

Indeo® Video Version 5.06 and Indeo Audio Software Version 2.5

Release Notes

Overview

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Introduction

Intel is pleased to introduce the Indeo video 5.0 and Indeo audio software 2.5. These release notes describe the features of Indeo audio software, Indeo video, the enhancements included in version 5.0, and instructions on how to download and install the new version.

Getting Started

The Indeo video 5.06 codec, documentation, sample source code, technical information, and access to technical support are available on this site:

<http://developer.intel.com/ial/indeo/video/index.htm>

You can obtain all of the documents mentioned in these Release Notes from the documentation page:

<http://developer.intel.com/ial/indeo/video/doc.htm>

The Indeo audio software 2.5 codec, documentation, technical information, and access to technical support are available on this site:

<http://developer.intel.com/ial/indeo/audio/index.htm>.

You can obtain all of the documents mentioned in these release notes from the documentation page:

<http://developer.intel.com/ial/indeo/audio/doc.htm>.

You can download the latest drivers from the Indeo drivers page:

<http://developer.intel.com/ial/indeo/video/driver.htm>.

Enhancements in Indeo video 5.0

Indeo video version 5.0 supports virtually all of the features of the previous 4.x releases, but performs better in each category. Enhancements include:

A new wavelet compression algorithm that greatly improves visual quality.

Better compression at all levels of video quality than previous generation codecs.

Playback performance enhancements for both MMXTM technology and the Pentium II processor, including smoother, interpolated "zoom by 2" playback on processors with MMX technology.

Progressive Download, a feature enabled in Microsoft DirectShow* architecture and supported by the new Internet Explorer* 4.0 browser, which allows high-quality scalable video for the Internet and intranets. This feature can be used with Netscape Navigator* 3.x, Netscape Communicator* 4.x, and Internet Explorer 3.x browsers as well by installing the Indeo video 5.0 plug-in.

Indeo video version 5.06 supports encoding with Microsoft DirectShow.

Features of Indeo audio software 2.5

Indeo audio software 2.5 is the primary audio compression codec used by the Indeo Video 5.0 Progressive Download Publisher (see <http://developer.intel.com/ial/indeo/video/web.htm>). This release includes the following features:

8:1 Compression

Indeo audio software compresses 16-bit raw PCM audio by a factor of eight. For example, a one-second CD-quality audio (16-bit PCM, 44.1 kHz sample rate, stereo) clip requires 176,400 bytes of storage. After compression, it requires 22,050 bytes of storage.

Support for Standard Multimedia Sample Rates

Sample rates of 8,000 Hz, 11025 Hz, 22050 Hz, and 44,100 Hz are supported. It is possible to convert to a lower sample rate while compressing an audio clip with Indeo audio software. For example, the one-second CD-quality audio clip mentioned above could be converted to 8,000 Hz sample rate during compression. In this case the compressed clip would require 4,000 bytes of storage. Note, however, that decreasing the sample rate can dramatically reduce the audio quality.

Support for Stereo and Mono

Both stereo (two channel) and mono (one channel) compression and playback are supported. Mono requires half the storage space of stereo. For example, if the one-second CD-quality stereo audio clip mentioned above is compressed as mono at 8,000 Hz sample rate, the resulting compressed audio clip would require only 2,000 bytes of storage! However, note that compressing stereo audio as mono can dramatically reduce the audio quality.

For more information

Read more about these features and how to use them at the Indeo audio software home page:

<http://developer.intel.com/ial/indeo/audio/index.htm>.

Progressive Download

Indeo video 5.0 scalability allows Internet videos to be downloaded progressively. Video files on a Web server can be created in such a way that lower resolution, lower frame rate video can be viewed almost immediately, allowing the user to quickly decide if they wish to continue viewing the video or download it to their hard drive. Given more download time, and/or a faster Web connection, a Progressive Download file will continuously improve in both quality and frame rate, until all of the video data is downloaded from the Web server to the client PC.

This gives Web authors the ability to create high-quality video content, and lets viewers use fast connections and/or longer download times to get the highest quality video on their PCs. Those connected to the Web at slower speeds, however, can still access video of good quality without unreasonable waits and download times.

To create a Progressive Download file a video producer first creates a standard .AVI file using a video editing/compression tool such as Adobe Premiere* or Asymetrix Digital Video Producer*. When creating the file, Indeo video's "Scalability" compression option must be turned ON.

The file is then modified using the Intel Indeo video 5.0 progressive download publisher tool. This tool opens and re-saves the file, creating the progressive download file structure and optionally compressing the audio into Intel's new Indeo audio format as it does so. To learn more about this process read about how to use the Indeo video 5.0 progressive download publisher tool.

