



## **Recommended codecs for stable WATCHOUT playback is:**

**MPEG-2, h264, WMV or Animation** (*when transparency is needed*), in that order.

### **MPEG-2, settings to start with:**

- standard definition NTSC, PAL and sizes up to 1920x1080 FullHD
- width and height dimensions to be evenly divisible by 16/8 (1920 is ok, 1910 is not)
- Constant Bit-Rate (CBR)
  - 6-8 Mbps for Standard Definition (SD)
  - 12-15 Mbps for HD 1280x720
  - 20-25 Mbps for HD 1920x1080
- All I-Frames, sequence headers on every Group Of Pictures (GOP), GOP structure 15 frames or less
- All I-Frames might require 20-30% higher bit-rate
- 50/60p might require higher bit-rates
- de-interlace (make file progressive) during encoding, if necessary (eg. mainly camera based content)
- use elementary stream
- use separate audio (.wav)

### **Windows Media, WMV, settings to start with:**

- standard definition NTSC, PAL and sizes up to, and beyond, 1920x1080 FullHD
- any width/height dimensions are ok (but not necessarily recommended)
- Constant Bit Rate, and about 75% of the bit-rate of MPEG-2
- use minimum keyframe setting (1 second, or 30 frames)... the default is much higher
- de-interlace (make file progressive) during encoding, if necessary (eg. mainly camera based content)
- very nice picture, at lower bit rates than MPEG-2
- use separate audio (.wav)
- WM9 is more processor intensive on playback than MPEG-2

# WATCHOUT

## **h264/.mp4, settings to start with:**

- standard definition NTSC, PAL and sizes up to, and beyond, 1920x1080 FullHD
- any width/height dimensions are ok (but not necessarily recommended)
- Constant Bit Rate (CBR), and about 50-75% of the bit-rate of MPEG-2
- de-interlace (make file progressive) during encoding, if necessary (eg. mainly camera based content)
- very nice picture, at lower bit rates than MPEG-2
- use separate audio (.wav). IF sound is included, it should NOT be AAC-audio.
- h264 is much more processor intensive on playback than MPEG-2 and even WMV.
- file ending .mp4 recommended.

*QuickTime has 2 export settings: MPEG-4 = .mp4 and H264 = .mov, .mp4 is more compatible with standard-compliant h264-players, other than QuickTime*

## **COMMENTS / NOTES:**

### **Frame-rate**

*23.98/24 fps is a very poor choice, for clips intended for 50 or 60Hz displays  
At worst, will result in severe stuttering of the video content.*

*If not converted, WATCHOUT does it on the fly, this will increase the load on the Display computer and can be even more ugly than a leisure time conversion.*

*WATCHOUT will play almost any frame-rate, but a little consideration here will inevitably yield better visual results. As always, testing is crucial.*

### **Other QuickTime formats - ProRes, PhotoJPEG etc**

*QuickTime is NOT a format, but a container, that support different codecs.  
.mov as a file ending does not tell you which one is used.*

*WATCHOUT support some of these itself, i.e. h264 (.mp4) and Animation.*

*Others are played back via QuickTime, as ProRes, PhotoJPEG/M-JPEG etc,  
with various success rate. This is a bit out of our control, since it's Apples code.*

*QuickTime are single-threaded on Windows, and do not support all formats/profiles  
in Windows, as in MacOSX.*

*WATCHOUT:s supplied codecs is multi-threaded, as is WATCHOUT.*

### **- ProRes/PhotoJPEG/M-JPEG is NOT recommended for WATCHOUT playback.**

*If it works for you, great. Some swear by it, some carefully avoid it.*

*These codecs usually also mean higher, sometimes VERY much higher bit-rates,  
and increases the load on your hardware, more so than MPEG-2, h264 or WMV,  
at the same resolution, **so make sure your hardware support this!***



## Some tools for analyzing & encoding

(not in any way endorsed by Dataton AB)

### Analyze

*Mac/Win*

**MediaInfo:** <http://mediainfo.sourceforge.net/en/Download>

*Win*

**GSpot:** <http://www.headbands.com/gspot/>

**WMSnoop:** <http://www.sliq.com/default.asp?view=wmsnoop>

**GraphStudio:** <http://blog.monogram.sk/janos/tools/monogram-graphstudio/>

### Encode

*Mac/Win*

**Telestream Episode 6:** <http://www.telestream.net/episode/overview.htm>

**Adobe Media Encoder CS6:** <http://www.adobe.com/products/mediaencoder.html>

*Win*

**GV ProCoder3:** [http://www.grassvalley.com/products/procoder\\_3](http://www.grassvalley.com/products/procoder_3)

**TMPGEnc:** <http://tmpgenc.pegasys-inc.com/en/index.html>

*Mac*

**Compressor4:** <http://www.apple.com/finalcutpro/compressor/>

*Some other ideas:*

<http://www.telestream.net/pdfs/user-guides/Simple-Encoding-Recipes-2010.pdf>