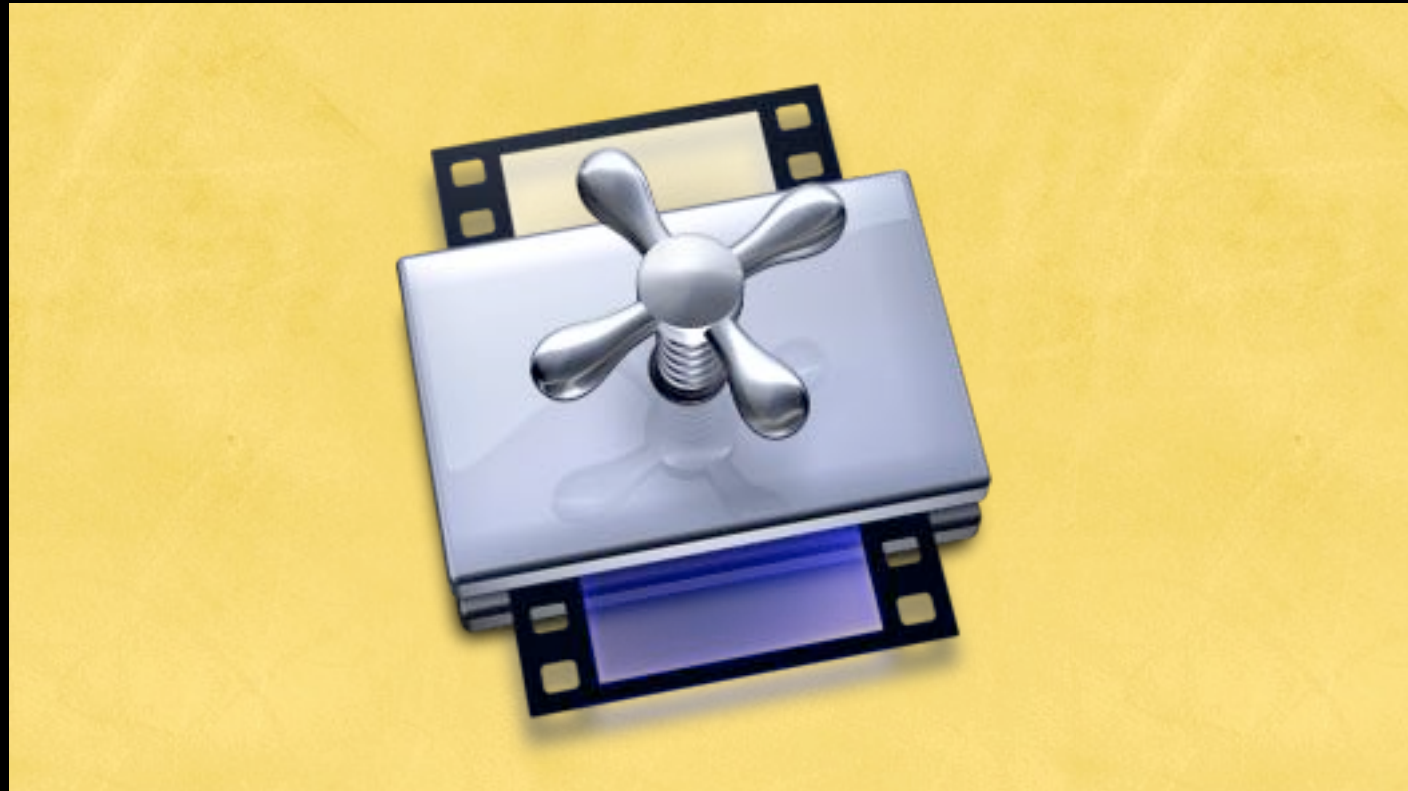


Outputting Blu-ray, DVD and to the Web

Micheal Jones (@Chealion)

Joe Media Group (@joemediagroup)



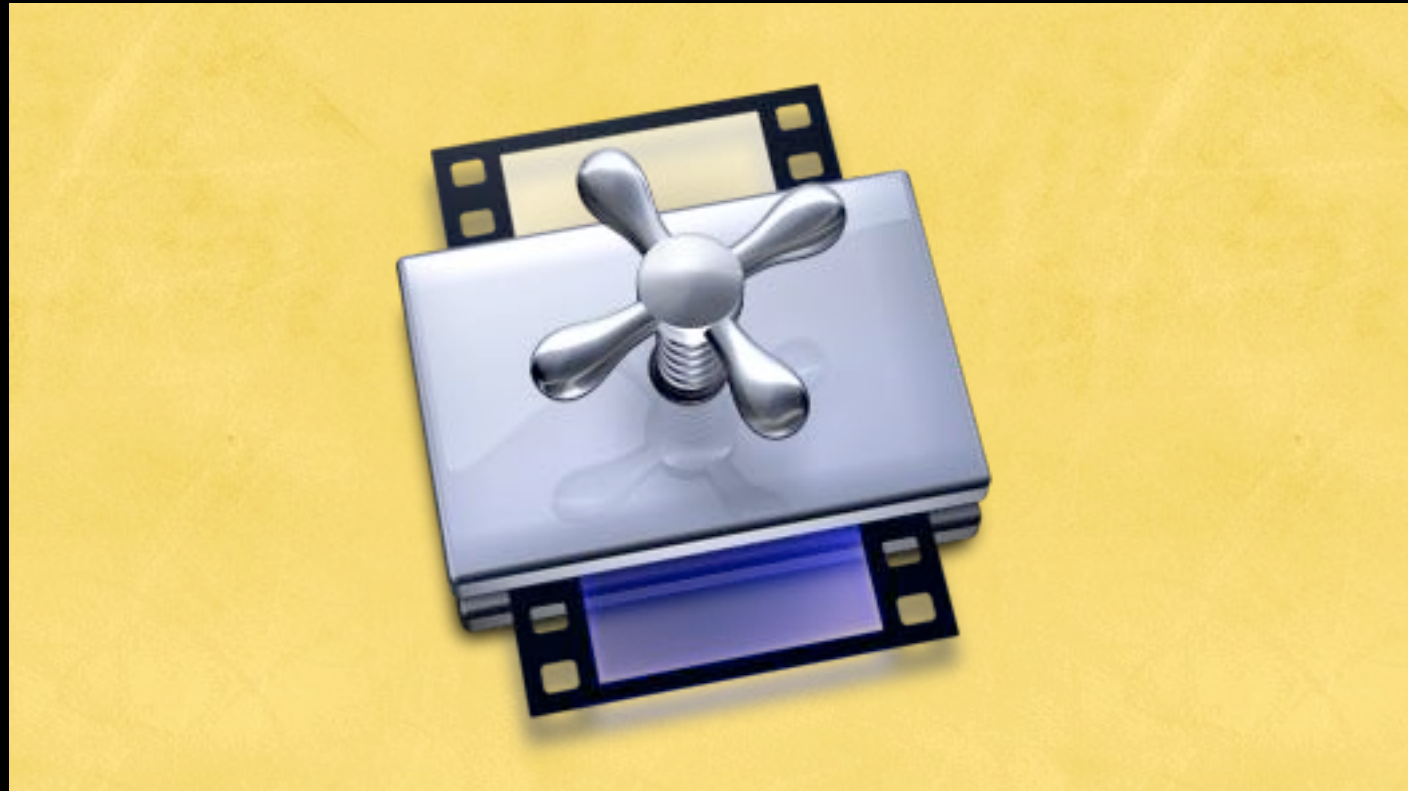
Step 1: Send to Compressor



Step 2: Search for Output



Step 3: Profit?



