New Flash Player Rises in the Web-Video Market

Jacqueline Emigh

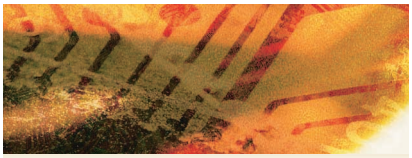
For years, playing video on the Web has generally required using one of the three applications: Apple's QuickTime, Microsoft's Windows Media Player, or Real Networks' RealPlayer. Now, though, the Big Three players face a challenger that initially became well-known for uses that had nothing to do with video: Adobe (formerly Macromedia) Flash.

Even before Adobe's $3.4 billion buyout of Macromedia in December, Flash—once just a Web-site animation tool—was expanding into online video. Now that Flash has access to Adobe's clout and resources, as well as new technology, proponents hope this process will accelerate.

Like the Big Three, discussed in the "The Big Three Video Players" sidebar, Flash can play video from Web pages. However, Flash is considerably smaller than its competitors and offers faster download speeds. It is also tightly integrated with the well-regarded Flash multimedia-development environment.

On the other hand, Flash lacks several features—including intellectual-property-protection technology, important to encourage providers of copyrighted content to make material available in the format—found in other media players.

Nonetheless, Flash's strengths are already making the technology a prominent part of the online-video landscape, a process that could continue if Adobe keeps improving it.



FLASH 8 CLOSEUP

In 1995, FutureShock Software introduced Flash as a Web-based animation development environment and player called FutureSplash Animator.

In 1997, Macromedia acquired the product and renamed it Flash, adding video support with Flash 6, released in 2002.

"Flash started to be a platform for rich Internet content back in 2003 with Flash 7," said Peter O'Kelly, an analyst at the Burton Group, a market research firm.

Flash 8 and video

The new Flash 8 environment, released in August 2005, includes Flash Player 8 and Flash Professional 8, a set of content-creation tools.

The technology works with Adobe products such as Flash Media Server for streaming content with video and Flex Enterprise Server for streaming content without video; Flex Framework for building Web-based applications; Breeze, a Web-based conferencing and presentation application; and other design and development tools.

Flash plays only video encoded in either the Flash Video format, introduced with Flash 8, or the ShockWave Flash format, used in earlier releases. However, other formats can be transcoded into FLV or SWF. FLV supports much longer video clips than SWF.

Unlike the Big Three players, which focus on video and audio, Flash players also support animation and vector graphics, noted Ben Bajarin, an analyst at Creative Strategies, a consultancy and market research firm.

Flash is best suited to video embedded into pages and streamed to Web browsers via a media server. Adobe is concentrating on this type of *on-demand* streaming video, as opposed to video that must be downloaded and stored first, which doesn't require a media server.

Although Flash can play both kinds of video, on-demand streaming video is the focus in Adobe's current target markets of advertising, media, and e-commerce, noted Chris Hock, director of product marketing for the company's Flash Video Division.

The technology handles streaming similarly to Microsoft, Apple, and Real, but Flash 8 offers particularly efficient playback and high-quality video, he said. When a user accesses video, the server streams the compressed file to a Flash player for decompression and playback on a Flash browser, embedded in the host Internet browser.

Like RealPlayer, Flash operates across multiple platforms such as Windows, Macintosh, Linux, and Sun Microsystems' Solaris. However, at press time, Flash 8 was available only for Windows and Macintosh, with a Linux version about to ship. The QuickTime player operates across only Windows and Macintosh platforms, and Windows Media Player works only on Windows operating systems.

Forrester's Manning said Flash player is practically universally accessible. A study by the NPD Group, a market research firm, showed Flash is installed on about 98 percent of PCs, more than QuickTime, Win-

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dows Media Player, or RealPlayer. This is due to smart bundling deals by Adobe and Macromedia, noted Chris Swenson, director of software industry analysis for NPD Techworld, a market research firm.

