MPEG Stream Identifier (MPEGID) User's Manual Version 3.0

MPEGID User's Manual, V3.0

Table of Contents

Chapter I

Introduction

1 Introduction

Welcome to the Manzanita Systems MPEG Stream Identifier (MPEGID). MPEGID is an easy-to-use program with a full graphical user interface (GUI). It rapidly identifies and characterizes MPEG and related format media files that are commonly used in today's digital video and streaming applications. MPEGID tells you the type of the file and displays important properties of its content. Both elementary stream files and multiplexed stream files can be identified with MPEGID. If the input file is a multiplexed stream, individual elementary streams within the multiplex will also be identified and their properties will be displayed.

MPEGID identifies all of the following types of media streams:

- MPEG-1 Video Elementary Streams
- MPEG-2 Video Elementary Streams
- MPEG-4 Part 10 / H.264 / AVC Video Elementary Streams
- MPEG-4 Part 2 Video Elementary Streams
- MPEG Layers I and II Audio Elementary Streams
- MP3 (MPEG Layer III) Audio Elementary Streams
- AC-3 (Dolby Digital) Audio Elementary Streams
- Advanced Audio Coding (AAC) Elementary Streams
- Enhanced AC-3 (E-AC-3, Dolby Digital Plus) Audio Elementary Streams
- MPEG-4 (HE-AAC and HE-AAC version 2) AAC Elementary Streams
- DTS (Digital Theater Systems) Audio Elementary Streams
- SMPTE 302M Audio Elementary Streams
- MPEG-1 System Streams
- MPEG-2 Program Streams
- MPEG-2 Transport Streams
- MPEG-4 (MP4) ISO Base Media Files
- Video Object (VOB) Streams
- DVB Subtitle and ITU-R System B Teletext Streams
- SCTE 35 DPI Cueing Message Streams

MPEGID has an integrated Demultiplexer tool, which allows you to extract and save video and audio elementary streams from existing system stream, program stream, VOB, transport stream, or MPEG-4 media files.

A command line executable is included with the MPEGID installation. It enables execution of MPEGID in batch files or scripts for high-volume applications.

The Demultiplexer tool and command line MPEGID are only available with the full, registered version of MPEGID, not the demo version.

1.1 What's New in MPEGID Version 3.0

MPEGID Version 3.0 is a major release that has the following new features:

- MPEG-4 Part 2 video elementary streams are supported.
- MPEG-4 High Efficiency AAC (HE-AAC) audio elementary streams are supported.
- DVB subtitle streams and SCTE 35 DPI (splicing) messages streams are recognized.
- MPEG-4 ISO base media files are supported.
- Enhanced AC-3 substreams and small block frames are fully supported.
- MPEG Audio Layers 1-3 low sample rates are supported.
- Descriptor data found in transport stream PSI tables is displayed.
- Demultiplexer tool can demultiplex MPEG-4 media files.
- Support for Windows Vista is added.

1.2 Overview

Identifying and characterizing a media file with MPEGID is as easy as dragging and dropping the file from a file browser/explorer window onto the MPEGID interface. If the input file is a video or audio elementary stream, MPEGID will display a list of properties that characterize its content. If the file is a multiplexed stream, a tree structure is displayed that illustrates the hierarchy of components in the multiplex. The properties of an individual elementary stream in the multiplex are highlighted when the node that represents it in the tree is selected.

For MPEG-1, MPEG-2, MPEG-4 Part 10 / H.264 / AVC, and MPEG-4 Part 2 video elementary streams, MPEGID may display the following properties:

- File Size
- Duration
- MPEG Profile
- MPEG Level
- Bit Rate
- Frame Rate
- Resolution
- Aspect Ratio

For MPEG Layers I, II and III (MP-3), AAC, AC-3, Enhanced AC-3, DTS, and HE-AAC audio elementary streams, MPEGID may display the following properties:

- File Size
- Duration
- Layer (MPEG only)

- ADIF or ADTS Format (AAC only)
- Bit Rate
- Sample Rate

For SMPTE 302M audio elementary streams, MPEGID displays the following properties:

- Number of Channels
- Channel ID
- Sample Size

For MPEG-1 System, MPEG-2 Program, and VOB streams, MPEGID displays the following properties:

- File Size
- Duration
- Multiplex Bit Rate
- stream_id of each elementary stream
- VOB subtype of each Dolby AC-3 elementary stream (VOB streams only)
- Properties of each elementary stream

For MPEG-4 media files, MPEGID displays the following properties:

- File Size
- Duration
- track_ID of each elementary stream
- Properties of each elementary stream

For MPEG-2 transport streams, MPEGID displays the following properties:

- File Size
- Duration
- Multiplex Bit Rate
- program_number associated with each program
- PCR PID and PMT PID for each program
- stream_id and stream_type of each elementary stream
- PID of each elementary stream
- Properties of each elementary stream

To give you the fastest results, MPEGID only inspects the beginning of the input file to determine its contents. Therefore, the characteristics that are displayed are those that are present initially in the stream. Any changes, for example, in the bit rate, that occur later in the stream will not be noted.

1.3 About this Manual

This online manual completely documents the use of MPEGID. The following chapters are presented:

- Getting Started 8 covers installation of MPEGID.
- The MPEGID User Interface 14 describes all menus, controls, and displays available in the MPEGID program.
- Using MPEGID 20 details how to identify media files with MPEGID. It describes the results that are displayed by MPEGID for each type of file.
- Additional Support 42 presents Frequently Asked Questions (FAQ) about MPEGID, a list of pertinent references, and tips for getting additional help and support.
- Purchasing and License Agreement 48 gives information for purchasing the full version of MPEGID and outlines the terms of the license agreement that covers the MPEGID software and associated documentation.

This manual assumes that you have familiarity with the basic MPEG syntax and semantics.

Chapter II

Getting Started

2 Getting Started

This chapter helps you install and start MPEGID. It contains the following sections:

- Installing MPEGID 8 describes installation of the MPEGID program to your hard drive.
- Starting MPEGID 10 explains how to start the MPEGID program on your computer.
- Installing Your License Key 10 describes how to install the key that allows you to run the full version of MPEGID.

2.1 Installing MPEGID

The latest version of MPEGID is always available for download from the Manzanita Systems website at:

http://www.manzanitasystems.com/mpegid.html

MPEGID is available for the following platforms:

- Windows 2000, Server 2003, XP, or Vista 8
- Linux 8
- Mac OS X 9

2.1.1 Windows 2000, Server 2003, XP, or Vista

MPEGID is provided in a single self-extracting executable for installation on Windows 2000, Server 2003, XP, and Vista systems. Typically, the file name includes the version number, e.g., *mpegid-3.0.exe*.

Windows 2000, Server 2003, XP, or Vista is recommended for MPEGID V3.0. MPEGID may work on Windows 98, Windows Me, and Windows NT, but it is not officially supported on these platforms.

To install MPEGID from the self-extracting installation file on Windows 2000 / Server 2003 / XP / Vista:

1. Open the folder in which you downloaded the MPEGID installation file using My Computer or the Windows Explorer and double-click on it.
2. Follow the on-screen instructions to install MPEGID on your computer.

2.1.2 Linux

The minimum system requirement for installing MPEGID on a Linux system is:

- i386+ compatible processor

Both RPM and tar distributions are available for installation of MPEGID on Linux. The files will be named, for example, *mpegid-3.0-1.i386.rpm* and *mpegid-3.0.tgz*.