More than throwing files
through Compressor?!



DVD

Overview

Resolution	SD
Codecs	MPEG-2
Max Bit Rate (Mbps)	9.8 (V+A)

Workflow

1. Compression
2. Disc Authoring
3. Burning

Tools



CC License: <http://www.flickr.com/photos/faceinthecrowd/4145134577>



Toast



Compressor + DVD Studio Pro



Direct Output to Recorder

How can we make it better?

- Avoiding aliasing from resizing
- Bitrate Tweaking (will talk about this later)
- 2-pass encoding - what does it really do?

Anti-aliasing

- Buggy



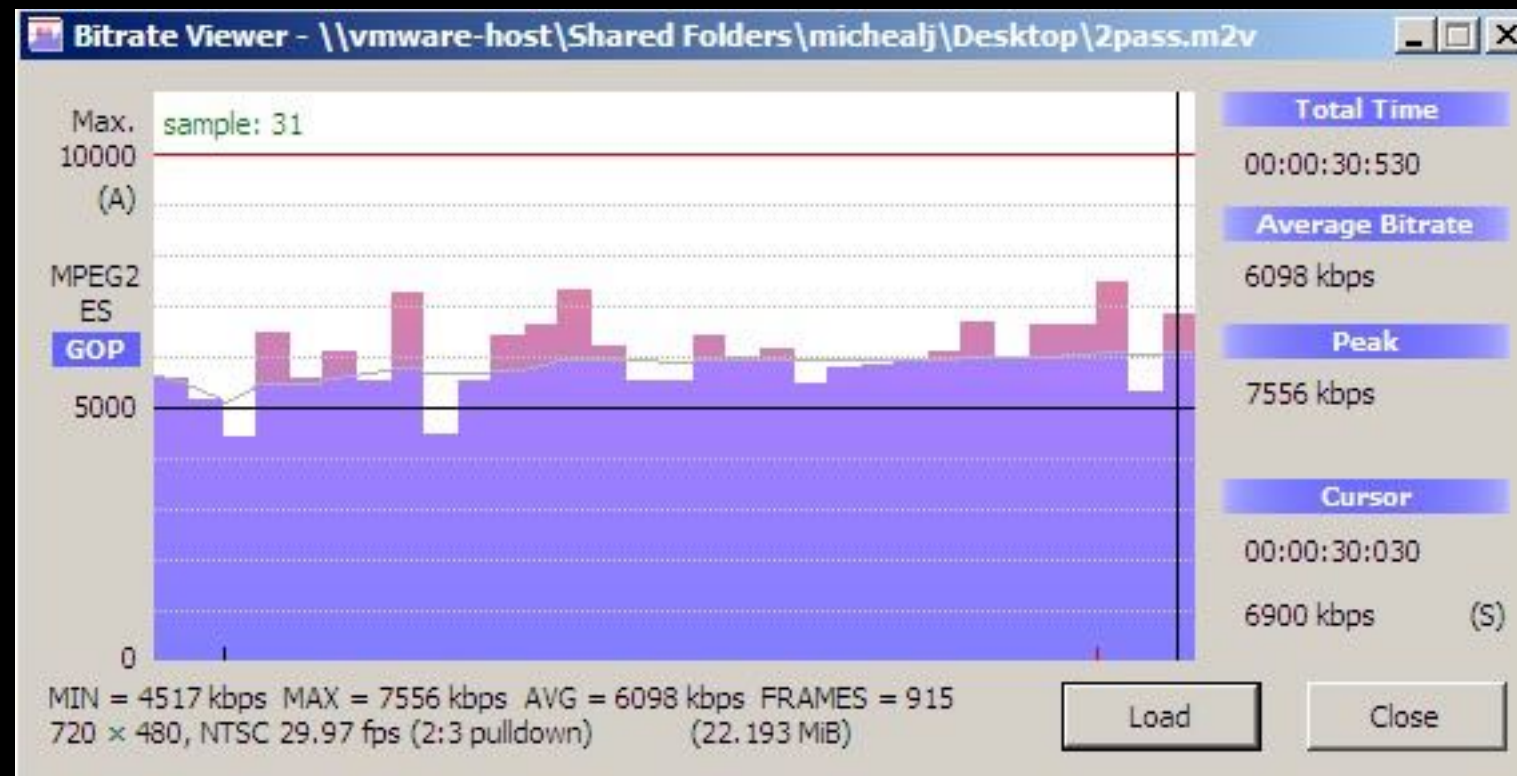
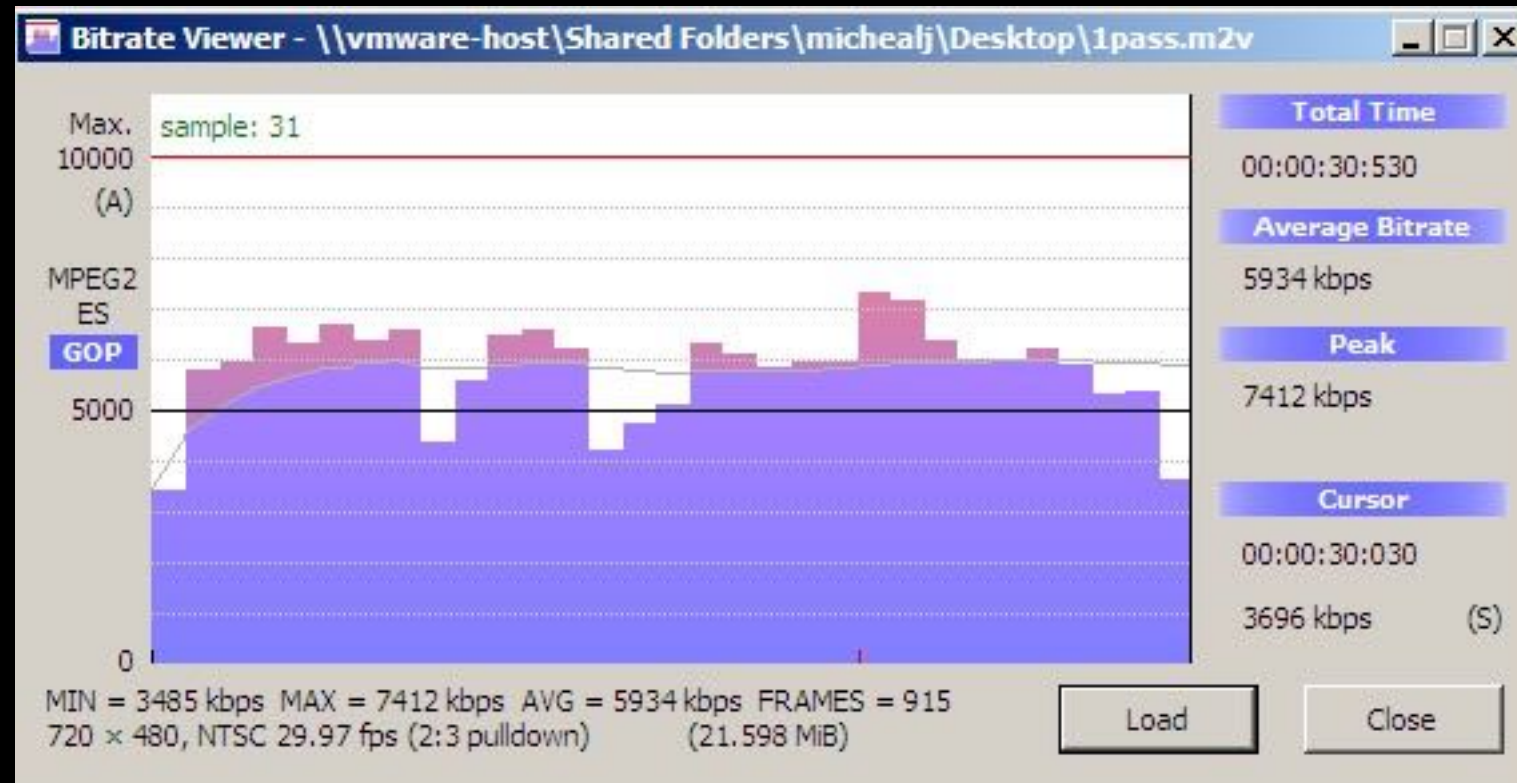
2-pass Encoding