Flash 8 could require 12 to 18 months to achieve a 90 percent penetration rate, stated Mike Downey, Adobe's vice president of Real Player.

New codec

To create Flash 8, Macromedia licensed On2 Technologies' VP6 video codec and optimized it for the Flash environment, said John Luther, On2's vice president of customer relations. Flash 8 also incorporates Sorenson Communications' Spark codec technology, introduced in Flash 6.

Macromedia chose VP6 to provide better support for rich content such as densely textured video with a lot of motion, explained Downey. VP6's algorithms let it offer roughly twice the video quality for the same file size, he noted.

VP6 codecs use less host-device memory than comparable codecs, which contributes to faster player and content downloads, according to Luther.

Unlike other comparable codecs, VP6 also automatically adjusts to various Internet-connection conditions without excessively affecting video quality or making the viewing window smaller. For example, Luther explained, VP6 accommodates slow connections by decreasing resolution slightly.

The codec includes a VP6 advanced profile for use with high-end video hardware, as well as a simple profile that allows playback of streaming video on inexpensive hardware without the addition of costly video processors.

Also, Downey said, VP6 is relatively easy to port to multiple platforms.

Ease of viewing

Watching video with Flash does not require users to go to a separate Web page to choose between Windows Media Player and Real Player, to type in answers to questions about their Internet connections, or wait a long time for a player and video to download, as is the case with other platforms, Downey said.

Instead, users can view Flash-enabled streaming video on their browsers automatically, without leaving the page they are visiting. And if the Flash player isn't already on the user's browser, it will quickly download from the page to the browser.

The Big Three Video Players

Apple's QuickTime, Microsoft's Windows Media Player, and Real Networks' RealPlayer are the three most popular Web-based video players. They include various capabilities that Flash doesn't have, while lacking some of its features.

APPLE'S QUICKTIME

QuickTime and Windows Media Player each came to market in 1991.

Although the QuickTime player is free, Apple makes money by selling development tools and by charging users for iTunes video and audio content, explained Harley Manning, a market analyst at Forrester Research.

Now in version 7, QuickTime supports a range of video formats, although it won't work with Windows Media Video (WMV) and it plays only some video encoded in Microsoft's earlier Audio-Video Interleaved (AVI) format.

MICROSOFT'S WINDOWS MEDIA PLAYER

Now in version 10, Media Player offers new features that include the ability to transfer recorded TV files to portable devices for viewing.

Microsoft views Windows Player, integrated into the Windows OS, as a way to attract users to the platform, from which the company derives considerable income, said Marcus Mathias, product manager in its Windows Digital Media Division.

Moreover, he explained, Microsoft also uses its WMV format—run in set-top boxes and portable PDAs, not just media players—to support media playback on platforms other than PCs, in which the company wants to boost software sales.

So, he said, "For us, it's not just about the media player."

REAL NETWORKS' REALPLAYER

Progessive Networks, which changed its name to Real Networks in 1997, launched RealPlayer in 1995 as the first application of its kind to provide streaming video.

"RealPlayer's streaming support is functionally similar to that of QuickTime and Windows, although we all have different techniques for continuously streaming data over the Internet, which has no quality-of-service guarantees," said Jeff Chasen, vice president of Real Networks' RealPlayer Division.

Not only does Real sell a version of its video player for corporate use, but it also markets media servers, media-creation software, player-management tools, RealArcade gaming software, consulting services, and the Rhapsody subscription-based music service.

Cross-platform interoperability is a strength for RealPlayer, which runs not just on Windows and MacOS but also on Linux, several Unix flavors, and three embedded platforms: Symbian, Windows CE, and embedded Linux.

In addition, RealPlayer supports all major video formats, including Microsoft's WMV and AVI, MP3, MP4, Apple's MOV, and 3gp.

The latest edition, Real Player 10.5, adds compatibility with virtually all MP3 players, including Apple's iPod.