To install MPEGID from the RPM package:

1. Use rpm per your normal procedure to install the MPEGID package.

   For example:
   ```
   su
   rpm -i mpegid-3.0-1.i386.rpm
   ```

To install MPEGID from the tar file:

1. Log in as root user and unpack the archive into */opt*.

   For example:
   ```
   su
   cd /opt
   tar xzf /path/to/archive/mpegid-3.0.tgz
   ```

2. Create symbolic links from the MPEGID executables to a directory which is in your PATH variable, or include the location of the MPEGID executables in the PATH variable. The MPEGID GUI program is called *gmpegid*. The command line version of MPEGID is called *mpegid*.

   For example:
   ```
   ln -s /opt/manzanita/mpegid/bin/gmpegid /usr/bin/gmpegid
   ln -s /opt/manzanita/mpegid/bin/mpegid /usr/bin/mpegid
   ```
   or
   ```
   export PATH=$PATH:/opt/manzanita/mpegid/bin
   ```

3. If the system is running GNOME or KDE, a desktop entry can be created by making links to files in the */desktop* directory.

   For example:
   ```
   ln -s /opt/manzanita/mpegid/desktop/mpegid.desktop
   /usr/share/applications/mpegid.desktop
   ln -s /opt/manzanita/mpegid/desktop/mpegid.png
   /usr/share/icons/hicolor/32x32/apps/mpegid.png
   ```

2.1.3 Mac OS X

The minimum system requirements for installing MPEGID on Mac OS X are:

- Mac OS X v10.3.9 (Panther) or newer

MPEGID is provided as a disk image, e.g., *mpegid-3.0.dmg*, for installation on Mac OS X systems.

To install MPEGID from the disk image:

1. Double-click on the *mpegid-3.0.dmg* file icon to mount it as a disk image volume.

2. Open the MPEGID volume and drag the MPEGID application to your Applications folder.

In order to run the command line version of MPEGID (enabled only with the full, registered version), create a symbolic link from the MPEGID executable to a directory which is in your PATH variable, or include the location of the MPEGID executables in the PATH variable.

For example:
```
ln -s /Applications/mpegid.app/Contents/MacOS/mpegid /usr/bin/mpegid
```

2.2 Starting MPEGID

After MPEGID is installed, it will run as a demo version until you unlock the full version with a license key.

The procedure for starting the GUI version of the MPEGID program is the same whether you are running the demo version or the full version. For a description of the command line version of MPEGID, see the section Identifying from the Command Line 39.

To start MPEGID on Windows 2000 / Server 2003 / XP / Vista:

1. Choose **Start > Programs > Manzanita Systems > MPEGID 3** from the Windows Start menu, or double-click the **MPEGID** icon on the **Desktop**.

To start MPEGID on Linux or Solaris:

1. If you have created a desktop entry for MPEGID, choose the **MPEGID** item from the **Sound & Video** (Multimedia) submenu of your **Start** (Launch) menu.

or

1. At a shell prompt, enter the line:

```
gmpegid
```

If you get a message that the name that you entered is not recognized as a command, then the MPEGID executable is not in a location that is recognized by the PATH environment variable. You should either create a symbolic link from the MPEGID program to a directory which is in your PATH variable or include the location of the MPEGID program in the PATH variable.

To start MPEGID on Mac OS X:

1. Double click on the MPEGID application in your **Applications** folder.

On all platforms, if you have not yet installed a valid license key, a dialog box will be displayed that gives you information about the demo version. After a few seconds, the **Use Demo** button will be active. The **Enter License Key** button allows you to install a new license key 10. Click **Use Demo** to open the MPEGID program in demo mode. You may now begin identifying your media files.

If the license key for the full version has been installed, or if you have a hardware dongle for any Manzanita product connected to your computer, then the full version of the MPEGID program will open. You may now begin identifying your media files.

2.3 Installing Your License Key

MPEGID is initially installed as a demo version. You will need a valid MPEGID license key or have a hardware dongle for any licensed Manzanita product on your system to unlock the full version. With the full version, you will have access to the Demultiplexer and command line execution.

You will receive a license key when you register your copy of MPEGID with Manzanita Systems and pay a registration fee. The section, Purchasing a Registered Copy 49, in this manual gives instructions on how to order your registered copy.

It is recommended that you record and save your license key. You will need it if you ever re-install MPEGID.

To install the MPEGID license key:

1. Start the MPEGID GUI program.

   A dialog box will be displayed that gives you information about the demo version.

2. Click the **Enter License Key** button.

3. Enter your license key in the labeled textbox. The license key is 16 characters long, separated into four groups of four characters each with a dash (-). It should entered in the format NNNN-NNNN-NNNN-NNNN.

   For example:

   ```
   1234-5678-90AB-CDEF
   ```

4. Enter your company name or organization in the textbox labeled **Company Name**.

5. Click the **Continue** button.

   If the license key was successfully installed, a dialog box will appear informing you that the MPEGID program will quit.

6. Start the MPEGID GUI program again.

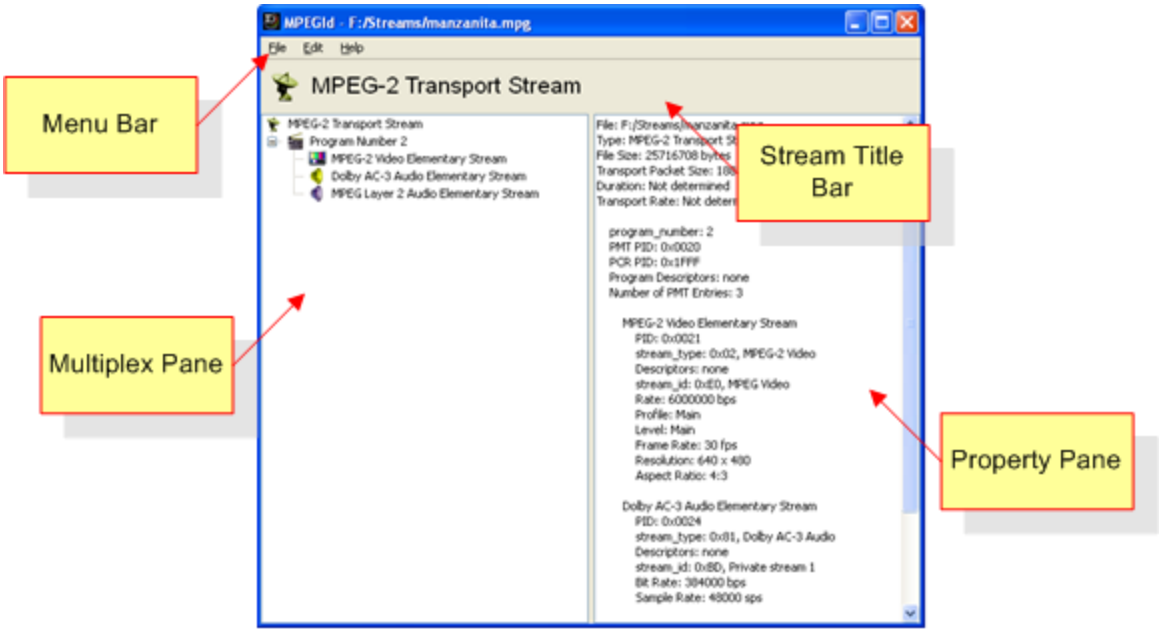
   The MPEGID user interface will open. You may now begin identifying your media files.

Chapter III

The MPEGID User Interface

3 The MPEGID User Interface

The MPEGID user interface consists of a single, simple window. It has the following components:



Menu Bar 15
The Menu Bar provides menus to open an input media file, save a report file, run the Demultiplexer, and set display preferences. It also provides access to the online help system.