Other Features of Indeo Video 5.0

The Indeo video 5.0 release includes most of the features in previous releases of Indeo video:

Video access protection

Many multimedia developers are concerned about the illegal distribution of their copyrighted material. The Indeo video 5.0 codec helps prevent misuse of video clips by using access keys (numeric passwords that can be inserted into a video clip during compression). Applications need the password to play video clips encoded with an access key.

Key frame flexibility

The Indeo video 5.0 codec offers control and flexibility over the use of key frames. The key frame interval is unrestricted, allowing a variety of values:

- 0 Only the first frame in the file is a keyframe. No other key

frames occur in the file.

1 Every frame in the file is a key frame.

2, 3, ... n Every nth frame in the file is a key. The value of n has no upper limit.

Along with this flexibility in key frame intervals, Indeo video 5.0 allows for non-periodic key frames. This means that during editing, the encoding application can tell the Indeo video 5.0 codec to place a key frame at any location. Video producers can then specify access points anywhere within a video sequence, or better control video quality by placing key frames on scene-change boundaries.

Application interactivity

Indeo video 5.0 incorporates features that make it possible to include video in interactive multimedia applications and games, challenging the traditional notion of video as having a fixed size and rectangular shape.

Transparency

For years, the movie and television industries have used the technique of chroma-keying (sometimes called blue-screening) to place foreground objects over synthesized backgrounds. One example of chroma-keying is when TV meteorologists appear to be standing in front of a wall-sized map, when in fact, they are standing in front of a blue wall. Chroma-key circuitry electronically separates the foreground pixels representing the meteorologist from the blue background pixels and overlays the meteorologist on an electronically-generated weather map. The Indeo video codec supports this type of transparency. During encoding, a compression application can send information to the codec describing a color or range of colors that represent a transparent background (such as the blue wall in the meteorologist example). Indeo video then analyzes each frame, separates the background pixels from the foreground, and makes the background pixels transparent, encoding only the foreground objects as compressed video.

Indeo video 5.0's transparency encoding is flexible, allowing for arbitrarily-shaped multiple foreground objects. Foreground objects can also move from frame to frame, allowing you to create what might be called video sprites. Video sprites are transparent video objects that can be overlaid onto other video or bitmap backgrounds. During playback, foreground objects can be composited dynamically over different backgrounds. For example, the meteorologist can appear over different weather maps on PCs with sufficiently powerful Pentium processors. A foreground object can even appear over another video stream, as in the case of a tornado.

Local decode

Sometimes an application needs to display only part of a decoded video image. For example, in a game, you might look through the periscope of a submarine where your view is limited to a small subset of the entire image. This subset changes as the video plays, depending on where the periscope is rotated.

In this case, much of the source image does not need to be displayed, and it's preferable not to waste processor resources decoding it. Indeo video 5.0 provides this capability through a feature called local decode.

The playback application can tell Indeo video 5.0 to decode only a rectangular subregion, called the view port, from the source video image. The minimum possible size of the local decode viewport is defined during compression, but the display size and location of the viewport can be changed dynamically during playback.

Real-time video effects

The brightness, contrast, and color saturation of Indeo video 5.0 files can be modified interactively during playback. This makes it possible to simulate different lighting conditions, or to tailor the appearance of the video playback to particular graphics environments and preferences.

Installation Notes

1.To obtain the decode only drivers for:

- Indeo video 5.06 codec
- Indeo audio codec
- Indeo Video 3.x and 4.x codecs
- Progressive Download Plug-in and
- DirectShow filter,

select on the Download Area page the Playback only option (lv5play.exe.)

2. To obtain both the decode and encode drivers for:

- Indeo video 5.06 codec
- Indeo audio codec
- Indeo Video 3.x and 4.x codecs
- Progressive Download Plug-in and
- DirectShow filter,

select on the Download Area page the Developer install option (lv5devl.exe.)

Note: lv5devl.exe also allows the option to install the Indeo installation source code and YVU9 codec.

3.To obtain the Indeo video 5.0 progressive download publisher tool and its components, select Indeo video 5.0 Progressive Download Publisher on the Download page.

4.Complete the registration pages.

5.Download the executable, and execute it once the download is complete.

NOTE: The Indeo video 5.06 codec is a 32-bit driver that supports Microsoft Windows* 95, Windows 98, and Windows NT*. Windows 3.1 support is not available.

