**Using HTML Audio and Video**

**Sept. 29, 2015**

References

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**Introduction**

The HTML 5 specification provides support for audio and video media playback through <audio> and <video> elements in web browsers without requiring plug-ins or script. Video plg-ins include Adobe Flash, Silverlight, jQuery plugins, etc. New web browsers for PC/desktops and mobile devices including Safari (iPad, iPhone), Chrome for PC and Android-based smartphones and tablets, IE and Frefox declare the support for HTML 5 video.

**Video Container Formats (file formats)**

Additional complexity complicated the HTML5 video support of audio codecs and video codecs which are used to handle coding-encoding with different levels of compression and quality. A container format is used to store and transmit coded video and audio. Many combinations of codecs and container formats exist, the following three formats including H.264, Ogg Theora, and VP8 (WebM) are the current possible options for encoding your video for HTML5 browsers.

Current Video Formats and Supported Major Browsers for HTML5 [6]-[11]

|  |  |  |  |
| --- | --- | --- | --- |
| **Browser** | **H.264** | **Ogg Theora** | **VP8 (WebM)** |
| IE | native | with install | with install |
| Chrome | native | native | native |
| Safari | native | with install | no |
| Mozilla | with install from Microsoft | native | native |
| Opera | no | native | native |

Comparison of H.264, Ogg and WebM Video Formats [6]-[11]

|  |  |  |  |
| --- | --- | --- | --- |
| **Parameters** | **H.264** | **Ogg Theora** | **VP8 (WebM)** |
| Standard  | MPEG-4 Part 10, Advanced Video Coding (AVC) | Open source  | Open source, Alliance for Open Media |
| Company Ownership | Apple | Xiph.org | Google |
| License Fee | Yes | Free |  |
| Quality per bit rate | Best | Good | Very Good |
| File Compression Rate (File size) | Very good | Good | Lower than good |

Notes

* iPhone records video in H.264 format, but you cannot drop it into an HTML site; need to run it thorough a converter first.
* MP4 videos plays natively in Safari, Chrome, and IE9
* Ogg Theora Vorbis: The Ogg container format with the Theora video codec and Vorbis audio codec is supported in desktop/mobile devices: Firefox, Chrome, and Opera

Video Converters for Mult-Platform (Windows, Mac and Linux)

* Miro Video Converter (free and open source), <http://www.mirovideoconverter.com/> ; for converting almost any video to MP4, WebM (VP8), Ogg Theora, or for Android, iPhone and iPad.
* Hanbrake (free and open source transcoder), <https://handbrake.fr/>

Reference [13] Media Formats Supported by the HTML audio and video elements, <https://developer.mozilla.org/en-US/docs/Web/HTML/Supported_media_formats>

Audio Formats and Supported Major Browsers for HTML5 [6]-[11]

|  |  |  |  |
| --- | --- | --- | --- |
| **Browser** | **H.264 Codec** | **Ogg Theora Codec** | **VP8 Codec (WebM)** |
| IE9+ | native | with install | with install |
| Chrome | native | native | native |
| Safari | native | with install | no |
| Mozilla | with install from Microsoft | native | native |
| Opera | no | native | native |

HTML5 supports audio and video streaming through the two elements <audio> and <video> and related attributes as shown in the following table.

Attributes of the <audio> and <video> elements [6]-[11]

|  |  |  |
| --- | --- | --- |
| **Attribute** | **Value** | **Description** |
| preload | none | metadata | auto | none- to instruct browser not preload media data.metadata – browser should preload only media metadataauto - - browser should preload all media data |
| autoplay | Boolean – any value sets this to true | If present, asks the browser to play the media as soon as the page is loaded, |
| controls | Boolean – any value sets this to true | If present, asks the browser to display the default media controls. It allows for manipulation of methods and properties such as play(), pause() |
| height (video only) | pixels (optional) | For setting the height dimension of the video player. |
| width (video only) | Pixels (optional) | For setting the width of the video player. |
| loop | Boolean – any value set this to true | If present, causes the media to loop indefinitely. |
| poster (video only) | URL of image file | If present, shows the poster image until the first frame of video has downloaded. |
| src | URL | The URL of the media. |