Stream Title Bar 16
The Stream Title Bar tells you the type of the input media file.

Multiplex Pane 17
The Multiplex Pane shows a graphical representation of the contents of the input media file. It is only displayed if the input file is a multiplexed stream.

Property Pane 18
The Property Pane displays a list of all stream properties and their values. If the input file is a multiplexed stream, the properties for the component that is currently selected in the Multiplex Pane are highlighted.

3.1 Menu Bar

The Menu Bar at the top of the interface gives you access to MPEGID's main functions. The tables below summarize the commands on the Menu Bar.

File >		
Identify...	Opens the Open Input File dialog box that allows you to specify a media file for identification and characterization.	Ctrl+O
Save Report As...	Saves the properties of the current input file in a text file.	Ctrl+S
Quit	Closes the MPEGID program.	Ctrl+Q

Edit >		
Demux...	Extracts a single, selected elementary stream from a multiplexed stream and saves it as a binary file. The input file must be an MPEG-1 system stream, MPEG-2 program stream, VOB, MPEG-2 transport stream, or MPEG-4 media file.	Ctrl+D
Preferences...	Sets the format (decimal or hexadecimal) in which stream_id, PID, and stream_type values are displayed.	

Help >		
Manual	Opens the online User's Manual.	
About	Displays information about your copy of the MPEGID program.	

3.2 Stream Title Bar

The Stream Title Bar spans the MPEGID interface just below the Menu Bar. When the MPEGID program initially starts, the Stream Title Bar will be a blank space. After you open an input file, its type will be displayed in the Stream Title Bar as both a description and an icon.

The following types may be displayed in the Stream Title Bar:

Icon	Description
	MPEG-1 Video Elementary Stream
	MPEG-2 Video Elementary Stream
	MPEG-4 AVC/H.264 Video Elementary Stream
	MPEG-4 Part 2 Video Elementary Stream
	MPEG Layer I Audio Elementary Stream
	MPEG Layer II Audio Elementary Stream
	MPEG Layer III Audio Elementary Stream*
	Dolby AC-3 Audio Elementary Stream
	Dolby Enhanced AC-3 Audio Elementary Stream
	DTS Audio Elementary Stream
	Advanced Audio Coding (AAC) Elementary Stream
	MPEG-4 AAC Elementary Stream
	SMPTE 302M Audio Elementary Stream
	MPEG-1 System Stream
	MPEG-2 Program Stream**
	MPEG-2 Transport Stream
	MPEG-4 ISO Base Media File
	Unknown***

* MP-3 Audio Streams are identified as MPEG Layer III Audio Elementary Streams.

** Video Object (VOB) files are identified as MPEG-2 Program Streams.

*** The input file was not recognized by MPEGID.

3.3 Multiplex Pane

The Multiplex Pane occupies the panel on the left side of the MPEGID window below the Stream Title Bar when the input file is a multiplexed stream (MPEG-1 System Stream, MPEG-2 Program Stream, VOB, MPEG-2 Transport Stream, or MPEG-4 Media File). It is not present when the input file is an elementary stream.

The Multiplex Pane displays a tree structure that symbolizes the multiplexed stream. The root node of the tree represents the multiplexed stream itself. Each node that branches from the root node represents a component of the multiplex. For example, the Multiplex Pane for an MPEG-2 Program Stream that contains one video elementary stream and two audio elementary streams will display a Program Stream root node with one video branch node and two audio branch nodes. When you click on a node in the Multiplex Pane, the properties of the corresponding component are highlighted in the Property Pane.

The following types of nodes may appear in the Multiplex Pane:

Icon	Description
	MPEG-1 Video Elementary Stream
	MPEG-2 Video Elementary Stream
	MPEG-4 AVC/H.264 Video Elementary Stream
	MPEG-4 part 2 Video Elementary Stream
	MPEG Layer I Audio Elementary Stream
	MPEG Layer II Audio Elementary Stream
	MPEG Layer III Audio Elementary Stream*
	Dolby AC-3 Audio Elementary Stream
	Dolby Enhanced AC-3 Audio Elementary Stream
	DTS Audio Elementary Stream
	Advanced Audio Coding (AAC) Elementary Stream
	MPEG-4 AAC Elementary Stream
	SMPTE 302M Audio Elementary Stream
	Private Stream, User Private Stream
	DVB Subtitle Stream
	MPEG-1 System Stream
	MPEG-2 Program Stream**
	MPEG-2 Transport Stream
	MPEG-4 ISO Base Media File
	MPEG-2 Program

* MP-3 Audio Streams are identified as MPEG Layer III Audio Elementary Streams.

** Video Object (VOB) files are identified as MPEG-2 Program Streams.

3.4 Property Pane

If the input media file is a video or audio elementary stream, then the Property Pane will display a list of properties that characterize the stream. If the input file is a multiplexed stream (MPEG-1 System Stream, MPEG-2 Program Stream, VOB, MPEG-2 Transport Stream, or MPEG-4 Media File), then the Property Pane will occupy the panel to the right of the Multiplex Pane. In this case, the Property Pane displays all properties of the multiplex with indenting to distinguish individual components and to indicate hierarchy. When you click on a node in the Multiplex Pane, the properties of the corresponding component are highlighted in the Property Pane.

The chapter, Using MPEGID 20, in this manual describes the properties for each stream and multiplex component that are displayed in the Property Pane.

Chapter IV

Using MPEGID

4 Using MPEGID

Identifying and characterizing a media file is as simple as opening up the file in MPEGID. MPEGID will display important properties of the stream that the file contains. If the input file contains a multiplexed stream (MPEG-1 System Stream, MPEG-2 Program Stream, VOB, MPEG-2 Transport Stream, or MPEG-4 Media File), MPEGID will also display a graphical representation of the multiplex.

This chapter contains the following sections:

- Identifying Your Media File 20 explains how to open an input media file for identification and characterization.
- Viewing the Multiplex Structure 21 describes use of the graphical representation that is displayed for multiplexed streams.
- Interpreting Stream Properties 21 gives a detailed description of the properties that are displayed for each type of stream and multiplex component.
- Saving a Report File 38 tells how to save the stream properties in a text file.
- Demultiplexing an Elementary Stream 38 documents use of the demultiplexer utility.
- Identifying from the Command Line 39 describes the command line version of MPEGID.

4.1 Identifying a Media File

You can open a media file in MPEGID by dragging and dropping the file from a file browser/explorer window onto the MPEGID interface, or by using the Identify function on the File Menu. MPEGID will automatically identify the input file once it has been opened.

To open and identify an input media file using drag-and-drop:

1. Select the input file in a graphical file system browser/explorer. Drag and drop the file onto the **Stream Title Bar**, **Multiplex Pane** or **Property Pane** of the MPEGID interface.

   MPEGID will open the input file and identify it. The **Stream Title Bar** will display the identity of the file. If the input file is an elementary stream, a list of properties will be displayed in the **Property Pane** below the **Stream Title Bar**. If the input file is a multiplexed stream, then both the **Multiplex Pane** and **Property Pane** will display the results of the identification.

   If MPEGID does not recognize the format of the input file, it will display an error message.

To open and identify an input media file using the File Menu Identify function:

1. Choose **File > Identify...** from the **Menu Bar**. The **Open File** dialog box will appear.
2. Browse your system to select the input file, then click **Open**.

   The **Open File** dialog box will close, and MPEGID will open the input file and identify it. The **Stream Title Bar** will display the identity of the file. If the input file is an elementary stream, a list of properties will be displayed in the **Property Pane** below the **Stream Title Bar**. If the input file is a multiplexed stream, then both the **Multiplex Pane** and **Property Pane** will display the results of the identification.

