prodoo orođeo dr			Userna	ime:	
	 Free that downloads Software updates 						
	 Special offers 				Passw	ord:	
	 More 						
	Read our Privacy Policy					Log In	2
	Create an Account!				Forgot y	our username and pa	ssword?
		UIII D					5

5. Once in the download page, find the YouTube Fingerprinting patch under *FlipFactory Plugins and Installers* and double click it to start the download (download the installer zip file to a known location):



6. Unzip the installer file and double click on setup.hta to execute the installer:

YouTubeFingerprinting_7_0_53723						1
File Edit View Favorites Tools Help	Folders				4	
Address C:\downloads\YouTubeFingerprinting_7	0_53723		Ele-		M 🔁 Go	
Folders Fol		Vame - Tiles EFF:4452.xml Instructions.html Instructions.html	1 KB 1 KB 86 KB	File Folder XML Document HTML Document HTML Application	Date Modined 11/6/2009 2:57 PM 11/4/2009 3:30 PM 11/4/2009 3:30 PM 11/4/2009 3:30 PM —	Double click setup.hta

7. Click *Next* when the dialog box is displayed:



8. Select Install then click Next:

21	
_0_53723	
	Select Install
Next Cancel	
Next Calcel	
	21 0_53723

9. Click Finish:

FlipFactory Update Tool - 2,1,20090921	
YouTubeFingerprinting_7_0_53723	
Installing: YouTubeFingerprinting_7_0_53723 is	complete.
	Finish

Note: You must obtain and install a License from Telestream to activate the FlipFactory YouTube Fingerprinting option.

Creating Fingerprints of Video Files

This example uses FlipFactory to create a fingerprint of a video file. In a new or existing FlipFactory workflow, automatic fingerprinting can be added to production media being transcoded for publication.

Typical Fingerprinting Factory Settings

- Monitor: Local or Network Folder (optional)
- Product 1: Content ID (Fingerprint) Reference File
- Destination: YouTube Content ID System via SFTP
- Product 2: Media to publish (optional, format per your requirement)
- Destination: YouTube Content System via SFTP
- Notification: XSL Transform Report of fingerprint files produced by FlipFactory.

Follow these steps to add YouTube fingerprinting to a new or existing FlipFactory factory:

Note: This app note assumes that you know how to create and configure factories in FlipFactory and how to submit jobs. Refer to the FlipFactory User's Guide for details.

1. Add a new YouTube Fingerprinting product to your factory by selecting *YouTube Fingerprinting* from the list of products:

Manage Factories			
* 6 * *			
YTFPDemo (YouTubeDemo)	Product		
Factories	O MXF Stream	O OMF Stream	
Monitors	O Omneon Server	O PacketVideo MPEG4	
- Process/Analyze	O Quantel	O QuickTime	
Products Products Products Products	QuickTime Streaming	SeaChange Format	
👇 📑 (YouTube Fingerprinting)	Sony MAV70	O VOD Transport Stream	
 Destinations Indifications 	O Vortex	O WAVE Audio	S

2. To save a fingerprint file locally, click *Destinations*, select the *Local Folder* tab, and click the *Add* button. This creates a *Local Folder* icon under Destinations:



Note: In this example a local folder is used as a destination. In production you will specify an SFTP server on YouTube's Content ID System. Credentials are supplied by Google.