- Time Consuming - 1.5x to more longer
- All about the bitrate constraint
- Predictable File Size

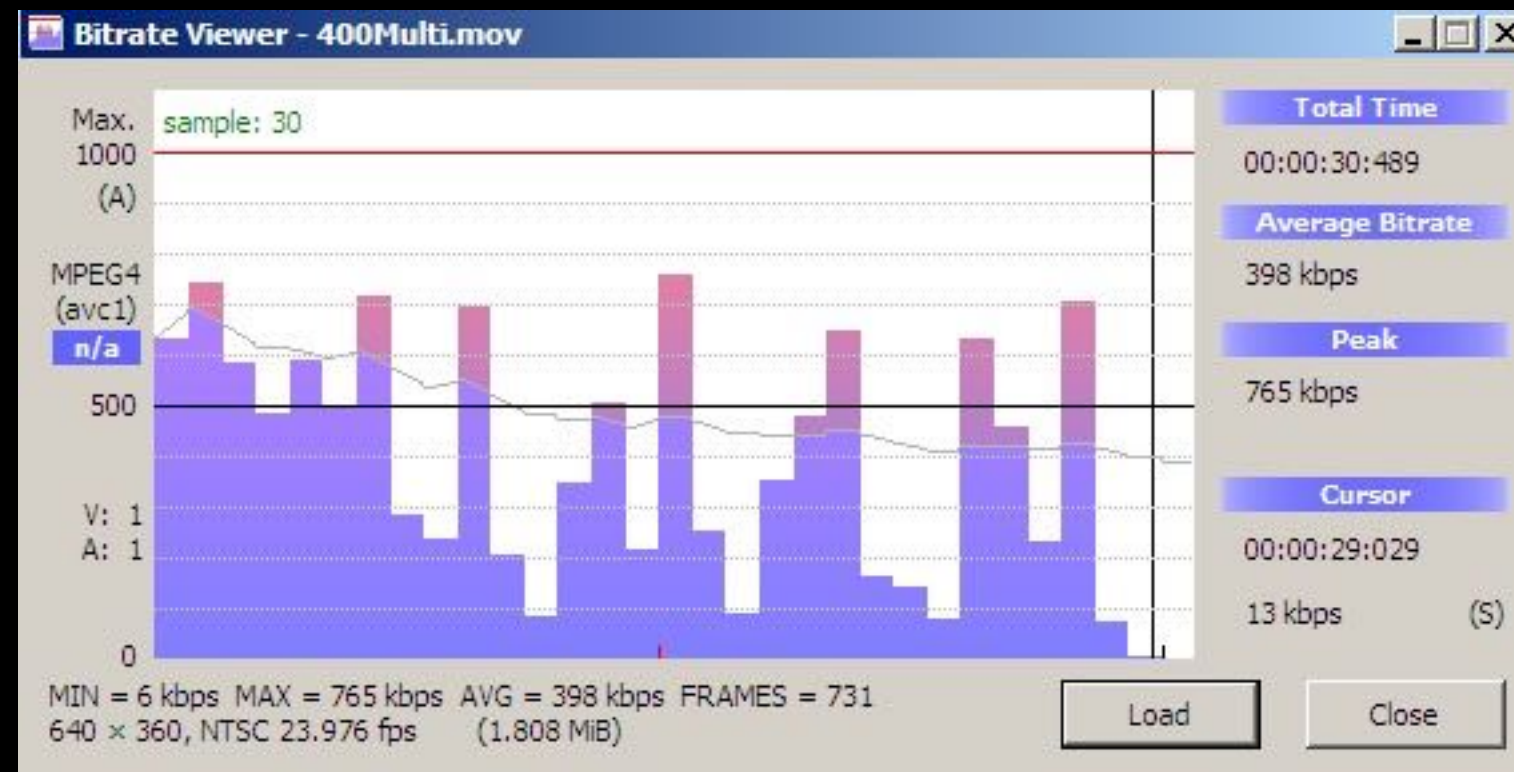
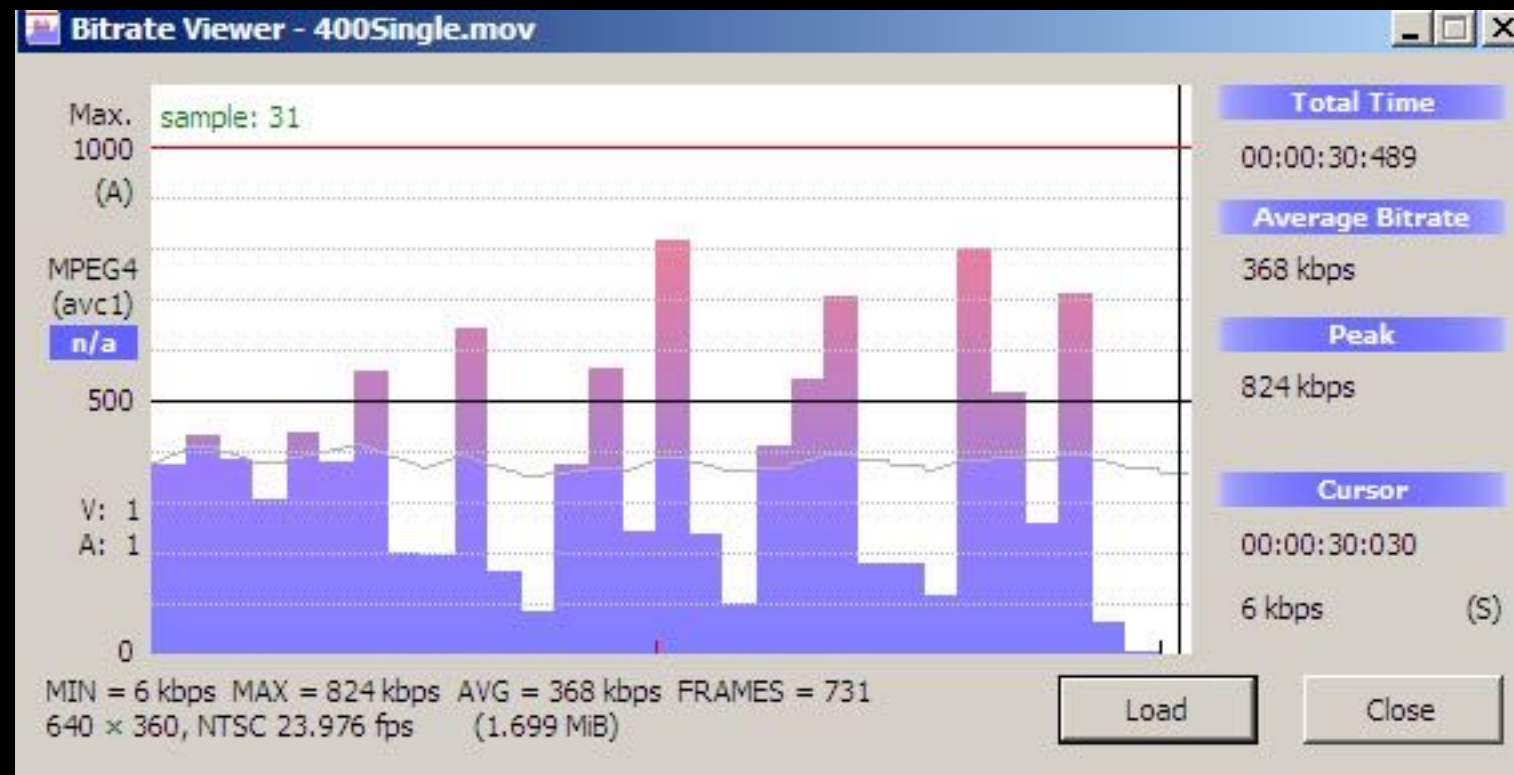
2-pass Encoding