   If MPEGID does not recognize the format of the input file, it will display an error message.

4.2 Viewing the Multiplex Structure

If your input media file is an MPEG-1 System Stream, MPEG-2 Program Stream, VOB*, MPEG-2 Transport Stream, or MPEG-4 ISO Base Media File, MPEGID will display a tree diagram in the Multiplex Pane that represents the contents of the multiplexed stream. This tree illustrates the hierarchical structure of the multiplex, showing the individual elementary streams that are contained in it. If the input stream is an MPEG-2 Transport Stream, the tree will show all programs that are defined in the multiplex, and all elementary streams that are mapped to each program.

The root node of the tree represents the multiplexed stream itself. Each node that branches from the root node represents a component of the multiplex. For MPEG-1 System Streams, MPEG-2 Program Streams, MPEG-4 ISO Base Media Files, and VOBs, only elementary stream nodes may branch from the root node. For MPEG-2 Transport Streams, one or more MPEG-2 Program nodes branch from the root node. Each MPEG-2 Program node may have one or more elementary stream nodes branching from it. See the section, Multiplex Pane 17, for a description of the types of nodes that may be depicted in the Multiplex Pane.

When you click on a node in the Multiplex Pane, the properties of the corresponding component are highlighted in the Property Pane.

* VOB files are identified by MPEGID as MPEG-2 Program Streams.

4.3 Interpreting Stream Properties

The Property Pane displays important properties of the input stream. If the input file is a multiplexed stream, then the Property Pane presents the properties hierarchically to mirror the graphical representation in the Multiplex Pane. When an individual node in the Multiplex Pane is selected, the properties of the corresponding component will be highlighted in the Property Pane.

Any portion of the results that are displayed in the Property Pane can be selected, copied to the clipboard, and pasted in a document. You can also save the entire contents of the Property Pane in a report file 38 for later reference.

This section gives detailed descriptions of the properties that are displayed for each type of stream and multiplex component.

It is important to remember that MPEGID only looks at the beginning of the input file to determine its identity and stream properties. Therefore, any changes that occur later in the file will not be reflected in the displayed properties.

The Property Pane displays the following types of properties:

4.3.1 General Stream Properties

For all supported types of media files, the Property Pane will display the following properties:

File Size

The File Size property gives the size of the input file in bytes.

Duration

The Duration property gives an estimate of the length of the stream in hours, minutes, and seconds. MPEGID bases this estimate on the File Size of the input file and the bit rate that is determined from the stream. For video and audio elementary streams, the bit rate is explicitly specified in the stream syntax. For MPEG-1 System Streams and MPEG-2 Program Streams, the bit rate is the initial mux_rate value specified in the stream. For MPEG-2 Transport Streams, MPEGID estimates the bit rate from the PCR (Program Clock Reference) values in the beginning of the stream. Note that this property is only an estimate. The actual duration will be different if a bit rate change occurs in the stream, or if the actual rate varies from that specified in the stream syntax.

4.3.2 MPEG-1 Video Elementary Stream Properties

The following properties are displayed in the Property Pane for an MPEG-1 Video Elementary Stream:

PID (MPEG-2 Transport Stream only)

The PID property is the value of the PID that is associated with the video elementary stream. The PID value may be an integer between 16 and 8190 (0x0010 and 0x1FFE). The value may be displayed in decimal, or if prefaced with a "0x", in hexadecimal. The base in which the PID property is displayed is set by the **Edit > Preferences** menu function. The PID property is only displayed if the MPEG-1 Video Elementary Stream is a component of an MPEG-2 Transport Stream.

stream_type (MPEG-2 Transport Stream only)

The stream_type property is the stream_type value that is associated with the video elementary stream in the Program Map Table. Generally, MPEG-1 video elementary streams are assigned a stream_type value of 1. The value may be displayed in decimal, or if prefaced with a "0x", in hexadecimal. The base in which the stream_type property is displayed is set by the **Edit > Preferences** menu function. The stream_type property is only displayed if the MPEG-1 Video Elementary Stream is a component of an MPEG-2 Transport Stream.

Descriptors (MPEG-2 Transport Stream only)

Any descriptors in the PMT that are associated with the elementary stream are shown. The hexadecimal data bytes for each descriptor that is present are displayed on a separate line.

stream_id (MPEG-1 System, MPEG-2 Program, and MPEG-2 Transport Streams only)

The stream_id property is the stream_id value that appears in PES headers for the video elementary stream. Generally, MPEG-1 video elementary streams are assigned a stream_id value from 224 to 239 (0xE0 to 0xEF). The value may be displayed in decimal, or if prefaced with a "0x", in hexadecimal. The base in which the stream_id property is displayed is set by the **Edit > Preferences** menu function. The stream_id property is only displayed if the MPEG-1 Video Elementary Stream is a component of an MPEG-1 System Stream, MPEG-2 Program Stream, or MPEG-2 Transport Stream.

track_ID (MPEG-4 ISO Base Media Files only)

The track_ID property is the value that identifies the elementary stream in the MPEG-4 media file.

Bit Rate

The Bit Rate property is the rate in bits per second (*bps*) that is specified in the video elementary stream syntax. The Bit Rate property will be set to "VBR" if the video stream is variable bit rate.

Frame Rate

The Frame Rate property is the frame rate in frames per second (*fps*) that is specified in the video elementary stream syntax.

Resolution

The Resolution property is given as *width* x *height*, where *width* is the width in samples and *height* is the height in lines of the displayable part of a picture as specified by the horizontal_size and vertical_size fields in the video sequence header.

Aspect Ratio

The Aspect Ratio property is the value specified in the aspect_ratio_information field in the video sequence header.

4.3.3 MPEG-2 Video Elementary Stream Properties

The following properties are displayed for an MPEG-2 Video Elementary Stream:

PID (MPEG-2 Transport Stream only)

This property is the value of the PID that is associated with the video elementary stream. The value may be an integer between 16 and 8190 (0x0010 and 0x1FFE). The value may be displayed in decimal, or if prefaced with a "0x", in hexadecimal as set by the **Edit > Preferences** menu function. The PID property is only displayed if the MPEG-2 Video Elementary Stream is a component of an MPEG-2 Transport Stream.

stream_type (MPEG-2 Transport Stream only)

The stream_type property is the stream_type value that is associated with the video elementary stream in the Program Map Table. Generally, MPEG-2 video streams are assigned a stream_type value of 2. The value may be displayed in decimal, or if prefaced with a "0x", in hexadecimal. The base in which the stream_type property is displayed is set by the **Edit > Preferences** menu function. The stream_type property is only displayed if the MPEG-2 Video Elementary Stream is a component of an MPEG-2 Transport Stream.

Descriptors (MPEG-2 Transport Stream only)

Any descriptors in the PMT that are associated with the elementary stream are shown. The hexadecimal data bytes for each descriptor that is present are displayed on a separate line.

stream_id (MPEG-1 System, MPEG-2 Program, and MPEG-2 Transport Streams only)

This property is the stream_id value that appears in PES headers for the video stream. Generally, MPEG-2 video streams are assigned a stream_id value from 224 to 239 (0xE0 to 0xEF). The value may be displayed in decimal, or if prefaced with a "0x", in hexadecimal as set by the **Edit > Preferences** menu function. The stream_id property is only displayed if the MPEG-2 Video Elementary Stream is a component of an MPEG-1 System Stream, MPEG-2 Program Stream, or MPEG-2 Transport Stream.

track_ID (MPEG-4 ISO Base Media Files only)

The track_ID property is the value that identifies the video elementary stream in the MPEG-4 media file.

