

Multimedia

As an industry leader, Microsoft is working with Internet organizations, such as W3C, to define and drive the adoption of HTML standards for multimedia. HTML extensions that were first presented in Microsoft Internet Explorer 2.0 for inline AVI video and background sounds have been adopted and formerly included in the W3C HTML specification. Microsoft is continuing to innovate and bring new multimedia capabilities to Web pages with Internet Explorer 3.0.

Web pages come to life with rich support of integrated multimedia functionality in Internet Explorer 3.0, making it the best browser for viewing all popular media formats for video, audio, and graphics on the Internet.

Whether linked to Web pages or embedded in Web pages via standard HTML commands, an unprecedented level of media playback support is provided in Internet Explorer 3.0. In addition, the flexible architecture of leading edge technologies like ActiveMovie Control means that new and emerging media formats can be quickly supported without having to get a new version of the browser or plug-in application.

Microsoft Internet Explorer 3.0 continues Microsoft's leadership in advancing multimedia to the Internet through its support for:

- The most sophisticated multimedia architecture on which to build Internet applications.
- ActiveMovie Control provides cross-platform digital video technology, which enables you to play AVI and QuickTime video formats, and industry-standard MPEG video and audio formats within your Web pages.
- Playback of all popular Internet video, audio, and graphic media formats, and services for defining and supporting new formats as they emerge.
- Internet Explorer supports today's current hardware acceleration schemes to enhance the performance of multimedia playback, bringing multimedia to life for the user.
- HTML multimedia standards, including animated GIFs, inline video, and background sounds, bring the richest and most exciting content to Web pages.
- A platform for enabling next-generation, online gaming on the Internet, building upon the proven game technologies already shipping for Microsoft Windows 95.
- Internet Explorer extends support secured Java applets by providing access to multimedia features of the operating system, such as full motion video playback and audio capabilities.
- VRML add-in supports Virtual Reality Modeling Language (VRML) 1.0 by providing an ActiveX Control add-in for fast viewing of 3D objects and 3D virtual worlds on the Internet.

Advanced Multimedia Architecture for Building Internet Applications

Microsoft Internet Explorer 3.0 builds on an advanced architecture of multimedia services to bring a rich, compelling experience to the user. The following figure illustrates the Microsoft multimedia architecture and shows how it integrates different multimedia services.

ActiveX Controls are at the highest level and take advantage of the lower-level services. ActiveMovie, which provides playback of digital video and audio, is an example of a control that makes use of the DirectX technology to leverage the acceleration features of the underlying hardware. The DirectX Technologies provide services by which developers can take direct advantage of hardware features to accelerate media playback (for example, 2D, 3D, animations, sound, and more), thus ensuring the highest level of performance possible.

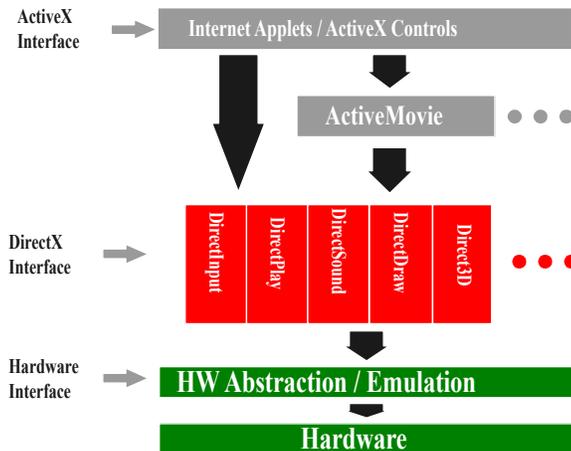


Figure 6 Microsoft Multimedia Architecture

Built-in functionality of ActiveX controls such as ActiveMovie brings next generation multimedia to your Internet browser, and support of ActiveX controls by third-parties brings additional innovative multimedia solutions to your desktop.

Additional information about Direct3D and ActiveMovie is available on the Internet at <http://www.microsoft.com/imedia>.

Microsoft ActiveMovie Control

Internet Explorer 3.0 comes fully loaded with support for all standard video and audio formats including audio-video interleaved (AVI), QuickTime, MPEG video, WAV, AU, AIFF and MPEG audio using Microsoft's ActiveMovie technology. You no longer need to download other helper applications to enjoy multimedia on the Internet.

ActiveMovie provides a universal playback mechanism for video or audio streams through an extensible architecture that exposes all elements of the media stream.