- 1 pass with CRF: Predictable quality, unpredictable filesize
- 2 pass with ABR: Unpredictable quality, predictable filesize
- Average Bit Rate vs Constant Rate Factor

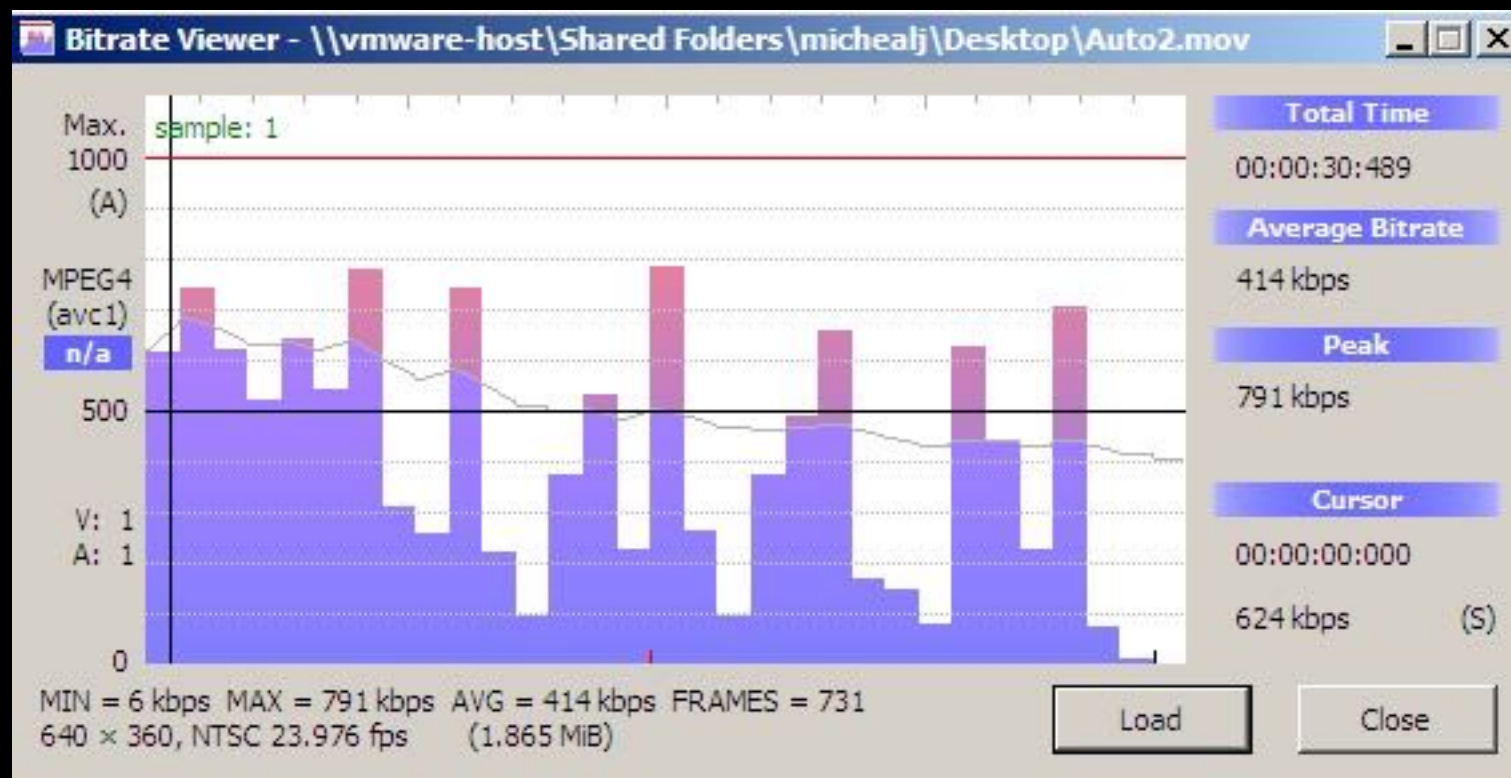
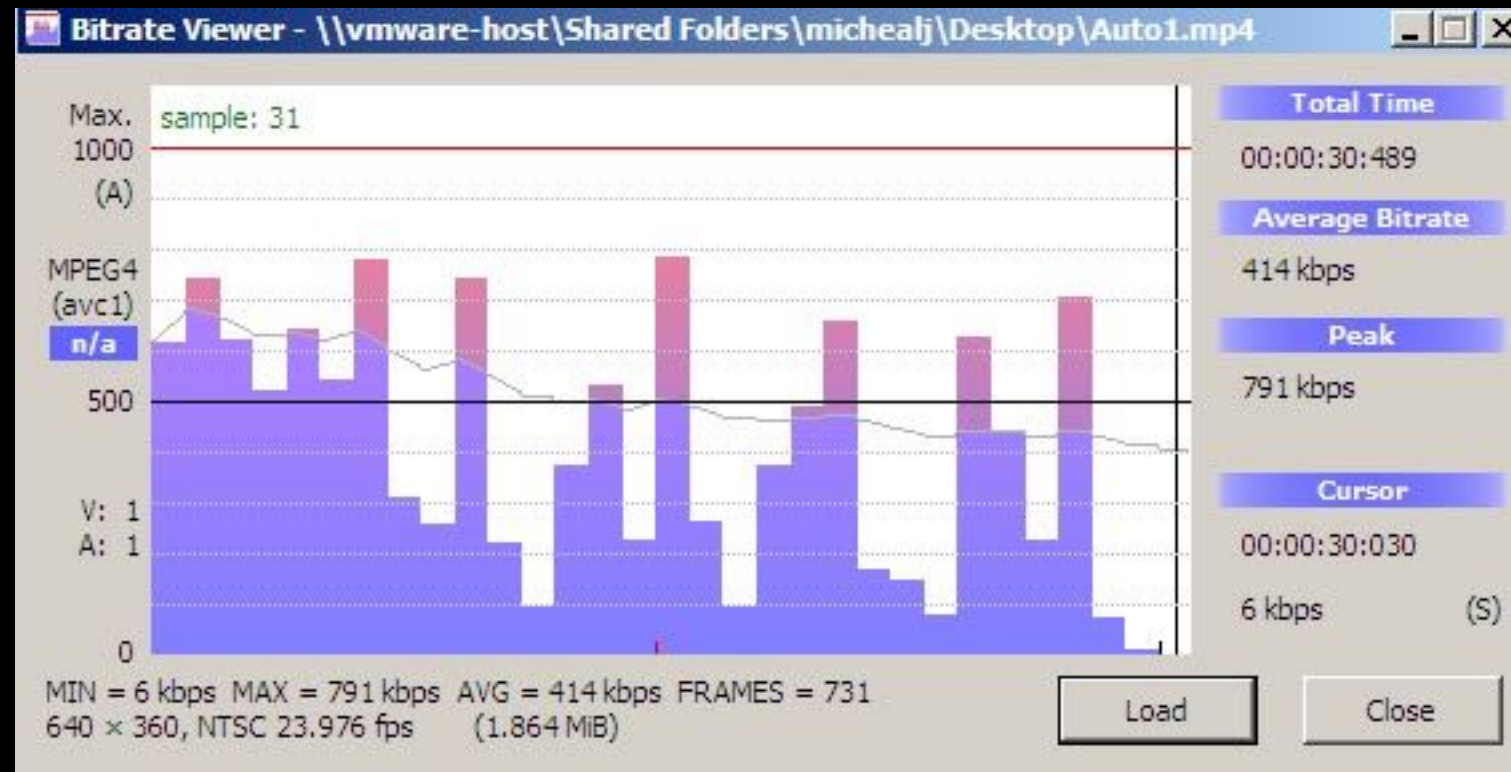
MPEG-2