Bit Rate

The Bit Rate property is the rate in bits per second (*bps*) that is specified in the video elementary stream syntax. If the video stream is variable bit rate, the Bit Rate property will be set to the maximum bit rate at which the stream is encoded.

Profile

The Profile property is determined from the profile_and_level_indication in the video elementary stream syntax.

Level

The Level property is determined from the profile_and_level_indication in the video syntax.

Frame Rate

The Frame Rate property is the frame rate in frames per second (*fps*) that is specified in the video elementary stream syntax.

Resolution

The Resolution property is given as *width* x *height*, where *width* is the width in samples and *height* is the *height* in lines of the displayable part of a picture as specified by the horizontal_size and vertical_size fields in the video sequence header.

Aspect Ratio

The Aspect Ratio property is the value specified in the aspect_ratio_information field in the video sequence header.

4.3.4 MPEG-4 AVC/H.264 Video Elementary Stream Properties

The following properties are displayed in the Property Pane for an H.264 / AVC / MPEG-4 Part 10 Video Elementary Stream:

PID (MPEG-2 Transport Stream only)

The PID property is the value of the PID that is associated with the video elementary stream. The PID value may be an integer between 16 and 8190 (0x0010 and 0x1FFE). The value may be displayed in decimal, or if prefaced with a "0x", in hexadecimal. The base in which the PID property is displayed is set by the **Edit > Preferences** menu function. The PID property is only displayed if the video stream is a component of an MPEG-2 Transport Stream.

stream_type (MPEG-2 Transport Stream only)

The stream_type property is the stream_type value that is associated with the video elementary stream in the Program Map Table. Generally, H.264 / AVC / MPEG-4 Part 10 video streams are assigned a stream_type value of 27 (0x1B). The value may be displayed in decimal, or if prefaced with a "0x", in hexadecimal. The base in which the stream_type property is displayed is set by the **Edit > Preferences** menu function. The stream_type property is only displayed if the video stream is a component of an MPEG-2 Transport Stream.

Descriptors (MPEG-2 Transport Stream only)

Any descriptors in the PMT that are associated with the elementary stream are shown. The hexadecimal data bytes for each descriptor that is present are displayed on a separate line.

stream_id (MPEG-1 System, MPEG-2 Program, and MPEG-2 Transport Streams only)

The stream_id property is the stream_id value that appears in PES headers for the video elementary stream. Generally, video elementary streams are assigned a stream_id value from 224 to 239 (0xE0 to 0xEF). The value may be displayed in decimal, or if prefaced with a "0x", in hexadecimal. The base in which the stream_id property is displayed is set by the **Edit > Preferences** menu function. The stream_id property is only displayed if the video stream is a component of an MPEG-1 System Stream, MPEG-2 Program Stream, or MPEG-2 Transport Stream.

track_ID (MPEG-4 ISO Base Media Files only)

The track_ID property is the value that identifies the video elementary stream in the MPEG-4 media file.

Bit Rate

The Bit Rate property is the rate in bits per second (*bps*) that is specified in the video elementary stream syntax. If the video stream is variable bit rate, the Bit Rate property will be set to the maximum bit rate at which the stream is encoded.

Profile

The Profile property is determined from the profile_idc in the video elementary stream syntax.

Level

The Level property is determined from the level_idc in the video elementary stream syntax.

Frame Rate

The Frame Rate property is the frame rate in frames per second (*fps*). It is calculated from the time_scale and num_units_in_tick fields when they are present in the video stream.

Resolution

The Resolution property is given as *width* x *height*, where *width* is the width in samples and *height* is the *height* in lines of the displayable part of a picture as specified by the horizontal_size and vertical_size fields in the video sequence header.

4.3.5 MPEG-4 Part 2 Video Elementary Stream Properties

The following properties are displayed for an MPEG-4 Part 2 Video Elementary Stream:

PID (MPEG-2 Transport Stream only)

This property is the value of the PID that is associated with the video elementary stream. The value may be an integer between 16 and 8190 (0x0010 and 0x1FFE). The value may be displayed in decimal, or if prefaced with a "0x", in hexadecimal as set by the **Edit > Preferences** menu function. The PID property is only displayed if the video elementary stream is a component of an MPEG-2 Transport Stream.

stream_type (MPEG-2 Transport Stream only)

The stream_type property is the stream_type value that is associated with the video elementary stream in the Program Map Table. The value may be displayed in decimal, or if prefaced with a "0x", in hexadecimal. The base in which the stream_type property is displayed is set by the **Edit > Preferences** menu function. The stream_type property is only displayed if the video elementary stream is a component of an MPEG-2 Transport Stream.

Descriptors (MPEG-2 Transport Stream only)

Any descriptors in the PMT that are associated with the elementary stream are shown. The hexadecimal data bytes for each descriptor that is present are displayed on a separate line.

stream_id (MPEG-1 System, MPEG-2 Program, and MPEG-2 Transport Streams only)

This property is the stream_id value that appears in PES headers for the video stream. Generally, video elementary streams are assigned a stream_id value from 224 to 239 (0xE0 to 0xEF). The value may be displayed in decimal, or if prefaced with a "0x", in hexadecimal as set by the **Edit > Preferences** menu function. The stream_id property is only displayed if the video elementary stream is a component of an MPEG-1 System Stream, MPEG-2 Program Stream, or MPEG-2 Transport Stream.

track_ID (MPEG-4 ISO Base Media Files only)

The track_ID property is the value that identifies the video elementary stream in the MPEG-4 media file.

Profile & Level

The Profile & Level property is determined from the video elementary stream syntax.

Frame Rate

The Frame Rate property is the frame rate in frames per second (*fps*) if it is specified in the video elementary stream syntax.

Resolution

The Resolution property is given as *width* x *height*, where *width* is the width in samples and *height* is the *height* in lines of the displayable part of a picture as specified in the video stream syntax.

4.3.6 MPEG Audio Elementary Stream Properties

Elementary streams that are encoded as Layer I, II, or III audio are identified as MPEG Audio Elementary Streams. Note that MPEG Layer III Audio Elementary Streams are also known as MP-3 Audio Streams.

The following properties are displayed in the Property Pane for an MPEG Audio Elementary Stream:

PID (MPEG-2 Transport Stream only)

The PID property is the value of the PID that is associated with the audio elementary stream. The PID value may be an integer between 16 and 8190 (0x0010 and 0x1FFE). The value may be displayed in decimal, or if prefaced with a "0x", in hexadecimal. The base in which the PID property is displayed is set by the **Edit > Preferences** menu function. The PID property is only displayed if the MPEG Audio Elementary Stream is a component of an MPEG-2 Transport Stream.

stream_type (MPEG-2 Transport Stream only)

The stream_type property is the stream_type value that is associated with the audio elementary stream in the Program Map Table. Generally, MPEG audio Layer I and II elementary streams are assigned a stream_type value of 3, and Layer III streams have a stream_type value of 4. The value may be displayed in decimal, or if prefaced with a "0x", in hexadecimal. The base in which the stream_type property is displayed is set by the **Edit > Preferences** menu function. The stream_type property is only displayed if the MPEG Audio Elementary Stream is a component of an MPEG-2 Transport Stream.