3. Click *Browse* and select the destination folder where fingerprint files will be placed:

Manage Factories		
 YTFPDema (YouTubeDema) Factories YT-Fingerprint (YouTube Fingerprint) Monitors Process/Analyze Products YouTube Fingerprinting (YouTube Fingerprinting) Oestinations Kotifications 	Local Folder Replace existing files? Replace existing files? Destination Folder C:\OutFiles Rias URL/UNC Flatten delivery path Flatten delivery path Create output in source named subdirectory Create output in source named subdirectory	Click Brows

4. To produce an audit report of the fingerprint files that have been generated by FlipFactory, add a notification. Click *Notifications*, select the *XSL Transform* tab, and click the *Add* button. This creates an *XSL Transform* icon under Notifications:

FlipFactory Manage					
Manage Factories					
9 C YTFPDemo (YouTubeDemo)	VOD Transform	XSL Transform			
🕈 🗂 Factories	Telestream	ClipMail FTP	Virage Vide	eoLogger	
P- I YT_Fingerprint (YouTube Fingerprint)	Slate/Spot Auto Forward Sundance Te			am ClipMail	
Monitors	Screen DVI	3 Teletext Notify	SeaCl	nangeMvi	
← C Products	Reuters Ne	wsML	Screen DVB	Notify	
P INOtifications	MdmlFile Sample	e MediaBrows	e Pathfire	ProTrack	
📮 XSL Transform	Forward HT	TP IBM Video	Charger IB	MS Mail	
and the second se	Dub List Ext	ernal Shell Ex	tract Metadata	Florical	
	Avid Auto Forw	ard Avid I	nterplay Transfe	er Engine	
	Add				— Click Add

 Click XSL Transform and configure the File Name Pattern to specify the file name (see on-line help for details). Select CSV_start.xsl from the stylesheet pull-down menu. Click Browse and select the destination folder where reports will be placed:

Manager Frankrige		
Manage Factories		
× • • * •		
🕈 🚍 YTFPDemo (YouTubeDemo)	XSL Transform	
Factories GTT Eingerprint (YouTube Eingerprint)	Priority	
Monitors	50	
Process/Analyze		
Carl Notifications A SL Transform	Low High	
	MM dd wwd cod	Enter
	Proport source name to output filename	File Name Patter
	Prepend source name to output filename	
	Create output in source named subdirectory.	
	Create output in source named subdirectory.	
	Stylesheet	
	CSV_start.xsl	Select Stylesheet
	Transformed Destination Folder	
	C1OutReports Browse	Click Browse
	Calculate checksum for each media file	
	Calculate checksum for each media file	
	Skip failed jobs	
	Kin failed jobs	
	When output file exists	
	Overwrite?	
	false	
	Use this stylesheet instead	
	CSV.xsl	
	Append/Insert	
	Annend to End of File	
-		

6. Click the Save icon to save the factory settings:



Testing Your Fingerprint Workflow

Now that you have created or updated your factory to produce YouTube fingerprinting, it should be tested to ensure that fingerprinting has been successful:

1. Submit several video files to be fingerprinted by placing them in the monitored folder (or they can be submitted manually):



2. After FlipFactory completes transcoding, examine the destination folder to ensure that the YouTube fingerprint files have been created:

⊃ outFiles			
File Edit View Fav	vorites Tools	Help	7
G Back • 🔾	🍠 🔎 Sea	arch 📄 Folders 🛄 🕶	
Address 🙆 C:\outFiles,		× 🔁	Go
Address 🗁 C:\outFiles. Name	Size Type	Date Modified 🔺	Go
Address C:\outFiles Name FingerPrint_002.yt	Size Type 876 KB YT File	Date Modified - 10/30/2009 3:07 PM	Go
Address C:\outFiles Name FingerPrint_002.yt FingerPrint_003.yt	Size Type 876 KB YT File 876 KB YT File	Date Modified 10/30/2009 3:07 PM 10/30/2009 3:07 PM	Go

3. Open the output report (.csv file placed by the XSL Transform) using Microsoft Exel to ensure all files submitted were reported:

0	a 9 · (* - +		10-30-2009.	csv - Microsoft E	xcel					. = x
	Home Insert Page I	Layout Formulas	Data Review	View Acr	obat				0	- 🗆 X
P	Calibri • 11 aste aste aste aste calibri • 11 B <u>I</u> <u>U</u> • <u>U</u> •			General * \$ * % * * * * * * * * * * * * * * * * * *	局の	Conditional Fo Format as Table Cell Styles * Styles	rmatting * e *	Hainsert + Hainsert + Delete + Format +	Σ · A · Z · Sort · · Filter	Find & * Select *
	• TL	f _#		1 1000000					1	×
	A	В	С	DE		F	G	Н	1	1
1	Account Name	Factory Name	File Name	File Dura Job Ad	cepte	Flip Started	Flip Comp	le Job Comple	el Success/F	ailure 📄
2	YTFPDemo (YouTubeDemo)	YT_Fingerprint	FingerPrint_41.yt	00:12.3 09/10	30 12	09/10/30 12	09/10/30 1	12 09/10/30 1	2: Success	
3	YTFPDemo (YouTubeDemo)	YT_Fingerprint	FingerPrint_41.yt	00:04.3 09/10	30 12	09/10/30 12	09/10/30 1	12 09/10/30 13	2: Success	
4	YTFPDemo (YouTubeDemo)	YT_Fingerprint	FingerPrint_47.yt	24:47.2 09/10	30 15	09/10/30 15	09/10/30 1	16 09/10/30 10	6: Success	
5	YTFPDemo (YouTubeDemo)	YT_Fingerprint	FingerPrint_48.yt	08:03.4 09/10	30 15	09/10/30 15	09/10/301	16 09/10/30 10	6: Success	
14	() N 10-30-2009		h		1 4		iii			* 1
Rea	ady						=	100% 🕞	Ū	•

Fingerprinting Live Feeds

This example sets up a 24-hour feed using Pipeline and schedules video clips to be created every thirty minutes with one minute overlaps. These video clips are published for FlipFactory to create YouTube fingerprint files. This process is demonstrated in the first example, Creating Fingerprints of Video Files.

The video clips are saved and automatically delivered to FlipFactory to create YouTube fingerprint files and production media for publication in the same factory. Unique file names are automatically generated in this scenario to avoid overlap. Additionally, FlipFactory creates a report of the file names for reporting purposes, enabling partners to reconcile the fingerprints with their schedule.

Note: This example assumes you have already reviewed Creating Fingerprints of Video Files, and know how to create video feeds using Pipeline **Scheduled Capture**.

Follow these steps to create a 24-hour scheduled feed using Pipeline to produce TIFO source files for YouTube fingerprinting in FlipFactory:

1. Create a "Scheduled Capture" Pipeline to feed video into FlipFactory using TIFO outputs.

Configuring Your Wrapper and File Storage Location

2. Using the pull-down menu next to *Wrapper*, select *TIFO* from the list. In the dialog box displayed, click the Browse button and navigate to the location where you want Pipeline to store the video clips it creates:

TIFO				
File Paths		_		
Storage C:\inFiles		Browse		Click Browse
Disk Buffering Use disk buffering	0 GB			
		Cancel	ОК	

 Using the pull-down menu next to *Publish*, select *FlipFactory* from the list. In the dialog box displayed enter the *Address* where the FlipFactory is located. From the pull-down menu next to *Account*, select the name of the account in FlipFactory that does YouTube fingerprinting. From the pull-down menu next to *Factory*, select the factory that performs the YouTube fingerprinting.

Finally, from the pull-down menu next to *File Location*, enter the location where FlipFactory must look to find video clips to be fingerprinted. This should be the same location identified for *Storage* in the previous step:



4. Select *File* > *New Schedule* from the menu bar. Create a 24-hour schedule of 30-minute video clips. Change the minutes field in the *Handles* text box to ":01" to provide 1-minute overlaps:

