Ben Waggoner, Program Manager, Video Encoding

Professional Content Group, Microsoft

BEST PRACTICES FOR WINDOWS MEDIA ENCODING

Agenda

- Demo
- RTSP Streaming v. Progressive Download
- The new codec
- Windows Media Parameters
- Windows Media Encoder Studio Edition

Demo – different codecs

- Windows Media Encoder wizard defaults
  - Web server (progressive download)
  - Full-Screen video, CD-quality Audio
- Windows Media Encoder
  - Same as above, with WMP11 Beta codec
- Windows Media Encoder Studio Edition
  - Custom settings with segment reencodes

Real-Time Streaming

- Files come off Windows Server 2003, via RTSP
  - mms:// still supported, but deprecated
- Controls time, with variable quality
- Encoding tips
  - Intelligent Streaming
  - 2-pass CBR Encoding for on demand
  - Longer buffer times improve quality, hurt latency

Progressive Download

- Files coming off web server
- Provide fixed quality, but variable time
- Works fine with WMDRM
- Encode as 2-pass Peak Limited VBR
- No Intelligent Streaming

Intelligent Streaming

- Multiple versions of video and audio in single file
- Highest bitrate within bandwidth chosen
- Can switch up or down as bandwidth changes
- WMP before 9
  - Can't switch between audio tracks
  - Can't switch between different resolution video tracks
- Only for real-time streaming
  - Just balloons bitrate for file-based delivery

Enhanced Codec for compression

- Windows Media Player 11 installs new codecs
  - Improved WMV9 Main Profile (backwards compatible)
  - New WMV9 Advanced Profile (WVC1 – new decoder)
- Improved compression efficiency in WME, others
- Advanced Registry Key settings to tune encoding
- GUI controls coming in WMEStudio Edition
- 4-thread optimized (big gains on dual-duals)

Useful Registry Keys

- Compression Optimization Type=1
  - Big quality improvement
  - 2-4x slower encoding
- Lookahead=16
  - Lets codec look into future to compensate for changes
  - Only for 1-pass CBR (hence live broadcasting)
- Motion Search Level=-2
  - Adds integer chroma search for motion

WME Studio Edition

- Windows Media Encoder Studio Edition
  - I call it "Studio Edition"
- Studio-oriented professional compression tool
- Beta soon
- 1.0 later this year

Key Studio Edition Features

- Great preprocessing
  - Lancoz Scaling
  - Advanced compression-tuned 10-bit to 8-bit dithering
- Advanced codec features
  - WMV9-Advanced Profile (WVC1) only for beta
  - GUI to set advanced parameters
- Segment-based (3rd pass) reencoding
  - Change encoding settings for particular segments!

Coming post-beta

- Later in 2006
    - Main Profile (backwards compatible WMV9)
    - VC-1 Elementary Stream for HD DVD
    - Many more segment re-encode parameters
- This is a long-term effort
    - Let us know what you need!
- Working with 3rd parties to include VC-1 technology in their products as well

Q&A

Links

- ## Windows media "For Pros" subsite
  - http://www.microsoft.com/windows/windowsmedia/forpros/default.mspx
- ## Windows Media Encoder Studio Edition
  - http://www.microsoft.com/windows/windowsmedia/forpros/encoderse/default.aspx
- ## Advanced Setting Registration modes
  - http://www.microsoft.com/windows/windowsmedia/howto/articles/codecadvancedsettings.aspx
- ## Windows Media Player 11 Beta
  - http://www.microsoft.com/windows/windowsmedia/player/11/default.aspx

Contact Info

◆ Me
  ✦ Ben.waggoner@microsoft.com
  ✦ Yes, I'm happy to email you a copy of this PowerPoint
◆ My Book
  ✦ http://cmpbooks.com/compression
◆ My class at Stanford (Aug 21-25)
  ✦ http://www.digitalmediaacademy.org/courses/video-compression-training.html