Descriptors (MPEG-2 Transport Stream only)

Any descriptors in the PMT that are associated with the elementary stream are shown. The hexadecimal data bytes for each descriptor that is present are displayed on a separate line.

stream_id (MPEG-1 System, MPEG-2 Program, and MPEG-2 Transport Streams only)

The stream_id property is the stream_id value that appears in PES headers for the audio elementary stream. Generally, MPEG audio (all Layers) streams are assigned a stream_id value from 192 to 223 (0xC0 to 0xDF). The value may be displayed in decimal, or if prefaced with a "0x", in hexadecimal. The base in which the stream_id property is displayed is set by the **Edit > Preferences** menu function. The stream_id property is only displayed if the MPEG Audio Elementary Stream is a component of an MPEG-1 System Stream, MPEG-2 Program Stream, or MPEG-2 Transport Stream.

track_ID (MPEG-4 ISO Base Media Files only)

The track_ID property is the value that identifies the elementary stream in the MPEG-4 media file.

Layer

The Layer property is the value specified by the Layer field in the audio elementary stream syntax. The possible values are "1", "2", and "3". Note that Layer III (3) audio streams are also known as MP-3 audio streams.

Bit Rate

The Bit Rate property is the rate in bits per second (*bps*) that is specified in the audio elementary stream syntax.

Sample Rate

The Sample Rate is the sampling frequency in samples per second (*sps*) that is specified in the audio elementary stream syntax.

4.3.7 AC-3 / Enhanced AC-3 Audio Elementary Stream Properties

The following properties are displayed in the Property Pane for a AC-3 (Dolby Digital) and Enhanced AC-3 (Dolby Digital Plus) Audio Elementary Stream:

PID (MPEG-2 Transport Stream only)

The PID property is the value of the PID that is associated with the audio elementary stream. The PID value may be an integer between 16 and 8190 (0x0010 and 0x1FFE). The value may be displayed in decimal, or if prefaced with a "0x", in hexadecimal. The base in which the PID property is displayed is set by the **Edit > Preferences** menu function. The PID property is only displayed if the audio stream is a component of an MPEG-2 Transport Stream.

stream_type (MPEG-2 Transport Stream only)

The stream_type property is the stream_type value that is associated with the audio elementary stream in the Program Map Table. The value may be displayed in decimal, or if prefaced with a "0x", in hexadecimal. Generally, AC-3 audio streams are assigned a stream_type value of 129 (0x81), and Enhanced AC-3 are given a value of 135 (0x87). The base in which the stream_type property is displayed is set by the **Edit > Preferences** menu function. The stream_type property is only displayed if the audio stream is a component of an MPEG-2 Transport Stream.

Descriptors (MPEG-2 Transport Stream only)

Any descriptors in the PMT that are associated with the elementary stream are shown. The hexadecimal data bytes for each descriptor that is present are displayed on a separate line.

stream_id (MPEG-1 System, MPEG-2 Program, and MPEG-2 Transport Streams only)

The stream_id property is the stream_id value that appears in PES headers for the AC-3 audio elementary stream. Generally, AC-3 and Enhanced AC-3 audio streams are assigned a stream_id value of 189 (0xBD). The value may be displayed in decimal, or if prefaced with a "0x", in hexadecimal. The base in which the stream_id property is displayed is set by the **Edit > Preferences** menu function. The stream_id property is only displayed if the audio stream is a component of an MPEG-1 System Stream, MPEG-2 Program Stream, or MPEG-2 Transport Stream.

VOB sub-type (VOBs only)

The VOB sub-type is an identifier that is unique for each Dolby AC-3 stream in the VOB. The VOB sub-type property is only displayed if the Dolby AC-3 Audio Elementary Stream is a component of a VOB-type MPEG-2 Program Stream.

track_ID (MPEG-4 ISO Base Media Files only)

The track_ID property is the value that identifies the elementary stream in the MPEG-4 media file.

Number of substreams

Indicates the total number of substreams embedded in the E-AC3 stream. This property is only displayed if substreams are present. Note the Bit Rate property is the total bit rate of all substreams.

Bit Rate

The Bit Rate property is the rate in bits per second (*bps*) that is specified in the audio elementary stream syntax.

Sample Rate

The Sample Rate is the sampling frequency in samples per second (*sps*) that is specified in the audio elementary stream syntax.

4.3.8 DTS Audio Elementary Stream Properties

The following properties are displayed in the Property Pane for a DTS Audio Elementary Stream:

PID (MPEG-2 Transport Stream only)

The PID property is the value of the PID that is associated with the audio elementary stream. The PID value may be an integer between 16 and 8190 (0x0010 and 0x1FFE). The value may be displayed in decimal, or if prefaced with a "0x", in hexadecimal. The base in which the PID property is displayed is set by the **Edit > Preferences** menu function. The PID property is only displayed if the audio stream is a component of an MPEG-2 Transport Stream.

stream_type (MPEG-2 Transport Stream only)

The stream_type property is the stream_type value that is associated with the audio elementary stream in the Program Map Table. The value may be displayed in decimal, or if prefaced with a "0x", in hexadecimal. Generally, DTS audio streams are assigned a stream_type value of 6. The base in which the stream_type property is displayed is set by the **Edit > Preferences** menu function. The stream_type property is only displayed if the audio stream is a component of an MPEG-2 Transport Stream.

Descriptors (MPEG-2 Transport Stream only)

Any descriptors in the PMT that are associated with the elementary stream are shown. The hexadecimal data bytes for each descriptor that is present are displayed on a separate line.

stream_id (MPEG-1 System, MPEG-2 Program, and MPEG-2 Transport Streams only)

The stream_id property is the stream_id value that appears in PES headers for the audio elementary stream. Generally, DTS audio streams are assigned a stream_id value of 189 (0xBD). The value may be displayed in decimal, or if prefaced with a "0x", in hexadecimal. The base in which the stream_id property is displayed is set by the **Edit > Preferences** menu function. The stream_id property is only displayed if the audio stream is a component of an MPEG-1 System Stream, MPEG-2 Program Stream, or MPEG-2 Transport Stream.

track_ID (MPEG-4 ISO Base Media Files only)

The track_ID property is the value that identifies the elementary stream in the MPEG-4 media file.

Bit Rate

The Bit Rate property is the rate in bits per second (*bps*) that is specified in the audio elementary stream syntax.

Sample Rate

The Sample Rate is the sampling frequency in samples per second (*sps*) that is specified in the audio elementary stream syntax.

4.3.9 AAC Elementary Stream Properties

The following properties are displayed in the Property Pane for an Advanced Audio Coding Elementary Stream, also referred to as Layer IV or audio with ADTS transport syntax:

PID (MPEG-2 Transport Stream only)

The PID property is the value of the PID that is associated with the audio elementary stream. The PID value may be an integer between 16 and 8190 (0x0010 and 0x1FFE). The value may be displayed in decimal, or if prefaced with a "0x", in hexadecimal. The base in which the PID property is displayed is set by the **Edit > Preferences** menu function. The PID property is only displayed if the AAC Elementary Stream is a component of an MPEG-2 Transport Stream.

stream_type (MPEG-2 Transport Stream only)

The stream_type property is the stream_type value that is associated with the AAC elementary stream in the Program Map Table. The value may be displayed in decimal, or if prefaced with a "0x", in hexadecimal. Generally, AAC streams are assigned a stream_type value of 15 (0x0F). The base in which the stream_type property is displayed is set by the **Edit > Preferences** menu function. The stream_type property is only displayed if the AAC Elementary Stream is a component of an MPEG-2 Transport Stream.