For developers, ActiveMovie services are exposed via a set of APIs. For content producers and higher-level developers, ActiveMovie includes an ActiveX control for embedding in Web pages with Internet Explorer 3.0 as well as for use in any OLE client application (e.g., Microsoft Word or Excel). The combination of ActiveX and DirectX technologies enable developers and content producers to create experiences never before possible over the Internet.

More than 20 industry companies have announced support for ActiveMovie, including the OpenMPEG consortium (representing 32 companies), and the Japanese Open MPEG Windows[®] Forum (representing 32 companies). This support signals that ActiveMovie will be a key API and solution for the next generation of digital video on the desktop and the Internet.

Microsoft ActiveMovie Streaming Format

The ActiveMovie Streaming Format (ASF) allows multiple data objects (for example, audio, still images, and URLs) to be combined and stored into a single, synchronized multimedia stream. ASF data is network transport neutral and can be transmitted over a variety of industry standard protocols and networks, including TCP/IP, UDP, RTP, IPX/SPX and ATM. Because ASF files can be streamed, playback of these files begins as soon as a Web page opens.

The ActiveMovie add-on toolkit contains a streaming format editor that enables developers to create rich multimedia content specifically targeted toward the Internet and intranet environments. More than 50 leading multimedia, content provider, tools and Webmaster companies have announced plans to support the ActiveMovie Streaming Format. Some of these major companies include Adobe Systems Inc., Aimtech Corp., Aspect Computer Pty Ltd., Asymetrix Corp., Avid Technology Inc., Macromedia Inc., Progressive Networks, Gold Disk Inc, Xing Technology, and VDONet.

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Video and Audio

ActiveMovie supports popular video and audio formats including AVI video, QuickTime, .WAV, MIDI, AU, and AIFF. It also supports playback of **MPEG video and audio**. With the support of MPEG video, ActiveMovie gives you television-quality video on your PC. Plus, MPEG video files are typically smaller than .AVI or QuickTime files due to a higher level of compression, thus decreasing the time to download video over the Internet. MPEG can also be of a higher visual quality than .AVI or QuickTime files. MPEG audio has similar benefits, supplying high level compression for smaller files, while delivering CD-quality audio files.

2D Animation and Graphics

Internet Explorer 3.0 supports viewing and interacting with the latest in animation on the Internet, providing the best browsing experience available. Support for animated GIF files provides the basics in animation capability, while new and innovative solutions like the HTML layout control provide web content creators with unparalleled flexibility to create immersive multimedia web pages. Internet Explorer 3.0 also supports a variety of graphic formats for displaying images within an HTML page, including JPEG, GIF, BMP, and more.

Support for ActiveX in Internet Explorer 3.0 means that the built-in support for multimedia in the browser is not the end, it's only just the beginning. Support for solutions including ShockWave and the PowerPoint Animation Player are examples of solutions that leverage the power of the Internet.

Virtual Reality - 3D

For 3D, Microsoft has been leading the way to make 3D on the Internet a reality. With the release of Direct3D comes an industry standard API and services for interactive, real-time 3D graphics on the desktop. Direct3D also defines a way for developers to transparently access hardware acceleration to speed up the graphics rendering process, and to enhance the quality of the 3D scene—this common device driver model is supported by virtually every hardware vendor doing mainstream 3D graphics hardware.

Microsoft is committed to continuing to support industry standards and popular media formats. Internet Explorer 3.0 provides support in Beta 2 for VRML 1.0 with the VRML Add-in, and will be supporting VRML 2.0 and offering browsing support through an ActiveX control.

Platform for Next Generation Online Gaming

Games are more fun if they can be played against real players, and the personal computer has richer connectivity options than any game platform in history. Microsoft's DirectPlay API, an extension of the popular DirectX multimedia API set, brings multi-player gaming to the Internet. DirectPlay continues Microsoft's aggressive initiative to offer leading-edge tools for the Internet and for gaming on the Windows platform. DirectPlay enhances the social aspect of gaming and enables the creation of vibrant, online gaming "communities."

Using Microsoft Internet Explorer 3.0, players can connect to Internet-based "lobby servers" to find opponents online and organize or join games. DirectPlay games can be Web-based, delivered as ActiveX controls, or can be high-performance, stand-alone Internet applications. Internet Explorer is the launch pad for finding and playing games online.