Exporting to Windows Media format

Windows Media is the Microsoft digital media technology. Originally introduced as NetShow, it has improved significantly, and the Windows Media 9 platform, released early 2003, is a popular proprietary digital media platform.

Using Windows Media for streaming delivery

Windows Media originally focused on real-time streaming, and even though it has become a more diverse technology over time, real-time streaming is still a core focus. Windows Media 9 has an excellent streaming architecture, excelling with MBR technology, servers, and codecs.

The MBR solution in Windows Media format is called Intelligent Streaming. Prior to Windows Media 9, it was limited, handling up to five video data rate bands per file, but all of these data rate bands needed to share the same resolution and audio track.

Intelligent Streaming was significantly improved with Windows Media 9. Now, it can use over a dozen data rate bands for both video and audio. The video bands can vary resolution as well, making it possible to provide a single link that can scale from audio-only for slower modems up to high definition playback for a local area network (LAN). The only significant restriction to Intelligent Streaming is that all bands must share the same codec and encoding mode (for example, Windows Media 9 with a 2-pass CBR).

To use the Intelligent Streaming options, you need to host content on a Windows Media 9 server running on Microsoft Windows Server™ 2003. If you need to host a video file on Windows Media Server 4.1 for Microsoft Windows NT° and Windows 2000, use the same resolution for all video bands and only use a single audio band. Older players (earlier than Windows Media 9) also need to use a subset of the available features.

Using Windows Media for progressive download

Windows Media 7 and earlier aren't suitable for progressive download, but this changed with version 7.1. Now the players reliably play partially downloaded material, and the encoders support download-optimized modes, such as 2-pass bit rate limited VBR.

Using Windows Media for disc-based delivery

Windows Media works with CD-ROM and DVD-ROM, as long as Windows Media Player or another Microsoft DirectShow-based player is used. However, because data rates are much less limited on discs, peak data rates that the computer's processor can decode may limit playback performance. The peak constrained VBR mode can be used in those cases to guarantee performance on the minimum playback platform.

The Macromedia Director CD-ROM authoring environment can't use DirectShow for video playback directly. To use Windows Media files in Director, you need a third-party plug-in.

Windows Media players

There is a wide variety of different Windows Media players available for different platforms, making compatibility a moving target. Recent versions of the player aren't always available for some common operating systems, a condition that requires you to provide multiple versions of the content or exclude some platforms. The following list describes the most commonly deployed players.

Windows Media Player 9 and later (Windows)

Windows Media Player 9 runs on Windows operating systems as old as Windows 98 Second Edition (SE); Player 10 runs only on Windows XP. These players support the full suite of features for Windows Media Video 9 (WMV9) and are the only versions that support new features, like multichannel audio, interlaced video, and nonsquare pixels.

Windows Media Player 9 for Mac OS X (10.1 and later)

The player for Mac OS supports the WMV9 and Windows Media Audio 9 (WMA9) codecs. Otherwise, the update is similar to older Mac OS players, which lack support for nonsquare pixels and interlaced video. Performance for low resolution content is quite good, but even the fastest G5 computers can't play high definition Windows Media Player 9 content. Note that none of the Mac OS X players support the older, but still common, ACELP.net speech audio codec.

Microsoft has no plans for further updates of the player. However, users can install Windows Media Components for QuickTime, by Flip4Mac™, to play Windows Media content directly in QuickTime Player or a browser.

Windows Media audio (WMA) codecs
Windows Media also has a variety of audio codecs optimized for different uses.

Windows Media Audio 9
Windows Media Audio 9 codec is the latest version of the WMA encoder, and its output is backward-compatible with the earlier WMA2 decoder. Any version of Windows Media Player still in use should be compatible with WMA9. Now that there are other codecs with the WMA9 prefix, the original WMA is now generally called WMA Standard, although it doesn't appear that way in encoding tools. In this document WMA9 refers to the standard codec.

WMA9 now supports all of the WMA9 bit rate modes. However, you should use CBR mode if you require compatibility with Windows Media Player 6.4. Note that the Bit rate VBR mode enables you to limit the data rate to between 48 and 192 Kbps. With the CBR mode, you choose from 5 to 320 Kbps. The Quality-based VBR mode doesn't provide a full 0-100 range, but offers a number of options that are selectable in a drop-down menu.

There is a 0 Kbps option for WMA9 CBR as well. This option is for making audio-free streaming files compatible with the legacy Windows Media Services 4.1 used prior to Windows Server 2003. Intelligent Streaming for that server requires each file to have one and only one audio track, so the 0 Kbps option provides a way to have an audio-free file.

Windows Media Audio 9 Professional
WMA9 Professional is a new codec for multichannel and high-resolution audio. It requires data rates of at least 128 Kbps, so it isn't appropriate for most web content. It was the first codec in one of the major architectures to support more than two audio channels, sample rates higher than 48 KHz, and bit depths greater than 16 bits. You should use it only with source that requires one of those features given its high-data-rate requirements. High-bit-rate WMA9 does just fine with stereo 16-bit sources at 48 KHz or less.

Multichannel WMA9 Professional plays back on systems with only stereo speakers, combining channels intelligently. It can also fold down (convert to fewer playback channels) well in other cases, as from 7.1 to 5.1, or to left, right, and center gaming systems. Still, multichannel is best when you anticipate a significant number of listeners who have multichannel audio playback.

WMA9 Professional supports all of the data rate modes of WMA9, including 2-pass CBR and all three types of VBR. As always, you should use 2-pass CBR for streaming and VBR for file-based playback.

Windows Media Audio 9 Lossless
The WMA9 Lossless codec is a mathematically lossless codec for archiving audio. Because a lossless compression can't guarantee any particular data rate, it is only 1-pass VBR. WMA9 Lossless works on the same players as WMA9 Professional. Lossless is overkill for delivery and you should only use it for archiving and mastering. It is also popular for digitally archiving audio CD content.