Descriptors (MPEG-2 Transport Stream only)

Any descriptors in the PMT that are associated with the elementary stream are shown. The hexadecimal data bytes for each descriptor that is present are displayed on a separate line.

stream_id (MPEG-1 System, MPEG-2 Program, and MPEG-2 Transport Streams only)

The stream_id property is the stream_id value that appears in PES headers for the AAC elementary stream. Generally, AAC streams are assigned a stream_id value from 192 to 223 (0xC0 to 0xDF). The value may be displayed in decimal, or if prefaced with a "0x", in hexadecimal. The base in which the stream_id property is displayed is set by the **Edit > Preferences** menu function. The stream_id property is only displayed if the AAC Elementary Stream is a component of an MPEG-1 System Stream, MPEG-2 Program Stream, or MPEG-2 Transport Stream.

track_ID (MPEG-4 ISO Base Media Files only)

The track_ID property is the value that identifies the elementary stream in the MPEG-4 media file.

Layer

The Layer property is the value specified by the Layer field in the audio elementary stream syntax. AAC is encoded as Layer 4.

Format

The Format property indicates if the AAC elementary stream is ADIF (Audio Data Interchange Format) or ADTS (Audio Data Transport Stream).

Bit Rate

If the Format is ADTS, the stream is always encoded at a variable bit rate. In this case, the Bit Rate property is set to "VBR". If the Format is ADIF, the stream can be either variable or constant bit rate. If it is variable bit rate, the Bit Rate property is set to "VBR". If the stream is constant bit rate, the Bit Rate property will be set to the rate in bits per second (*bps*) that is specified in the audio elementary stream syntax followed by "CBR".

Sample Rate (ADTS only)

The Sample Rate is the sampling frequency in samples per second (*sps*) that is specified in the audio elementary stream syntax. The Sample Rate is only displayed if the AAC stream is ADTS.

4.3.10 MPEG-4 AAC Elementary Stream Properties

The following properties are displayed in the Property Pane for an MPEG-4 AAC Elementary Stream, also referred to as High Efficiency AAC (HE-AAC) :

PID (MPEG-2 Transport Stream only)

The PID property is the value of the PID that is associated with the audio elementary stream. The PID value may be an integer between 16 and 8190 (0x0010 and 0x1FFE). The value may be displayed in decimal, or if prefaced with a "0x", in hexadecimal. The base in which the PID property is displayed is set by the **Edit > Preferences** menu function. The PID property is only displayed if the MPEG-4 AAC Elementary Stream is a component of an MPEG-2 Transport Stream.

stream_type (MPEG-2 Transport Stream only)

The stream_type property is the stream_type value that is associated with the elementary stream in the Program Map Table. The value may be displayed in decimal, or if prefaced with a "0x", in hexadecimal. The base in which the stream_type property is displayed is set by the **Edit > Preferences** menu function. The stream_type property is only displayed if the elementary stream is a component of an MPEG-2 Transport Stream.

Descriptors (MPEG-2 Transport Stream only)

Any descriptors in the PMT that are associated with the elementary stream are shown. The hexadecimal data bytes for each descriptor that is present are displayed on a separate line.

stream_id (MPEG-1 System, MPEG-2 Program, and MPEG-2 Transport Streams only)

The stream_id property is the stream_id value that appears in PES headers for the elementary stream. Generally, audio streams are assigned a stream_id value from 192 to 223 (0xC0 to 0xDF). The value may be displayed in decimal, or if prefaced with a "0x", in hexadecimal. The base in which the stream_id property is displayed is set by the **Edit > Preferences** menu function. The stream_id property is only displayed if the elementary stream is a component of an MPEG-1 System Stream, MPEG-2 Program Stream, or MPEG-2 Transport Stream.

track_ID (MPEG-4 ISO Base Media Files only)

The track_ID property is the value that identifies the elementary stream in the MPEG-4 media file.

Audio Object Type

MPEG-4 audio supports many different audio codecs. The Audio Object Type describes the codec used to create this MPEG-4 audio stream.

Number of sub-frames

This property gives the number of sub-frames contained in each AAC audio frame. Sub-frames are used to expand the number of channels supported by the audio stream.

Bit Rate

HE-AAC is inherently a VBR audio format, but an encoder can adjust the audio quality to create a CBR stream. MPEGID will attempt to determine if the rate is CBR, and if so, the calculated rate will be reported. If the rate appears to vary, then it will be reported as VBR.

Sample Rate

The Sample Rate is the sampling frequency in samples per second (sps) that is specified in the audio elementary stream syntax.

4.3.11 SMPTE 302M Audio Elementary Stream Properties

The following properties are displayed in the Property Pane for a SMPTE 302M Audio Elementary Stream:

PID (MPEG-2 Transport Stream only)

The PID property is the value of the PID that is associated with the audio elementary stream. The PID value may be an integer between 16 and 8190 (0x0010 and 0x1FFE). The value may be displayed in decimal, or if prefaced with a "0x", in hexadecimal. The base in which the PID property is displayed is set by the **Edit > Preferences** menu function. The PID property is only displayed if the audio stream is a component of an MPEG-2 Transport Stream.

stream_type (MPEG-2 Transport Stream only)

The stream_type property is the stream_type value that is associated with the audio elementary stream in the Program Map Table. The value may be displayed in decimal, or if prefaced with a "0x", in hexadecimal. Generally, SMPTE 302M audio streams are assigned a stream_type value of 6. The base in which the stream_type property is displayed is set by the **Edit > Preferences** menu function. The stream_type property is only displayed if the audio stream is a component of an MPEG-2 Transport Stream.

Descriptors (MPEG-2 Transport Stream only)

Any descriptors in the PMT that are associated with the elementary stream are shown. The hexadecimal data bytes for each descriptor that is present are displayed on a separate line.

stream_id (MPEG-1 System, MPEG-2 Program, and MPEG-2 Transport Streams only)

The stream_id property is the stream_id value that appears in PES headers for the audio elementary stream. Generally, SMPTE 302M audio streams are assigned a stream_id value of 189 (0xBD). The value may be displayed in decimal, or if prefaced with a "0x", in hexadecimal. The base in which the stream_id property is displayed is set by the **Edit > Preferences** menu function. The stream_id property is only displayed if the audio stream is a component of an MPEG-1 System Stream, MPEG-2 Program Stream, or MPEG-2 Transport Stream.

track_ID (MPEG-4 ISO Base Media Files only)

The track_ID property is the value that identifies the elementary stream in the MPEG-4 media file.

Bit Rate

The Bit Rate property is the rate in bits per second (bps) that is computed from the sample rate, sample size, and number of channels.

Number of Channels

This property is the number of channels that are present in the stream as encoded in the audio syntax.

channel_id

SMPTE 302M supports up to eight channels in one elementary stream. The Channel ID is the channel number of the first data channel in this stream. This feature allows more than eight channels to be carried using multiple elementary streams.

Sample Size

SMPTE 302M supports 16, 20 and 24 bit word size. This parameter gives the size of the samples in this stream.

4.3.12 Private Stream Properties

MPEG-1 system streams and MPEG-2 program streams can contain privately defined data streams in addition to audio and video elementary streams. Like audio and video, these streams are segmented in PES packets, however, their stream_id identifies them as Private Streams. MPEGID reports the presence of Private Streams, however, it does not inspect the content.

The following property is displayed in the Property Pane for a Private Stream:

stream_id

The stream_id property is the stream_id value that appears in PES headers for the Private Stream. Private Streams are identified by the stream_id values of 0xBD (private_stream_1) and 0xBF (private_stream_2). The value may be displayed in decimal, or if prefaced with a "0x", in hexadecimal. The base in which the stream_id property is displayed is set by the **Edit > Preferences** menu function.

