

Free video in a locked down world

Making Ogg Vorbis and Theora "just work"

What works today?

Browser	Operating system	Latest stable release	Video formats supported			
			Theora	H.264 (MP4)	VP8 (WebM)	VP9 (WebM)
Android browser	Android	4.4.4 "KitKat" (June 19, 2014; 49 days ago) ^[a] ^[38]	2.3 ^[39]	3.0 ^[39]	2.3 ^[39]	No
Chromium	Unix-like	N/A	r18297 ^[40]	Manual install ^[note 1]	r47759 ^[42]	r172738 ^[43]
	Others			No		
Google Chrome		36.0.1985.125 (July 16, 2014; 22 days ago ^[44]) ^[a]	3.0 ^{[45][46]}	3.0 ^{[46][note 2]}	6.0 ^{[48][49]}	29.0 ^[note 3]
Internet Explorer	Windows	11.0.9 (v11.0.9600.17126) ^[52] (10 June 2014; 58 days ago ^[53]) ^[a]	Manual install	9.0 ^[54]	Manual install	No
	Windows Phone	10.0 (November 21, 2012; 20 months ago) ^[a]	No	9.0 ^[55]	No	
	Windows RT	10.0		10.0 ^[56]		
Konqueror	All supported	4.13.1 (May 13, 2014; 2 months ago) ^[a] ^[57]	4.4 ^[note 4]			
Mozilla Firefox	Windows 7+	31.0 (July 22, 2014; 16 days ago ^[59]) ^[a] ESR 31.0 (July 22, 2014; 16 days ago ^[59]) ^[a] ESR 24.7.0 (July 22, 2014; 16 days ago ^[60]) ^[a]	3.5 ^[61]	21.0 ^[note 5]	4.0 ^{[64][65]}	28.0 ^{[66][67]}
	Windows Vista			22.0 ^[68]		
	Linux			26.0 (using GStreamer) ^[note 6]		
	Android			17.0 ^[71]		
	All other supported			No		
Opera		20 for Android (March 18, 2014; 4 months ago ^[72]) ^[a] 12.0.22 for Symbian S60 (June 24, 2012; 2 years ago ^[72]) ^[a] 10.0 for Windows Mobile (March 16, 2010; 4 years ago ^[73]) ^[a]	No	11.50	15.0	16.0
	Windows, OS X	23.0.1522.72 (August 6, 2014; 1 day ago ^[74]) ^[a]	10.50 ^[77]	No	10.60 ^{[78][79]}	No
	Windows (Presto)	12.17 (April 23, 2014; 3 months ago ^[75]) ^[a]				
	Linux, FreeBSD	12.16 (July 4, 2013; 12 months ago ^[76]) ^[a]				
Safari	iOS	7.0.5 (June 30, 2014; 38 days ago ^[80]) ^[a]	No	3.1 ^{[81][82]}	No	No
	OS X	6.1.5 (June 30, 2014; 38 days ago ^[80]) ^[a]	Manual install		Manual install ^[83]	
Web (previously Epiphany)	All supported	3.12.2 (May 20, 2014; 2 months ago) ^[a] ^[84]	2.28 ^[note 7]			

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A little history

- 2002ish: We accept Ogg Vorbis audio - no MP3
- 2005ish: We start accepting Ogg Theora video clips, but with tiny upload size limit.
- Cortado Java applet deployed to provide playback
- 2007 Html5 video tag proposed with Ogg Theora as minimal required codec. Opera, Firefox implement it.

