



HTTP Live Streaming and HTML 5: Delivering High-quality Video for Apple Devices

Adaptive Bitrate Media Delivery

Technology Overview

Adaptive Bitrate is the process of efficiently delivering streaming video to users by dynamically switching among different streams of varying quality and size during playback. This provides users with the best possible viewing experience their bandwidth and local computer hardware (CPU) can support.

Adaptive Bitrate Media Delivery

Industry Landscape



Apple HTTP Adaptive Streaming for iOS



Adobe

Adobe Dynamic Streaming for Flash



Microsoft®
Silverlight™

Smooth Streaming for Silverlight

Session Overview

HTTP Live Streaming and HTML5 to iOS Devices



HTTP Live Streaming (HLS)

Protocol Background

- Media Streaming Protocol produced by Apple Inc. as part of the Quicktime X and iOS platforms
- Starting in 2010 used by Apple to stream keynote events to Quicktime clients
- Used by top media companies to deliver improved user experience to iOS devices
- Apple requirement for iOS Apps that include video delivery within the App Store approval process.

iOS Support

- All devices running iOS 3.0 and later include built-in client software. A video placeholder is displayed when Safari encounters an `<OBJECT>` or `<EMBED>` tag with the URL of an HTTP Live stream. The full-screen media player is launched when the user touches the video placeholder. HTTP Live streams can also be played in native iPhone or iPad apps using the media player framework.

Quicktime Support

- On Mac OS X, version 10.6 and later, QuickTime can play HTTP Live Streams. The QuickTime plug-in allows you to embed streams in websites using the `<OBJECT>` or `<EMBED>` tags, and Safari can play HTTP Live streams natively within the `<VIDEO>` element. Developers can also use the QTKit framework to create desktop applications that play HTTP Live Streams

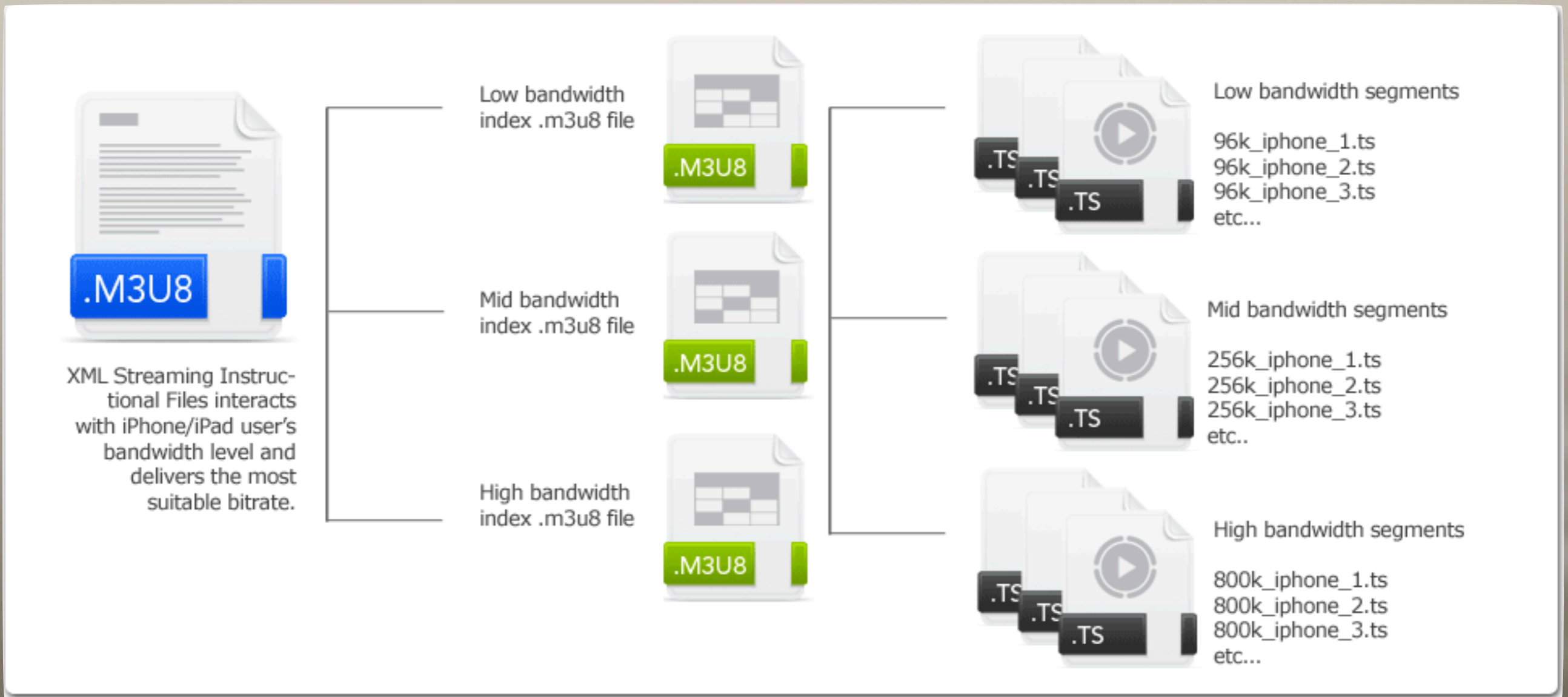
Safari Support

- Additionally, Safari is able to play HTTP Live streams natively on iPad, within a webpage, as part of a `<video>` element