Pipeline Control							
File Edit Control	Device	Clip	Tools	Help			
Pipeline Pipeline_Carl	v	Wrapper	TIFO	*			
Video DV 🗸 480i	¥ 29.97		25 Mbps 🗸				
Audio 🚺 Linear PCM 🔽 🗧 2 ch	✓ 4800	10 Hz 🗸	16 Bit (Big En	dian) 🗸	Clock Comp	uter Clock	~
Handles 00:01:00 00 Publish Flip	Factory V						
Pipeline State			test5	ched			
	_	-					Off On
Idle	-	-	- L	abels applied t	o new dips		
Preview .			-	1.30 MM	01:30:00	02:00:00	FingerPrint_19
- Andrew Brancher				2:00 AM	02:00:00	00-70-00	Free Dist 10
 Video Preview 				2:15 AM	02:00:00	- 02:30:00	HingerPrint_20
 Audio Preview 			Ē	2:30 AM	02:30:00	- 03:00:00	FingerPrint_21
- Disconstice			111	2:45 AM			
+ Diagnosuca			1×1	3:15 AM	05:00:00	- 05/50/00	FingerPrint_22
			in the	3:30 AM	0332040	040000	Encoded 12
				3:45 AM	0550.00	- 04.00.00	ringerning_25
				4:00 AM	04:00:00	04:30:00	FingerPrint_24
				4.15 AM	-		
				4:45 AM	04:30:00	05:00:00	FingerPrint_25
				5:00 AM	05:00:00	05:30:00	FinnerPrint 26
				5:15 AM	03.00.00	- 03,30,00	ingen inic_20
			â	5:30 AM	05:30:00	06:00:00	FingerPrint_27
				6:00 AM	-		
			121	6:15 AM	06:00:00	- 06:30:00	FingerPrint_28
orage: C:\inFiles	47 clips.	23:07:30.0	00 total time, 29	3.72 GB r			

5. Click the red *Off-On* button to activate the video feed. The *Off-On* button becomes green and live video is displayed on the left side of the panel. The right side of the panel indicates a video clip being created by displaying an orange progress timer:



6. Now that you have created a pipeline that produces scheduled video clips, you need to ensure that FlipFactory has processed them and successfully created fingerprint files.

- 7. Navigate to the TIFO file location to ensure that the files created by Pipeline are present:
 - inFiles
 Image: State Sta
- 8. Navigate to the FlipFactory output file location to ensure that the fingerprint files are present:

⊃ outFiles			_	_ 0	X
File Edit View Fa	vorites T	ools Help			1
G Back •	1	Search	Folders		
Address 🔂 C:\outFiles	1000			- - •	io
Address C:\outFiles	Size	Туре	Date Modified		io
Address C:\outFiles Name FingerPrint_41.1.yt	Size 20 KB	Type YT File	Date Modified 10/30/2009 11:5	2 AM	io 💉
Address C:\outFiles Name FingerPrint_41.1.yt	Size 20 KB 2,420 KB	Type YT File YT File	Date Modified 10/30/2009 11:5 10/30/2009 3:01	2 AM	0

9. Make sure the Job Status window in FlipFactory reports the jobs as "Complete".

Fingerprinting a Video Clip from Tape

This example sets up a Pipeline feed from video tape and creates video clips used by FlipFactory to create YouTube fingerprint files.

Note: This example assumes you have already reviewed "Creating Fingerprints of Video Files" and can create video feeds using "Log and Capture" in Pipeline.

Follow these steps to create video clips from tape for YouTube fingerprinting in FlipFactory:

- 1. Create a "Log and Capture" document in Pipeline Control and configure it to feed video into FlipFactory.
- 2. Set up the selected wrapper and FlipFactory publisher as described in Configuring Your Wrapper and File Storage Location on page 11.
- 3. Capture video clips using the Mark In and Mark Out buttons on the right side of the panel:



- 4. Click the red *Off-On* button to capture the video clips from the tape. The *Off-On* button displays green during the capture process.
- 5. Now that you have produced video clips, ensure that FlipFactory processed them and successfully created fingerprint files.
- 6. Navigate to the TIFO file location to ensure that the files created by Pipeline are present:

File Edic view Fave	prites Tools Help	Ĵ.			Ľ
G Back • Q	3 P Search	Folders	•		
Address C: UnFiles			ME	Ge	с.
	170 T (1.200.0			Ľ.,
Name	Size Typ	e Date	Modified		-
Name	Size Typ 15,948 KB TIFC	e Date) File 10/30/	Modified /2009 11:52	AM	•
Name FingerPrint_002.tifo	Size Typ 15,948 KB TIFC 15,948 KB TIFC	e Date) File 10/30/) File 10/30/	Modified 2009 11:52 2009 11:52	AM AM	•
Name FingerPrint_002.tifo FingerPrint_003.tifo	Size Typ 15,948 KB TIFC 15,948 KB TIFC 15,948 KB TIFC	e Date File 10/30/ File 10/30/ File 10/30/	Modified (2009 11:52 (2009 11:52 (2009 11:52	AM AM	

7. Navigate to the FlipFactory output file location to ensure that the fingerprint files are present:

🔁 outFiles				
File Edit View F	avorites T	ools Help		1
🕒 Back 🔹 🔵	3 ,	Search	Folders	
Address 🙆 C:\outFile	s.			Go
Name	Size	Туре	Date Modified 🔺	^
FingerPrint_002.yt	876 KB	YT File	10/30/2009 3:07 PM	
FingerPrint_003.yt	876 KB	YT File	10/30/2009 3:07 PM	-
EingerPrint 004.vt	876 KB	YT File	10/30/2009 3:07 PM	-

8. Make sure the Job Status window in FlipFactory reports the jobs as "Complete".

Copyright and Trademark Notice

©2009 Telestream, Inc. All rights reserved. No part of this publication may be reproduced, transmitted, transcribed, altered, or translated into any languages without written permission of Telestream, Inc. Information and specifications in this document are subject to change without notice and do not represent a commitment on the part of Telestream.

Telestream, Flip4Mac, FlipFactory, Episode, Telestream MAP, MetaFlip, GraphicsFactory, and MotionResolve are registered trademarks and Pipeline, Launch, Wirecast, ScreenFlow, Videocue, Drive-in and Split-and-Stitch are trademarks of Telestream, Inc. All other trademarks are the property of their respective owners.

All other brand, product, and company names are the property of their respective owners and are used only for identification purposes.

Limited Warranty and Disclaimers

Telestream, Inc. warrants to you, as the original licensee only, that the software you licensed will perform as stated below for a period of one (1) year from the date of purchase of the software by you:

The software will operate in substantial conformance with its specifications as set forth in the applicable product user's guide/published specifications/product description. Telestream does not warrant that operation of the software will be uninterrupted or error-free, will meet your requirements, or that software errors will be corrected. Telestream's sole liability under Section 1 of this Limited Warranty shall be to use reasonable commercial efforts to bring the Software's performance into substantial conformance with the specifications in the applicable product user's guide/ published specifications/product description.

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.

Limitations of Warranties. EXCEPT AS EXPRESSLY SET FORTH IN SECTION 1 ABOVE, NO OTHER WARRANTY, EXPRESS OR IMPLIED, IS MADE WITH RESPECT TO THE SOFTWARE, INCLUDING WITHOUT LIMITATION ANY IMPLIED WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICU-LAR PURPOSE, NON-INFRINGEMENT OF THIRD PARTY RIGHTS AND THOSE ARISING FROM A COURSE OF DEALING OR USAGE OF TRADE. NO WARRANTY IS MADE THAT USE OF THE SOFT-WARE WILL BE ERROR FREE OR UNINTERRUPTED, THAT ANY ERRORS OR DEFECTS IN THE LICENSED MATERIALS WILL BE CORRECTED, OR THAT THE SOFTWARE'S FUNCTIONALITY WILL MEET YOUR REQUIREMENTS.

January, 2010

Part No. 74-0213-01