- Spec wars rage as vendors disagree on the minimal mandatory codec.
- Firefox sticks to Ogg only
- Apple and Microsoft implement video with MP4-family codecs
- Google, Opera implement video with both Ogg and MP4

- 2010: Google buys on2's vp8 codec, frees it as WebM format.
- Mozilla, Opera, Adobe promise support.
- Adobe Flash support for webm never materializes :(
- Microsoft, Apple sorta work if you install third-party codecs -- only possible on some systems

- MediaWiki upgrades from OggHandler to TimedMediaHandler
- Transcoding infrastructure added to TMH
- TMH transcoding gains ability to transcode to/from MP4 formats, but it is not switched on yet

- 2013: Brions starts crazy research projects for JS on a whim
- 2013: WMF Engineering starts up a dedicated multimedia team. Hoping for a quick win in improving browser support for video/audio, plan an RfC on Commons to enable the MP4 transcoding
- This stays in legal limbo for a while as Legal analyses the MPEG-LA licenses required
- 2014: the RfC is rejected by community, without a clear mandate for alternatives.
- Multimedia team moves on to other priorities.

Back to the future past

Cortado Java applet

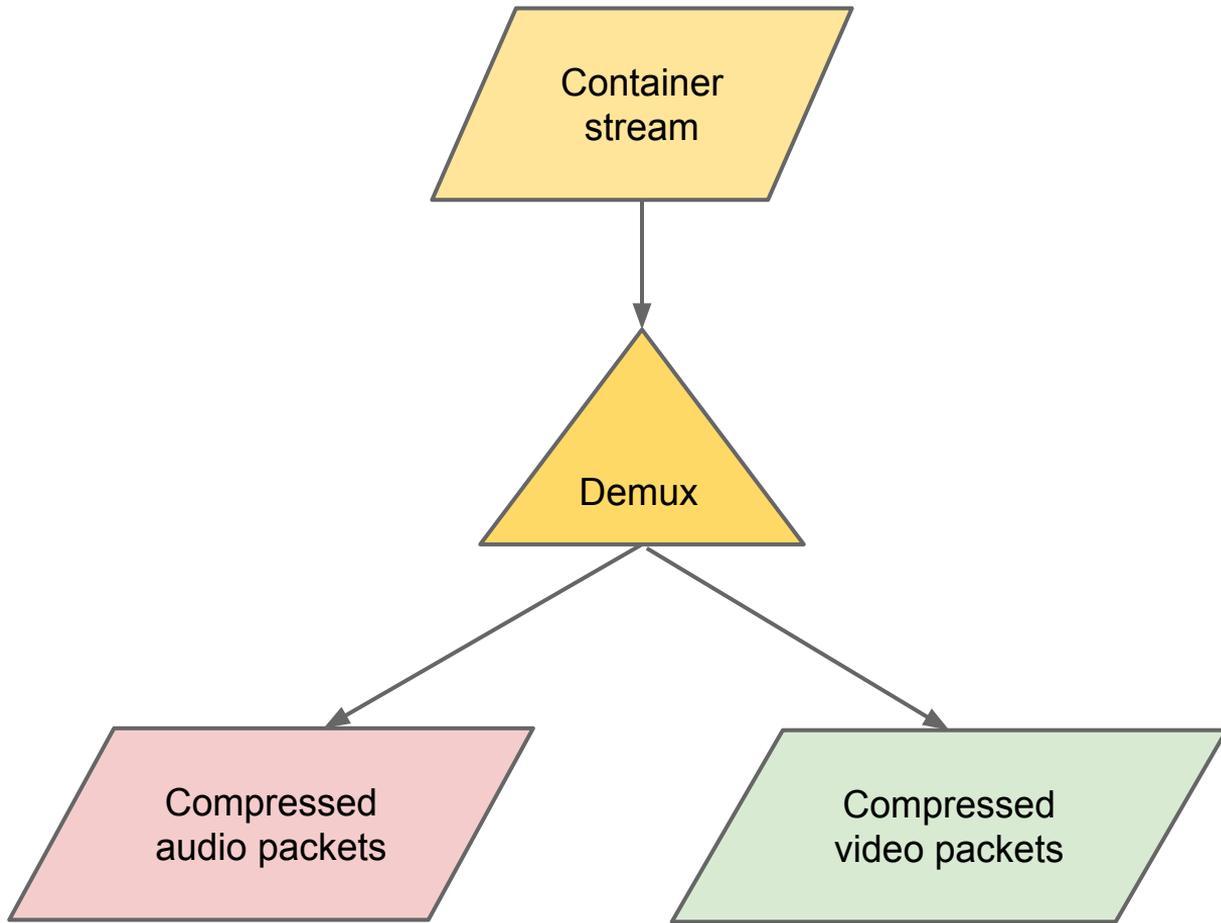
- * First set up for Wikimedia after we started accepting .ogv back in 2006 or so.
- * No longer maintained; former maintainers are sending patches for ogv.js instead.
- * Last signed release not quite compatible with latest Java plugins... we may or may not try to fix the signature in the short term.