Distribution Components

File Extension	MIME Type
.m3u8	application/x-mpegURL or vnd.apple.mpegURL
.ts	video/MP2T

HLS File Structure



Contents of .M3U8 MAIN Playlist

```
#EXTM3U
#EXT-X-STREAM-INF:PROGRAM-ID=1, BANDWIDTH=1245000
Revolver_iPad-1200k.m3u8
#EXT-X-STREAM-INF:PROGRAM-ID=1, BANDWIDTH=886000
Revolver_iPad-800k.m3u8
#EXT-X-STREAM-INF:PROGRAM-ID=1, BANDWIDTH=704000
Revolver_iPad-600k.m3u8
#EXT-X-STREAM-INF:PROGRAM-ID=1, BANDWIDTH=519000
Revolver_iPad-400k.m3u8
#EXT-X-STREAM-INF:PROGRAM-ID=1, BANDWIDTH=310000
Revolver_iPad-200k.m3u8
#EXT-X-STREAM-INF:PROGRAM-ID=1, BANDWIDTH=216000
Revolver_iPad-110k.m3u8
```

Contents of .M3U8 CHILD Playlist

```
#EXTM3U
#EXT-X-TARGETDURATION:10
#EXTINF:10,
Revolver_iPad-200k.split.1.ts
#EXTINF:7,
Revolver_iPad-200k.split.2.ts
#EXTINF:9,
Revolver_iPad-200k.split.3.ts
#EXTINF:10,
Revolver_iPad-200k.split.4.ts
#EXTINF:10,
Revolver_iPad-200k.split.5.ts
#EXTINF:9,
Revolver_iPad-200k.split.6.ts
#EXTINF:10,
Revolver_iPad-200k.split.7.ts
#EXTINF:9,
Revolver_iPad-200k.split.8.ts
#EXTINF:10,
```

HLS Highlights

- **Multiple Bitrates** - Chose 2-unlimited number of bitrates to match varying bandwidth conditions of iOS devices: Wifi Hi, Wifi Lo, 3G, EDGE
- **Cellular Fallback** - Apple required a “cellular fallback” for low bandwidth conditions. A 64k audio only stream plus a series of still images.
- **Segment Length** - Customize the length in seconds of individual segments (10s is Apple recommended default)
- **HTTP Delivery Ready** - No special streaming software required, simply point the iOS device to the main .M3U8 XML playlist file.

HTML5 video – what is it?



HTML5 – Codecs and Browsers



HTML5 – Example Code



HTML5 – on Apple devices



The Solution

Encoding.com transforms video encoding into a cloud service.

Encoding Issues Today

Upfront Investment
Rapid Growth in Demand
Management & Maintenance
Complex Technologies
Rigid Legacy Workflows



+ Pay as you go
+ Instant & Infinite Scalability
+ We Manage & Maintain
+ Support all Popular Formats
+ Flexible API

HTTP Streaming to Apple devices in a Snap.



Set and Forget. Use our iPhone Streaming preset and we will generate the thousands of segmented video files required iPhone/iPad streaming.

at 20,000 feet

1. ingest

images, video, audio



CDN/FTP/SFTP/S3/CloudFiles
customer source media storage



send to encoding.com via
chosen integration method



2. encode

to all popular web & mobile formats



wmv, h.264, FLV, VP6, JPEG, GIF, PNG, MP3,
AAC, and many more



3. deliver

to customer media destination




CDN/FTP/SFTP/S3/CloudFiles


  pc, ipad, mobile, tv

I. Tell us where your videos are located.

Watch Options

FTP S3 Cloud files


Source Media Folder 
(For example: http://username:userkey@mystorage.cloudfiles.com/video_in/)

Notification (optional) 

Frequency 

Destination(s) 
(For example: http://username:userkey@mystorage.cloudfiles.com/video_out/)
[+]

Title (optional) 

Passive FTP mode (optional) 

Save

2. Choose your output format from our presets.

Watch Options **Encoding Options** Watch Log

Format:	Flash 9 H.264	
Size	Flash up to 9	320 x 240
Video bit	Windows Media	256k
Audio bit	Mpeg 4	4k
Audio sa	Raw MPEG-4 video	
Audio ch	Flash 9 H.264	
Frame R	iPod	
Crop Top	iPhone/iTouch	
Crop Left	iPad	
Crop Right	iPhone streaming	
Crop Bottom	Apple TV	
Keep as	PSP	
Video codec	Zune	
Profile	Flash VP6	
Codec advanced options	Thumbnail	
Audio codec	Image-2-Image	
	MP3 Audio	
	Windows Media Audio	
	AAC Audio	
	MPEG-2	yes
	3GP	
	libx264	
	high	
	no	
	libfaac	

Save



3. Chillax.



Vid.ly



Our Recommendation





encoding.com

World's Largest Encoding Service

Jeff Malkin, President
jeff@encoding.com

Twitter: @encodingdotcom
800.513.1740 x.714

thank you.