H.264 (400kbps)



H.264 with CRF Enabled





Blu-ray

Overview

Resolution	HD
Codecs	MPEG-2, VC-1, H.264
Max Bit Rate (Mbps)	40 (V) / 48 (V+A)

Workflow

1. Compression
2. Disc Authoring
3. Burning

Tools



Codec Choice

MPEG-2

H.264

VC-1



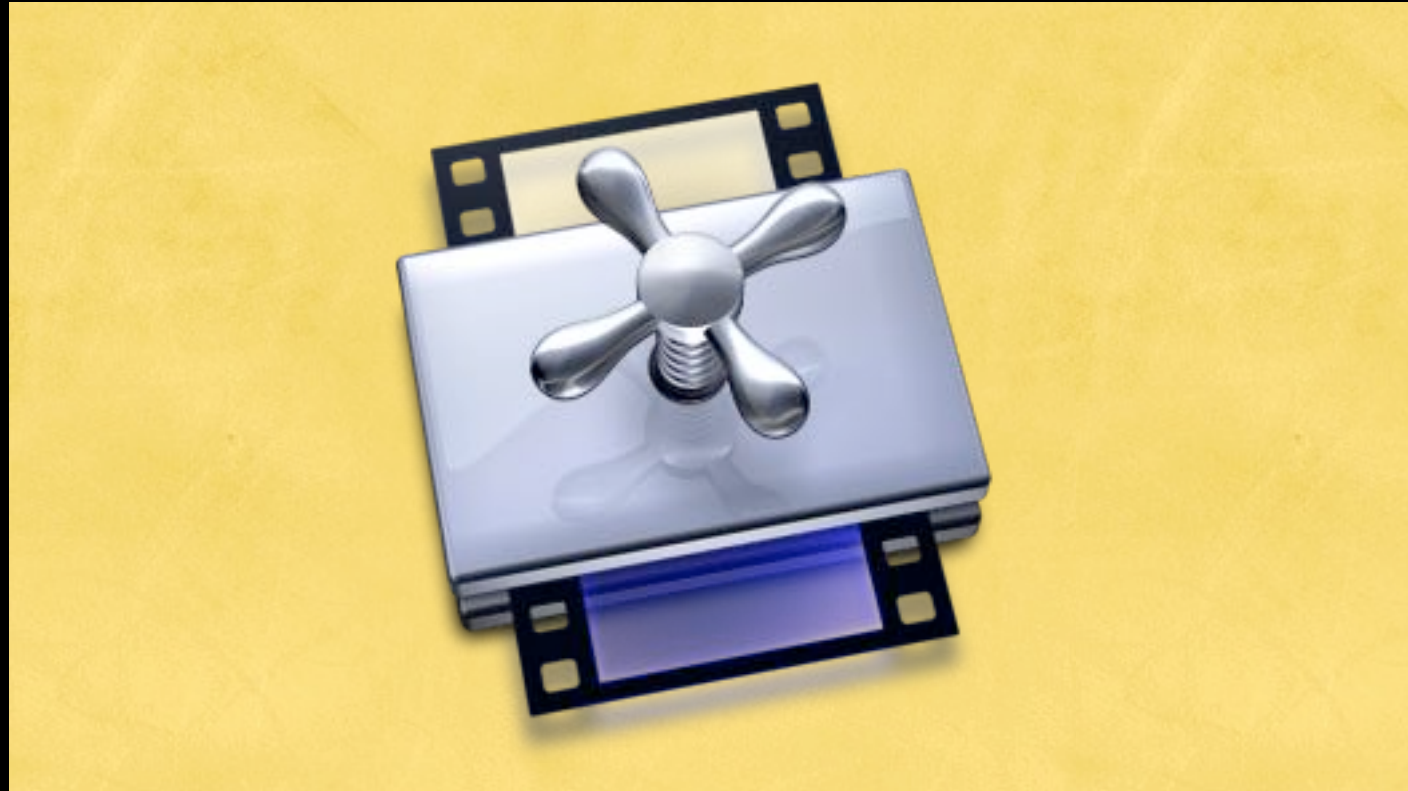
Toast



Toast BD Plugin

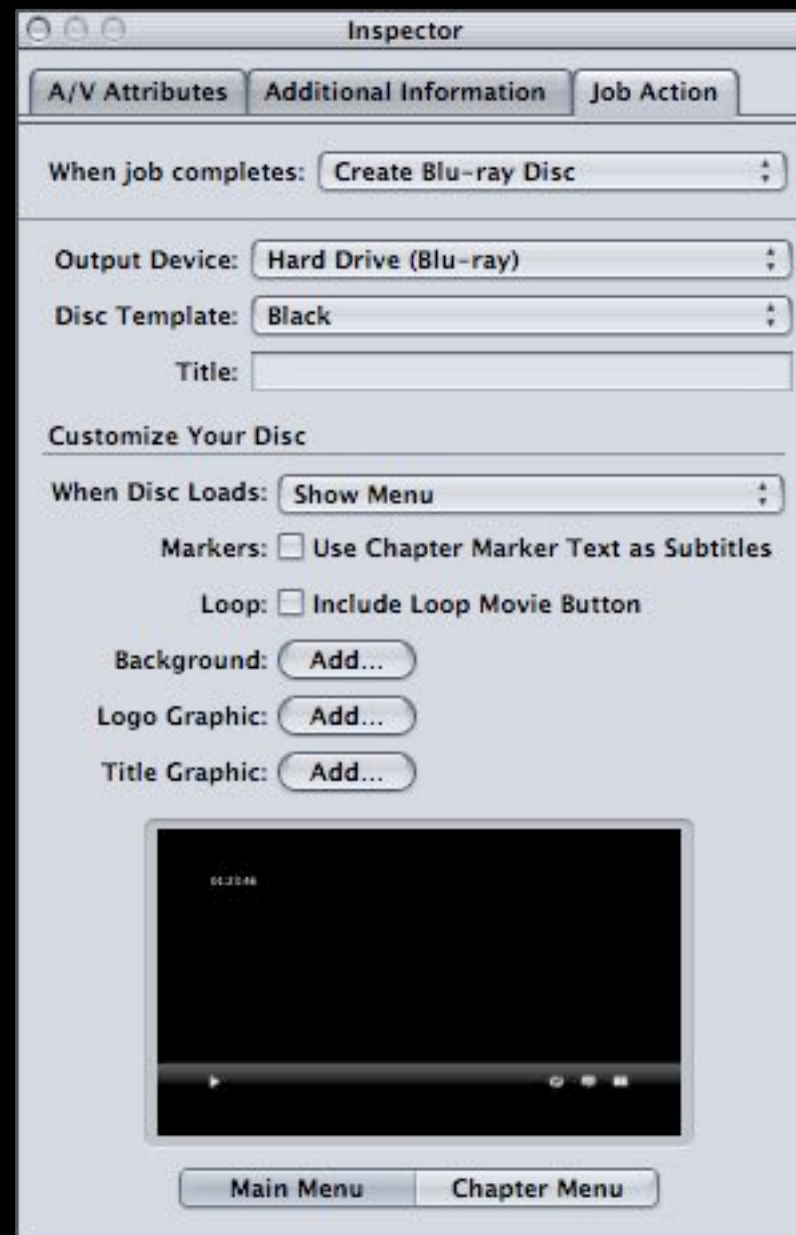


Encore



Compressor

DEMO



Testing / Playback

- VideoLan Client aka VLC (<http://videolan.org>)
- Blu-ray Player

Additional Resources

Ken Stone: http://www.kenstone.net/fcp_homepage/blu-ray_fcp_fields.html

How can we make it better?