This occurs because of the Flash player's small footprint and because VP6 greatly compresses video files. Also, as soon as it is downloaded, the Flash player works in the browser as an embedded, plug-in runtime environment. The Big Three players, on the other hand, are large, separate software programs.

The size of the Flash runtime environment is 926 Kbytes. For the installers alone, Real Player weighs in at 11 Mbytes, Windows Media Player at 10 to 12 Mbytes, and QuickTime at 32 Mbytes.

Other Flash capabilities

Developers of Flash-compatible Web pages can use Flash Professional to design their own user interfaces to, for example, match the look and feel of a company's Web site, according to Luther. They could also determine playback settings including those that enable interactivity such as the changing of viewing angles.

Flash 8 introduces other new developer capabilities such as the ability to import video files, convert them to FLV, and add playback controls and an interface without writing new code, Downey noted.

Flash 8 is the first player to provide full *alpha transparency*, which is the ability to play multiple content layers at runtime. This lets developers create a layered visual effect by combining Flash video with text, vector graphics, and other elements.

Flash 8 Professional includes mobile emulator technology that lets designers see in advance how multimedia content will be displayed on various portable devices.

Noncommercial programming environments such as AJAX (Asynchronous JavaScript and XML) can be used like Flash in some ways, but they have less mature APIs and thus require considerable customization, said NPD's Swenson.

LIMITATIONS

Competitors and industry observers say Flash lacks many important features of traditional media players. "Its functionality is definitely limited by its size," said Real Networks' Chasen.

For example, its size restricts built-in support for large numbers of video file formats, making content development more cumbersome in some cases. Also, Flash doesn't incorporate intellectual-property protection, which might discourage some content providers from developing or providing high-demand copyrighted material for the platform, according to some industry observers.

The new Flash 8 may compete with the Big Three video players.

Adobe's focus has not been on such content, said the company's Downey. However, he added, Adobe is considering adding intellectual-property protection to future Flash versions.

Flash can also be used for live video streaming—an area currently dominated by Windows Media Player and Real Player—but the data must first be transcoded into the SWF format, which could make the process inconvenient.

Unlike QuickTime and Windows Media Player, Adobe—like Real Networks—is not gearing its video technology to standardization.

Apple and Microsoft have submitted their video-player architectures for examination and consideration as industry standards. For example, Apple's QuickTime architecture is the basis for MPEG-4, an International Organization for Standardization/International Electrotechnical Commission video-compression standard that the Moving Pictures Experts Group developed.

QuickTime will also form the foundation for the Society of Motion Picture and Television Engineers' emerging H.264 (MPEG-4 Advanced Video Coding) high-definition TV standard, said Frank Casanova, Apple's director of MacOS audio and video.

Meanwhile, Microsoft has submitted its video codec as the basis for the SMPTE's proposed 421M compression standard.

Some industry observers argue that technologies proposed for standardization can benefit from the scrutiny that the process involves, can better avoid obsolescence, can interoperate more easily with other vendors' products, and are more likely to retain developer and vendor support.

Others contend that in some cases, avoiding standardization leaves vendors freer to innovate technically.

According to analysts, Flash is likely to become increasingly successful in the on-demand streaming segment of the video-player market but probably won't expand into other areas unless major features are added. For example, the addition of built-in support for more file formats might help Flash compete better against the Big Three in the downloadable-video market, said Creative Strategies' Bajarin.

Also, said NPD's Swenson, Adobe could expand Flash's horizons by upgrading its ability to stream live content.

However, he added, adding too many features might produce extra bulk that would interfere with Flash's benefits as a lightweight environment for quick download and playback.

"The Flash platform is being incrementally refined, with a new video codec and more efficient support for mobile platforms," said Forrester's Manning. "But right now, you have to realize what Flash is for. It is not a be-all and end-all multimedia environment." ■

Jacqueline Emigh *is a freelance technology writer based in New York City, New York. Contact her at jac1050@aol.com.*

Editor: Lee Garber, *Computer*, l.garber@computer.org