**MIME Type for Audio and Video File Formats**

MIME types

* video/webm -- a WebM media file containing video and possibly audio as well
* audio/webm -- a WebM media file containing only audio
* audio/ogg -- an ogg file containing only aduio
* video/ogg -- an off media file containing video and possibly audio as well
* MP4 H.264 (AAC or MP3)
* audio/mpeg -- MP3

**Audio Playback Examples,** <http://www.etcs.ipfw.edu/~lin/HTML5/audios/HTML5-audiotesting.html>

The following mp4 and oga audio files were found from w3.org and used for testing in this example.

<audio controls>

 <source src="http://media.w3.org/2010/07/bunny/04-Death\_Becomes\_Fur.mp4" type='audio/mp4' />

 <source src="http://media.w3.org/2010/07/bunny/04-Death\_Becomes\_Fur.oga" type='audio/ogg; codecs=vorbis' />

 <p>Your user agent does not support the HTML5 Audio element.</p>

</audio>

WebM Demo Files for Testing

* WebM video for Microsoft IE+9 (Google), <https://tools.google.com/dlpage/webmmf/>
* WebM Files – Demo Files, <http://www.webmfiles.org/demo-files/>
* Chrome, version 450.2454.101, 2015 – OK
* Windows IE9 with WebM video

**Examples of HTML5 Playing WebM Video,** [**http://www.etcs.ipfw.edu/~lin/HTML5/videos/big-buck-bunny-trailler-webM.html**](http://www.etcs.ipfw.edu/~lin/HTML5/videos/big-buck-bunny-trailler-webM.html)

<video width="560" height="280" controls="controls" preload="none" >

<source src="http://www.etcs.ipfw.edu/~lin/HTML5/videos/webmfiles/big-buck-bunny\_trailer.webm" type="video/webm">

< /video>

<!DOCTYPE html >

<html>

<head>

<title>Big Buck Bunny Trailler - WebM File Testing</title>

</head>

<body>

<!-- Thank you! The testing file was downloaded from: http://www.webmfiles.org/demo-files/ -->

<h3>

<p> Big Buck and Bunny Trailer - WebM Video Demo</p>

<p> See <a href="http://www.webmfiles.org/demo-files/">All Demos from Webmfiles.org</a> </p>

</h3>

<p>

<video width="560" height="280" controls="controls" preload="none" >

<source src="http://www.etcs.ipfw.edu/~lin/HTML5/videos/webmfiles/big-buck-bunny\_trailer.webm" type="video/webm">

< /video>

</p>

</body>

</html>

webm-video-ex2.html

<video width="123" height="123" controls >
< source src="http://www.etcs.ipfw.edu/html5/videos/webmfiles/elephansts-dream.webm" type='video/webm; codecs="vp8, vorbis"'>
< /video>

Webm Video Example:

<video src=”myfolder/movie.webm” poster =”movie.jpg” controls>

 <p> Your browser does not support the <code> audio </code>

</video>

<audio src=”myfolder/audio.ogg”>

 <p> Your browser does not support the <code> audio </code>

</audio>

<audio src=”myfolder/audio.ogg” controls autoplay loop>

 <p> Your browser does not support the <code> audio </code>

</audio>

<audio controls>

<source src=”http://media.w3.org/2010/07/bunny/04-Death\_Becomes\_Fur.mp4” type=’audio/mp4’>

<source src=”http://media.w3.org/2010/07/bunny/04-Death\_Becomes\_Fur.oga” type=’audio/ogg; codec=vorbis’>

<p> Your user agent does not support the HTML Audio element. </p>

</audio>

HTML 5 <video> Element

The <video> element is designed to work alone without any detection scripts.

HTML video player

HTML 5 supported video formats include

* MPEG-4
* Flash Video
* Ogg
* WebM
* Audio Video Interleave

Using JavaScript to Control HTML5 Video Player, [https://msdn.microsoft.com/en-us/liBRary/hh924823(v=vs.85).aspx](https://msdn.microsoft.com/en-us/liBRary/hh924823%28v%3Dvs.85%29.aspx)