- 2-pass encoding
- Bitrate Tweaking (will talk about this later)



Web

Overview

Resolution	Who Knows?
Codecs	What's a codec?
Max Bit Rate (Mbps)	How big is your pipe?

Workflow

1. Finding out specs/host
2. Compression
3. Uploading / Delivery

Finding Out Specs

Audience Capabilities



Mobile



Television



Desktop

Hosting

- Yourself
- Video Service (eg. Vimeo)
- Something else?

Vimeo

Codec: H.264


SD: 640x360


HD: 1280x720

Vimeo


← → ↻ vimeo.com/9199216


vimeo Join **vimeo** Log In Explore Help Search Videos

 **Episode 1 "Hot Coffee"**
by **Bunny Hug**
1 year ago



More
Show me **Bunny Hug's videos** See all


 4. **Episode 2 "After Math"**
by **Bunny Hug**
1 year ago

 3. **Episode 1 "Hot Coffee"**
by **Bunny Hug**
1 year ago


In this very first episode, Travis and Celeste - two former lovers and current roommates - share an awkward conversation over a pot of coffee.


****WARNING - Adult content - Curse words - Maybe a bare bum, but probably not****

[Switch to HTML5 player](#)

Credits
 **Bunny Hug**

22 Likes

 **Lizendo** 10 months ago
Great!!! Congratulations!

 **Monito Films** 10 months ago

Advertisement
vimeo FESTIVAL AWARDS
WINNER
EXPERIMENTAL

YouTube

Codec: H.264 and On2 VP6

SD: 427x240, 640x360

HD: 1280x720, 1920x1080, 4K

YouTube

The screenshot shows a web browser window with the YouTube website. The address bar displays the URL `www.youtube.com/watch?v=GQtQAggt-7Y`. The YouTube logo is in the top left, followed by a search bar and links for 'Browse', 'Upload', 'Create Account', and 'Sign In'. The video title is 'BUNNY HUG Episode #1 "Hot Coffee"' by 'BunnyHugShow', which has 8 videos and a 'Subscribe' button. The video player shows a scene with two puppets on a stage. A settings menu is open over the video, showing options for 720p HD, 480p, 360p (selected), and 240p. Below the video, there are buttons for 'Like', 'Add to', 'Share', and 'Embed', along with a view count of 1,540. The description states the video was posted on February 03, 2010, with 21 likes and 1 dislike. A comment section is visible at the bottom with one comment from 'HackedMyAccount'.

← → ↻ www.youtube.com/watch?v=GQtQAggt-7Y

You Tube Search Browse Upload Create Account Sign In

BUNNY HUG Episode #1 "Hot Coffee"

BunnyHugShow 8 videos

Settings...
720p HD
480p
• 360p
240p

0:02 / 8:29 360p

Like + Add to Share Embed 1,540

BunnyHugShow February 03, 2010 21 likes, 1 dislikes
In this very first episode, Travis and Celeste - two former lovers and curren...

All Comments (5) see all

Respond to this video...

Well done!
HackedMyAccount 9 months ago

Travis seems like such a jerk though... and she sounds like a jerk... Michelle

Suggestions

- BUNNY HUG Episode #2 "After Math" by BunnyHugShow 766 views 6:33
- BUNNY HUG - Behind the Scene #2 by BunnyHugShow 88 views 1:18
- Napalm girl : Bunnyhug by mellerbeck 2,321 views 3:35
- HD Vision Glasses by Anisam 289,747 views 1:43
- The Hot Coffee Effect by glavideos 442,826 views 2:47
- Tae Bo Cardio Billy Blanks 2/5 by XxSweetLady 2,496,058 views 7:42
- Annoying Orange: Pacmania by realannoyingorange 14,568,413 views 2:27
- Chuck Berry - Johnny B. Goode live by Helminen1 8,922,968 views 5:00

YouTube



Your Own

Whatever you want...

Your Own



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Utilities Consumer Advocate - How Are Your Outlets?



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joe: media group is an award-winning television and film production company that specializes in the development, production and post-production of screen-based marketing and entertainment.

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T: [403.264.5400](tel:403.264.5400)

F: [403.228.9304](tel:403.228.9304)

TF

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Your Own



Compressing

Common Formats

- Flash Video
- H.264 in a QuickTime or MP4 container
- WebM (VP8/Vorbis)
- Ogg (Theora/Vorbis)

Video	Audio
H.264	AAC
On2VP6	MP3
Sorenson Spark	
VP8	Ogg Vorbis
Ogg Theora	
WMV	WMA

Codecs!

WMV

- Requires Flip4Mac for playback/encoding on OS X

Ogg Theora

- On2 VP3 for video, Ogg Vorbis for audio
- Open
- Limited playback options

WebM

- On2 VP8 for video, Ogg Vorbis for audio
- Tools are very new
- QuickTime 7 Player Export only
- “Open”
- Limited playback options

Flash Specific Formats

- Sorenson Spark (H.263), On2 VP6, H.264
- MP3, ADPCM, Linear PCM, AAC, more
- Performance Issues
- FLV or F4V container

H.264

- Coupled with AAC - usually in a MP4 container
- Wide playback support on devices
- Exceptionally flexible
- Licensing fees

Flash and Video

- Flash is the player - not just a format
- Still the most widely available playback method

Video Services

Vimeo

<http://vimeo.com/help/compression>

YouTube

[http://www.google.com/support/youtube/bin/answer.py?
hl=en&answer=55744](http://www.google.com/support/youtube/bin/answer.py?hl=en&answer=55744)

[http://www.google.com/support/youtube/bin/answer.py?
hl=en&answer=132460](http://www.google.com/support/youtube/bin/answer.py?hl=en&answer=132460)