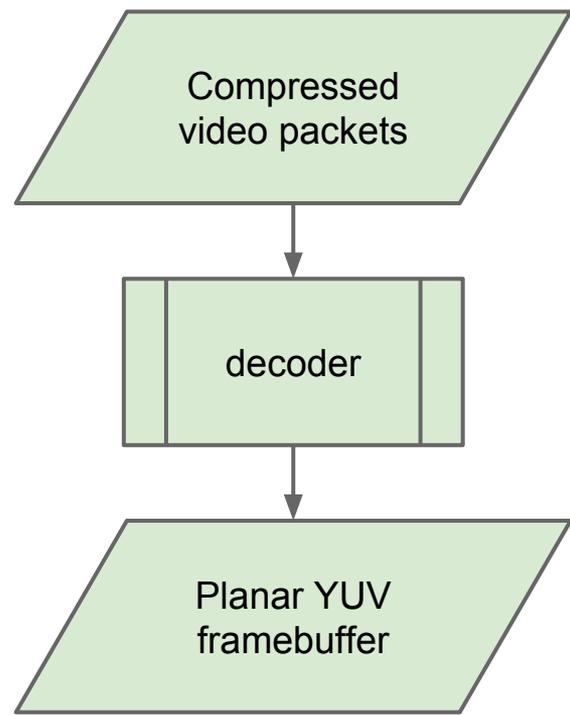
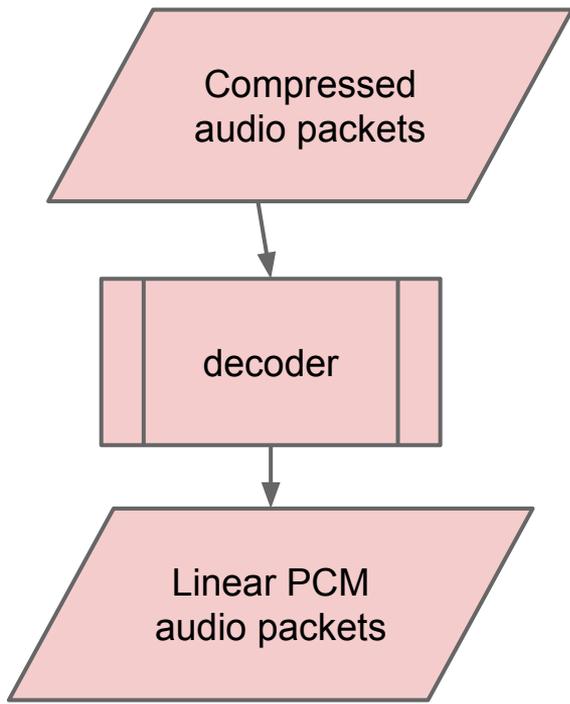
Cortado problems