Uninstall

To UnInstall the Playback Only:

1. From the system tray, click Start, select Run.
2. Type in the command, `regsvr32 -u "driver name"`, or from system tray, click Start, open Programs and select the MSDOS Command Prompt. Change the directory to `C:\WINDOWS\SYSTEM` (Windows 95) or `C:\WINNT\SYSTEM32` (Windows NT 4.0) and type in `regsvr32 -u "driver name."`
3. Hit return. This will unregister the codec.
4. After unregistering the codec, the compressed files cannot be played back.
5. Go to `C:\WINDOWS\SYSTEM` (Windows 95) or `C:\WINNT\SYSTEM32` (Windows NT 4.0) and manually remove the driver files.
6. Open the Registry, and go to this location:
`HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows\CurrentVersion\SharedDLLs`
7. Search for the value `<WINSYSDIR\ir41_32.ax`. If the value is exactly equal to 1, then you may, optionally, delete the file `<winsysdir\iacenc.dll` (Warning: If the value under this registry item is greater than 1, and if you remove the file, it may break other software you have installed on your machine.)
8. Remove the key from the registry:

Note: The driver names are `ir50_32.dll`, `iac25_32.ax` and `ivfsrc.ax`

To UnInstall the Developers version:

1. Go to Control Panel and select the "Add/Remove Programs" icon.
2. Highlight Indeo Software and then select the Add/Remove button.
3. Select "Yes" when prompted to confirm your uninstall selection.
4. All of the components installed onto your system will be removed. Files that were previously on your system will not be removed.

To UnInstall the Progressive Download Publisher Tool:

1. Explore `C:\Program Files\Intel\Indeo`. Highlight and delete the folder in which the Web Publisher tool was installed (default is the Progressive Download Publisher folder), or delete the tool from the destination location selected during installation. In this folder the following files should be listed: `ivi5pub.exe`, `web.htm`, `fig1.gif`, `fig2.gif`, `fig3.gif` and `fig4.gif`.
2. From the system tray, click Start, select Run. (Note: This is an optional step to remove the `iac25_32.ax` driver. Doing so can possibly affect other software that might depend on the audio codec.)
3. Type in the command, `regsvr32 -u iac25_32.ax`, or from system tray, click Start, open Programs and select the MSDOS Command Prompt. Change the directory to `C:\WINDOWS\SYSTEM` (Windows 95) or `C:\WINNT\SYSTEM32` (Windows NT 4.0) and type in `regsvr32 -u iac25_32.ax`.
4. Hit Enter. This will unregister the codec.
5. Go to `C:\WINDOWS\SYSTEM` (Windows 95) or `C:\WINNT\SYSTEM32` (Windows NT 4.0) and manually remove both the `iac25_32.ax` and `iacenc.dll` drivers from this directory.

6. Launch regedit. Look for the key:

HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows\CurrentVersion\SharedDLLs
search for the value <WINSYSDIR\iacenc.dll. If the value is exactly equal to 1, then You may, optionally, delete the file <winsysdir\iacenc.dll endif; WARNING: if the value under this registry item is greater than 1, and if you remove the file, it may break other software you have installed on your machine.

7. Remove the key from the registry:

SOFTWARE\Classes\CLSID\{AC7E3750-516E-11D1-9683-00AA00A5F56D}

Major Changes in Indeo video 5.06

Indeo video 5.06 contains the following changes relative to previous releases of Indeo video 5.0x:

Faster Encode Speed: The offline encoder will operate up to 30% faster when compared to previous versions of Indeo video 5.0. The amount of improvement will vary depending on the video clip and compression settings chosen.

Playback Performance Problems Addressed: Previous releases of Indeo video 5.0 have exhibited playback performance problems when running on certain hardware configurations. These problems were typically associated with machines using processors running in excess of 333Mhz. Indeo video 5.06 fixes bugs associated with these hardware-specific performance issues.

Microsoft DirectShow* Related Synchronization Issues

Resolved: Under some circumstances, certain versions of Microsoft DirectShow may lose synchronization when playing back video clips using previous versions of Indeo video 5.0. This problem appears to the viewer as the video momentarily (and repeatedly) playing back at a much higher or lower speed than normal, causing the video to be out of synch with the audio. This problem is associated with the rendering filter in certain builds of the DirectShow runtime such as versions 5.0 and 5.2. With these versions of DirectShow the problem can be triggered when using Indeo video 5.0 with video display adapters using YUV hardware color conversion (such as AGP display cards with YUY2 support). Indeo video 5.06 implements a workaround to this problem that actively forces the video playback to remain in synch with the audio whenever it senses that DirectShow is not correctly maintaining synchronization. This workaround has no effect when DirectShow correctly maintains synchronization on it's own (such as with DirectShow 5.1 or when not using YUV hardware color conversion).