Recommendations

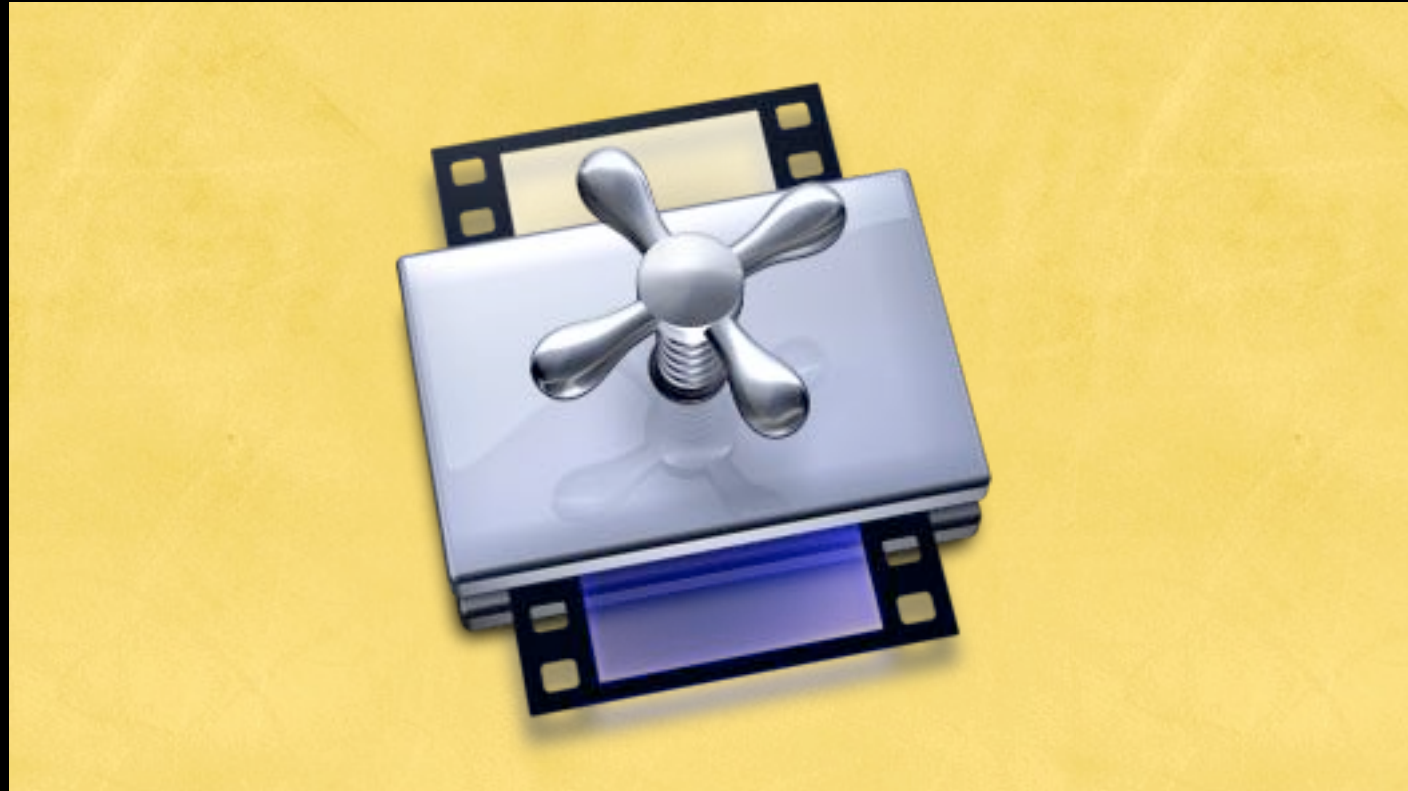
tl;dr:

H.264 @ high bitrate
Deinterlaced
AAC Audio

Tools



CC License: <http://www.flickr.com/photos/tomheld/3218951576>



Compressor



Episode

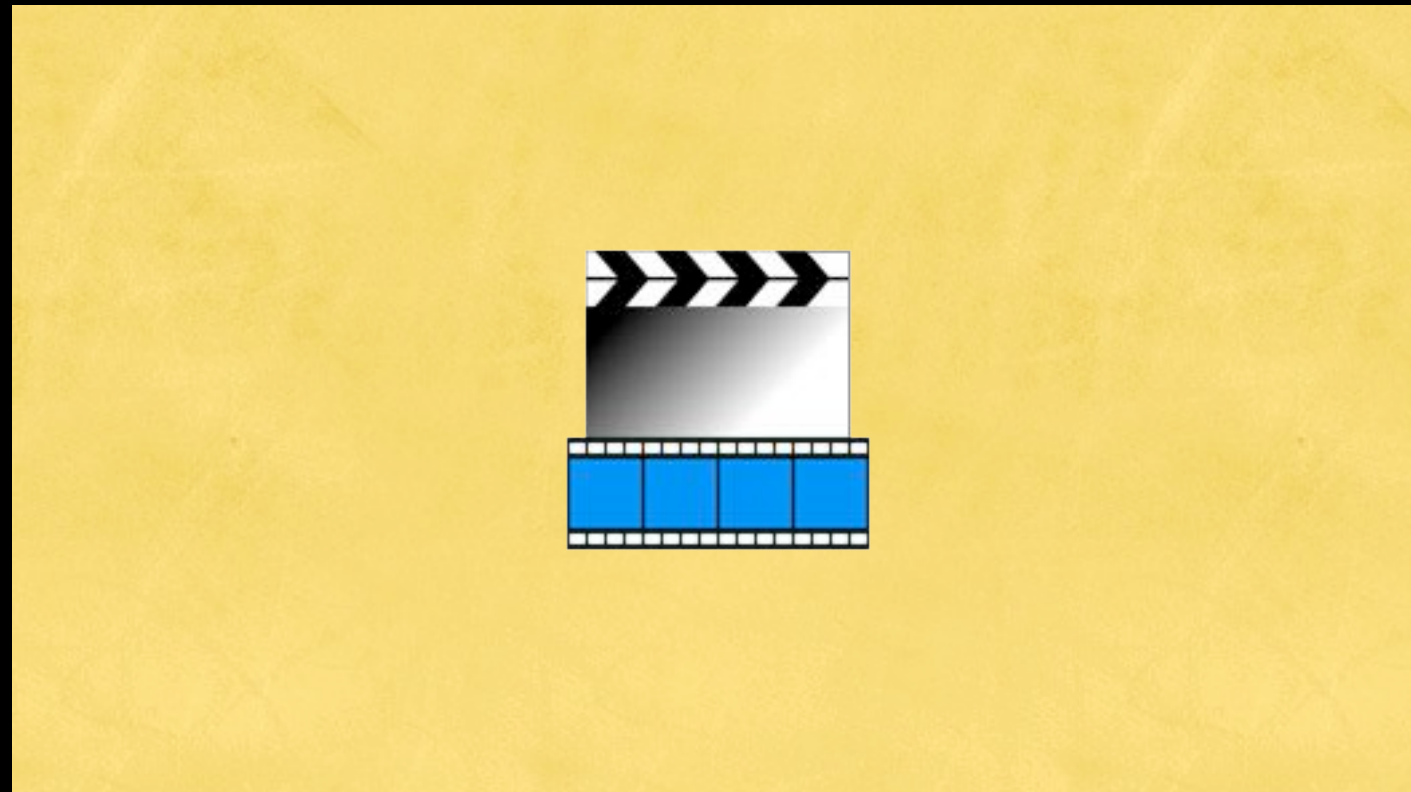


Squeeze



Adobe
Media Encoder

Other Compressors



MPEG Streamclip



MediaInfo Mac

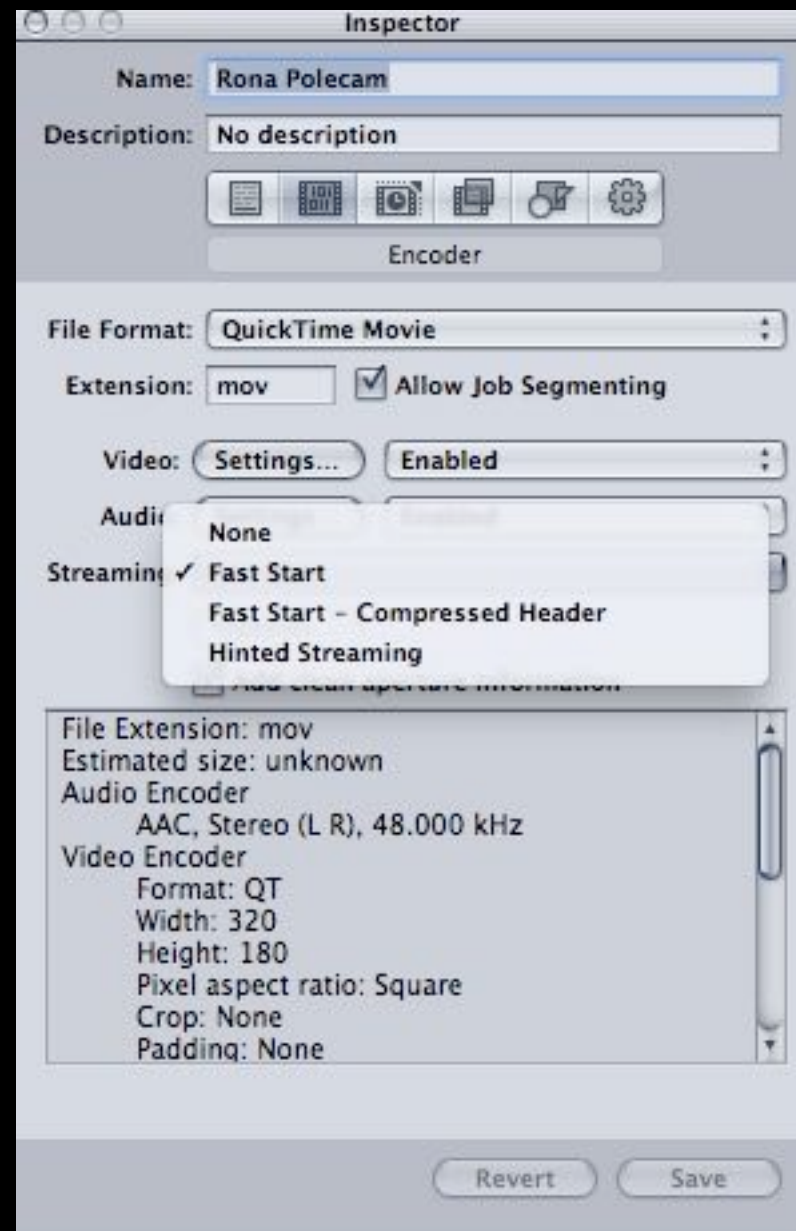
How can we make it better?

- Avoiding aliasing from resizing
- Bitrate Tweaking (One more slide!)
- Changing Codecs
- Using Fast Start on MP4/MOV containers
- Changing Encoders
- Learn Calculus

Bitrate Tweaking

- Bit Rate = Amount of information per second
- How much is needed?
- CBR vs. VBR
- Visual Quality
- Resolution
- No one answer - hence “art”

Fast Start



Encoders

H.264 has several implementations:

- Apple
- MainConcept (Episode, Squeeze, AME)
- x264 (Open Source)
- http://en.wikipedia.org/wiki/H.264/MPEG-4_AVC#Software_encoder_feature_comparison

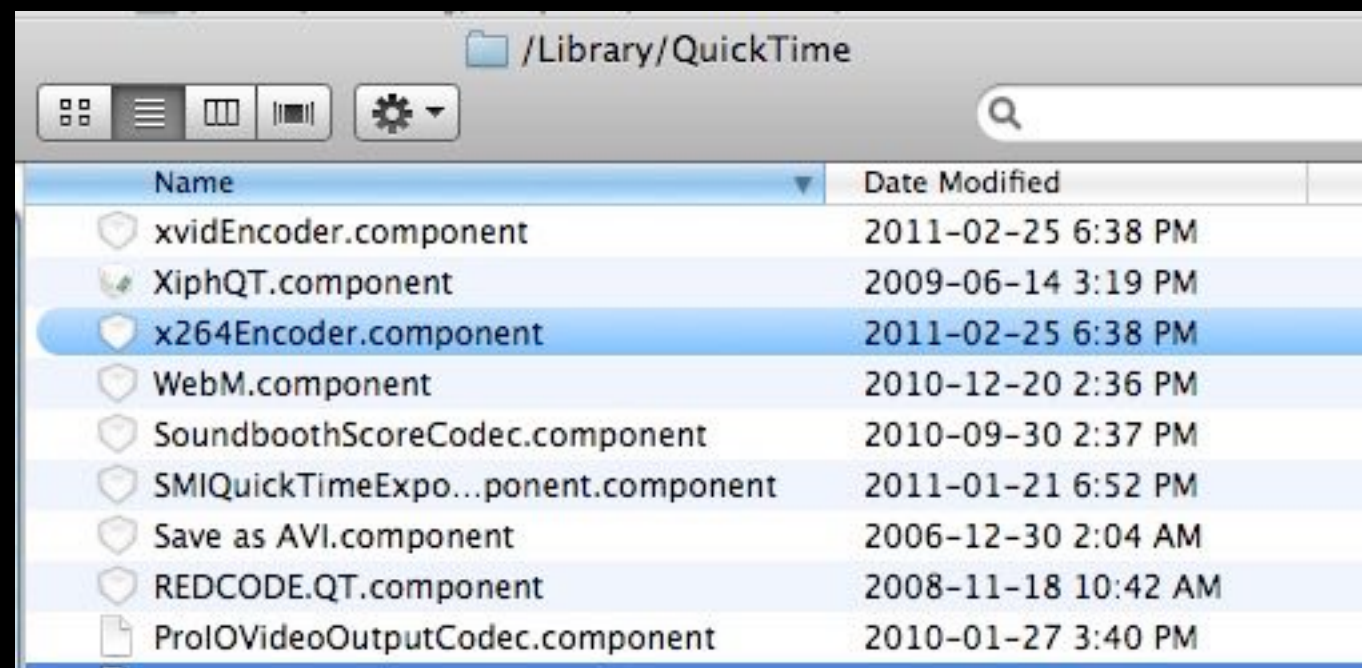
x264 & Mac OS X

QuickTime component by MyCometG3:

<http://www003.upp.so-net.ne.jp/mycometg3/>

Extremely flexible

x264 & Mac OS X



x264 Does Calculus For Me

- Single Pass
- CRF = Constant Quality Mode

x264 Does Calculus For Me

AUTO

Codec Settings (Summary) : CABAC / 5 Ref Frames
QF (like Gordian Knot) : 0.075
Codec Settings (CABAC) : Yes
Codec Settings (Reference Frames) : 5
Video Stream Length : 30s 488ms
Video Stream BitRate : 414 Kbps
Video Stream BitRate Mode : VBR
Bit Depth : 8 bits
Video Stream Size : 1.50 MiB (81%)

414

500kbps (2pass)

QF (like Gordian Knot) : 0.090
Codec Settings (CABAC) : Yes
Codec Settings (Reference Frames) : 5
Video Stream Length : 30s 488ms
Video Stream BitRate : 495 Kbps
Video Stream BitRate Mode : VBR
Bit Depth : 8 bits
Video Stream Size : 1.80 MiB (83%)

495

Q&A

Contact:

Twitter: @Chealion

Email: micheal@mcjones.ca / michealj@joemedia.tv

Slides @ chealion.ca & joemedia.tv

Mac O-S ten

<http://support.apple.com/kb/TA22541>

The current version of Mac OS is [Mac OS X](#) (pronounced "Mac O-S ten").
9, Mac OS 8, System 7.5, and System 6. Major releases of Mac OS X inclu