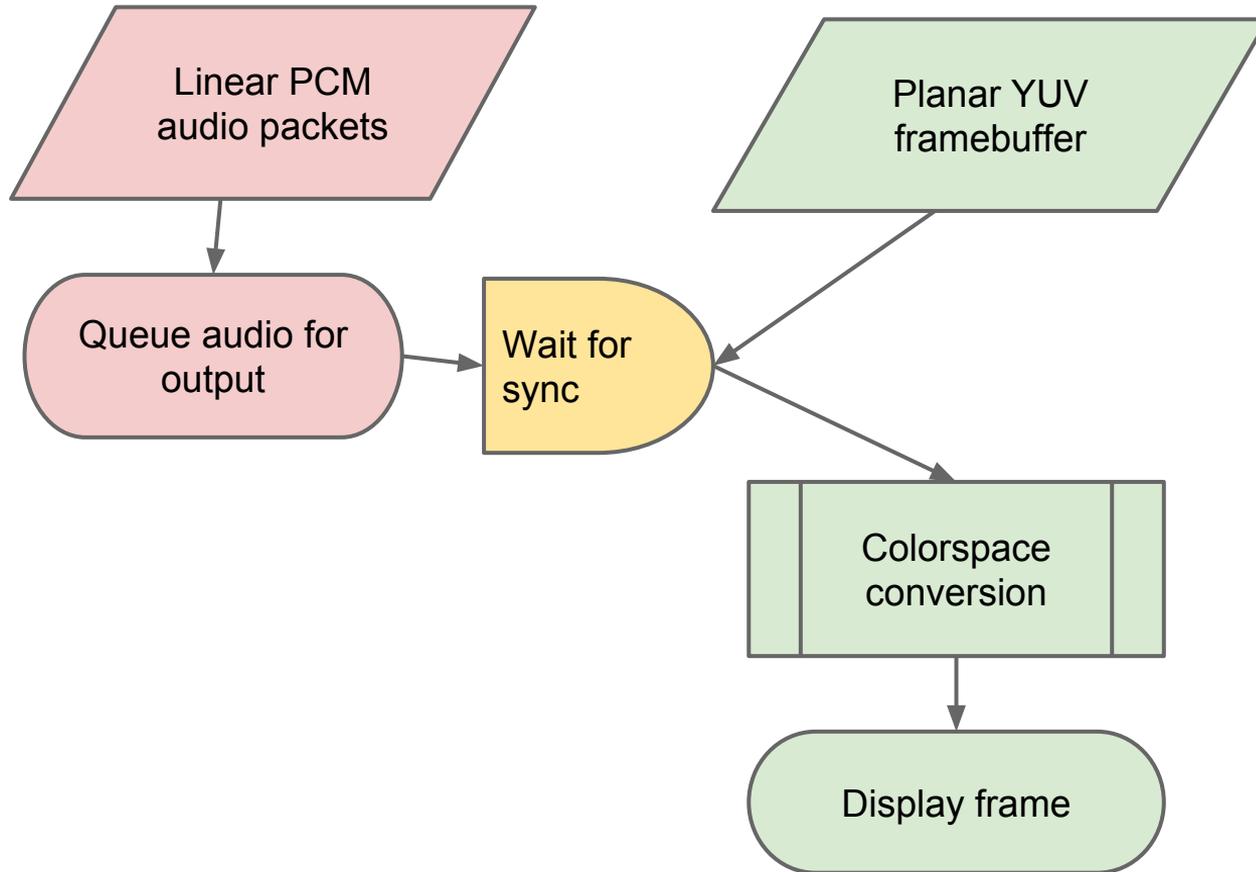
Ecosystem rot:

- * Java not as widely installed as it once was, and is frequently disabled when installed
- * Java applets not available at all on popular platforms like iOS
- * Java applet container has slow startup
- * Java applets don't play well with CSS in IE

**What is multimedia
playback?**







So what do you need?

- demuxer
- audio decoder
- video decoder

- audio output
- video output / color conversion
- sync

Low-level

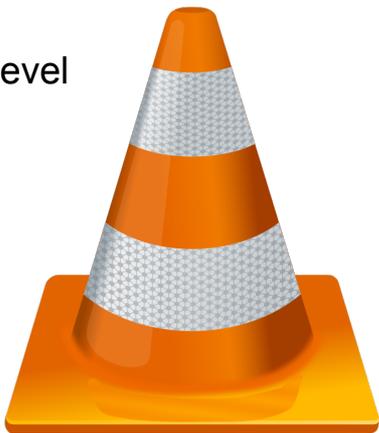


xiph.org



theora.org

High-level



VLCKit



High-level frameworks

Do a lot for you

Heavyweight,
increases app size

Already available for
some OSs

Not available for
web/JS/Flash

Commercial support
available

License FUD?