Indeo software converted to use UNICODE strings throughout: The Indeo software is currently only available in an English version. This change facilitates possible future translations of the Indeo software to other languages that require multi-byte characters.

Installation scripts now support multiple installed versions of Netscape Navigator: Previous releases of the Indeo video 5.0 software would only install the Indeo progressive download plug-in software in one copy of Netscape Navigator on a system. The copy of Netscape Navigator that was most recently installed would be enabled to use the Indeo software, but other copies were not. The current release will search for additional

copies of Navigator, and install the Indeo progressive download plug-in software on up to three different copies of Navigator on a single machine.

Known Limitations and Problems

lv5devl.exe

1. Developers: The lv5devl.exe is set to have the Indeo video 5.0 quick compressor driver (ir50_qc.dll) installed before the Indeo video 5.06 driver (ir50_32.dll). If the Indeo video 5.06 driver is installed before the Indeo video 5.0 quick compressor, an option to reboot your system will appear after the second installation of lv5devl.exe on Windows NT 4.0 or on Windows 95 with Microsoft DirectShow installed. If making changes to the installation executable with the Indeo Software Installation Code, ensure that the Indeo video 5.06 driver follows the installation of the Indeo video 5.0 quick compressor, to avoid the reboot option.

Installation

Note: The install of the Indeo video 5.0 Progressive Download Plug-in places the plug-in in the plugins directories of up to three copies of Netscape Navigator, as well as in the plugins directory of Microsoft Internet Explorer 3.0.

1. The Indeo video 5.0 Progressive Download Publisher install is not supported on Windows NT 3.51 systems.

Indeo video 5.06 Codec

There are several limitations associated with the Indeo video 5.06 codec.

1. The Indeo video 5.06 compression in Microsoft ActiveMovie* 1.0 is not supported.
2. Indeo video 5.06 compressions may, under some circumstances, result in slightly higher data rates than requested when using bitrate control. For more information about these cases, please consult the document at:
<http://developer.intel.com/ial/indeo/video/compress.htm>.

Indeo audio software 2.5

1. Many of the known audio and video players have the capability of moving an arbitrary distance forward or backward within a stream and resuming play. This is usually accomplished through the player's GUI controls (for example fast forward or rewind buttons, slider bar, etc.). Due to limitations of the DirectShow architecture, there may be a short period of silence before playing resumes.
2. The "Internal Name" and "Original Filename" in the iac25_32.ax file properties erroneously show up as "IAC2.ACM" rather than "iac25_32.ax". The file properties of iac25_32.ax are displayed by right-clicking on the file name in Explorer and selecting the "Version" tab. This problem is cosmetic and does not affect the performance of the codec.

DirectShow Filter

Note: Internet Explorer 4.0 is required on the system in order for the Progressive Download DirectShow filter to work.

1. The dial-up connection may terminate the connection prematurely. The work-around is to establish a dial-up connection before the browser is loaded, disable or increase the line activity timeout, or continue using the browser while downloading. The line activity time out can be adjusted under the connection tab of the Internet Properties.
2. Sometimes the Save As option may not be enabled when downloading a clip over a LAN or other high-speed link.
3. The browser STOP button does not stop the download. You need to leave the page or save the progressive download media clip to stop the download.
4. When attempting to save a progressive download media clip before the file is fully downloaded, the operation may sometimes fail. If this occurs, you can try refreshing the page and saving the file again.
5. Heavy network activity using a slow connection speed while downloading or saving progressive download media clips may cause truncated or corrupted .AVI files.

Progressive Download Plug-in

Note: The Progressive Download Plug-in is designed for Netscape 3.x or 4.x browsers and Microsoft Internet Explorer 3.x. It is not supported by Netscape Navigator 2.x or Microsoft Internet Explorer 2.x.

1. The size of the progressive download media clips in HTML source includes the control panel. The work around is add 12 to the width and 64 to the height to compensate for the control panel.
2. If ActiveMovie* 1.0 or Microsoft DirectShow is installed the plug-in will not work with Microsoft Internet Explorer 3.x. If either ActiveMovie 1.0 or Microsoft DirectShow is installed it is recommended upgrading to Microsoft Internet Explorer 4.0.

Progressive Download Publisher

1. The progressive download conversion options are not always re-initialized when opening more than one progressive download media clip within the same instance of the tool.

*All other brands and names are property of their respective owners.