Low-level frameworks

Lightweight

Have to do sync,
network, output
yourself

Easy to cross-compile
for web

Clean licensing

ogv.js in browsers

- demuxer: **libogg**
- audio decoder: **libvorbis**
- video decoder: **libtheora**

- audio output: **Web Audio or Flash**
- video output: **<canvas> + WebGL**
- sync: **audio playback position + timers**

OgvKit in iOS app

- demuxer: **libogg**
- audio decoder: **libvorbis**
- video decoder: **libtheora**

- audio output: **Audio Queue Services**
- video output: **OpenGL ES**
- sync: **audio playback position + timers**

ogv.js



emscripten

- * Ogg Vorbis (audio), Theora (video)
- * Xiph's reference C decoder libraries compiled to JavaScript with emscripten -- no manual reimplementation of codecs
- * Requires recent browsers with canvas and typed arrays
- * Can be accelerated with WebGL

libogg
libvorbis
libtheoradec
+
C library wrapper



clang / LLVM



emscripten



JavaScript source code

- * Typed Arrays / ArrayBuffers simulate C memory model
- * Can interface with “native” JavaScript code wrapper to create a codec library

ogv.js non-targets

- * Desktop Firefox/Chrome/Opera
- * Android



These already play Ogg and WebM natively, but client-side JS codecs could be useful for other projects.

ogv.js targets

Windows 7/8/8.1 Internet Explorer:



Version	JIT fast enough?	Web Audio?	WebGL?
IE 10	yes	Flash shim	no
IE 11	yes	Flash shim	yes
IE next version	yes	"in development"	yes

ogv.js targets

Mac OS X Safari

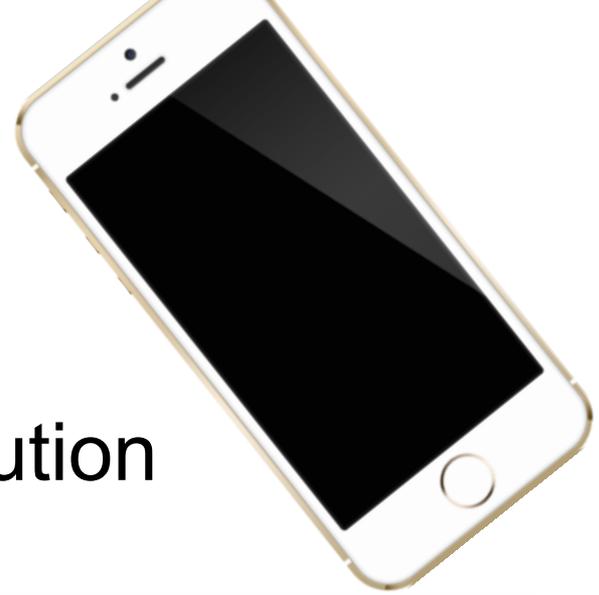


Version	JIT fast enough?	Web Audio?	WebGL?
10.8 / Safari 6.1	yes	yes	no
10.9 / Safari 7	yes	yes	no
10.10 / Safari 8 beta	yes	yes	yes

ogv.js browsers

iOS - Mobile Safari only

32-bit devices limited video resolution



Version	JIT fast enough?	Web Audio?	WebGL?
iOS 7 32-bit	varies	yes	no
iOS 7 64-bit	yes	yes	no
iOS 7 32-bit beta	varies	yes	yes
iOS 8 64-bit beta	yes	yes	yes

ogv.js future targets

Windows Phone as of 8.1:



Audio not available: no Flash, no Web Audio

Video: can play at 160p

Web Audio may come in a future version...

ogv.swf



Windows XP and Vista users are stuck on old versions of IE.

ogv.js's C components compiled to Flash with Crossbridge: ogv.swf!

ogv.js can transparently fall back on SWF on IE 9 (need to test 8/7/6)

Demo

<https://ogvjs-testing.wmflabs.org>

Questions?

<https://ogvjs-testing.wmflabs.org>