4.3.13 User Private Stream Properties

MPEG-2 transport streams can contain privately defined data streams in addition to audio and video elementary streams. Each data stream is carried by a unique PID and is identified in the transport stream's Program Map Table as a User Private Stream. User Private Streams may or may not be contained in PES packets. MPEGID reports the presence of User Private Streams, however, it does not inspect the content.

The following properties are displayed in the Property Pane for a User Private Stream:

PID

The PID property is the value of the PID that is carries the User Private stream. The PID value may be an integer between 16 and 8190 (0x0010 and 0x1FFE). The value may be displayed in decimal, or if prefaced with a "0x", in hexadecimal. The base in which the PID property is displayed is set by the **Edit > Preferences** menu function.

stream_type

The stream_type property is the stream_type value that is associated with the User Private Stream in the Program Map Table. User Private Streams are identified by the stream_type values of 0x80 through 0xFF (inclusive). The value may be displayed in decimal, or if prefaced with a "0x", in hexadecimal. The base in which the stream_type property is displayed is set by the **Edit > Preferences** menu function.

Descriptors

Any descriptors in the PMT that are associated with the data stream are shown. The hexadecimal data bytes for each descriptor that is present are displayed on a separate line.

stream_id

If the User Private Stream is contained in PES packets, then the stream_id property will be displayed. The stream_id is the value that identifies the stream in the PES headers. The value may be displayed in decimal, or if prefaced with a "0x", in hexadecimal. The base in which the stream_id property is displayed is set by the **Edit > Preferences** menu function.

4.3.14 DVB Subtitle Stream Properties

DVB subtitling systems are specified in ETSI EN 300 743 for carrying program related subtitles and other graphical elements in MPEG-2 transport streams. MPEGID reports that a data stream is a DVB Subtitle Stream if it is associated in the program's PMT with a DVB subtitle descriptor. MPEGID does not, however, inspect the content of the stream.

The following properties are displayed in the Property Pane for a DVB Subtitle Stream:

PID

The PID property is the value of the PID that is carries the DVB Subtitle Stream. The PID value may be an integer between 16 and 8190 (0x0010 and 0x1FFE). The value may be displayed in decimal, or if prefaced with a "0x", in hexadecimal. The base in which the PID property is displayed is set by the **Edit > Preferences** menu function.

stream_type

The stream_type property is the stream_type value that is associated with the DVB Subtitle Stream in the Program Map Table. DVB Subtitle Streams are assigned the value 0x06, or "PES Private Packets". The value may be displayed in decimal, or if prefaced with a "0x", in hexadecimal. The base in which the stream_type property is displayed is set by the **Edit > Preferences** menu function.

Descriptors

Any descriptors in the PMT that are associated with the elementary stream are shown. The hexadecimal data bytes for each descriptor that is present are displayed on a separate line.

stream_id

The stream_id is the value that identifies the stream in the PES headers. Generally, DVB Subtitle Streams are assigned a stream_id value of 0xBD, or "Private Stream 1". The value may be displayed in decimal, or if prefaced with a "0x", in hexadecimal. The base in which the stream_id property is displayed is set by the **Edit > Preferences** menu function.

4.3.15 MPEG-2 Program Properties

An MPEG-2 Transport Stream generally consists of one or more programs. The properties associated with each program are displayed by MPEGID as a set of MPEG-2 Program properties.

The following properties are displayed for each MPEG-2 Program in an MPEG-2 Transport Stream:

program_number

The program_number property is the value that is associated with this program in the transport stream's Program Association Table (PAT). It is the same as the Program Number that identifies the program in the Multiplex Pane.

PMTPID

The PMTPID property is the PID value of the stream that carries the Program Map Table (PMT) associated with this program. The value may be displayed in decimal, or if prefaced with a "0x", in hexadecimal. The base in which the PMTPID property is displayed is set by the **Edit > Preferences** menu function.

PCRPID

The PCRPID property is the PID value of the stream that carries the Program Clock Reference (PCR) associated with this program. The value may be displayed in decimal, or if prefaced with a "0x", in hexadecimal. The base in which the PCRPID property is displayed is set by the **Edit > Preferences** menu function.

Program Descriptors

Any descriptors in the PMT that are associated with the program are shown. The hexadecimal data bytes for each descriptor that is present are displayed on a separate line.

4.3.16 MPEG-1 System Stream Properties

In addition to General Stream Properties and individual elementary stream properties, the following property is displayed if the input media file is an MPEG-1 System Stream:

Mux Rate

The Mux Rate property is the rate in bits per second (*bps*) that is specified by the initial mux_rate field in the stream syntax.

4.3.17 MPEG-2 Program Stream Properties

In addition to General Stream Properties and individual elementary stream properties, the following property is displayed if the input media file is an MPEG-2 Program Stream:

Program Mux Rate

The Program Mux Rate property is the rate in bits per second (*bps*) that is specified by the initial program_mux_rate field in the stream syntax.

4.3.18 MPEG-4 ISO Base Media File Properties

In addition to General Stream Properties, the properties of each individual elementary stream contained in the media file will be displayed in the Property Pane for an MPEG-4 ISO Base Media File.

4.3.19 MPEG-2 Transport Stream Properties

In addition to General Stream Properties, MPEG-2 Program Properties, and individual elementary stream properties, the following property is displayed if the input media file is an MPEG-2 Transport Stream:

Transport Rate

The Transport Rate property is the rate in bits per second (*bps*) that is computed from the PCRs in the beginning of the transport stream. Note that the Transport Rate value is only an estimate. The actual transport rate may change later in the stream.

4.4 Saving a Report File

After you have identified a media file, you can save the results in a report file for future reference. The report file is a simple text file that contains all of the information displayed in the Property Pane.

If you just want part of the Property Pane results in a document, you can select the area that you want, copy it to the clipboard, and paste it in the document.

To save a report file:

1. Choose **File > Save Report As...** from the Menu Bar. The Save As dialog box will appear.
2. Browse your system to select the desired location to save the report file, enter the report name in the File Name box, then click **Save**.

4.5 Demultiplexing an Elementary Stream

The MPEGID program includes a utility that will extract a single elementary stream from an input MPEG-1 system stream, MPEG-2 program stream, MPEG-2 transport stream, or MPEG-4 media file and save it as a binary file. The elementary stream can be MPEG-1, MPEG-2, or H.264 / AVC / MPEG-4 part 10 video, MPEG audio, AAC, MPEG-4 AAC, AC-3, Enhanced AC-3, DTS, or SMPTE 302M audio. Multiple elementary streams may be extracted from a given input stream file by repeatedly running the Demultiplexer.

The demultiplexer function is not available with the demo version of MPEGID.

To demultiplex an elementary stream:

1. Open and identify 20 the input file. The file must be an MPEG-1 system stream, MPEG-2 program stream, MPEG-2 transport stream, or MPEG-4 media file.
2. Select the node in the Multiplex Pane that represents the elementary stream you wish to demultiplex.
3. Choose **Edit > Demux...** from the Menu Bar, or click the right mouse button on the node and then click on the **Demux...** function in the submenu. The Demultiplex As dialog box will appear.
4. Browse your system to select the desired location to save the demultiplexed stream, enter the output file name in the File Name box, then click **Save**.

   Depending upon the size of the input file, it may take several minutes for the stream to be demultiplexed. A dialog box will display the progress of the demultiplex operation. When demultiplexing is complete, a dialog box will display the final size of the output file. **Note:** If your input file is on a remote location on a network, the demultiplexing progress may not be displayed, or it may not be accurately updated because of network latency.

4.6 Identifying from the Command Line

The MPEGID installation includes a command line version that enables execution of MPEGID in a command prompt or shell window. The output of the command line version is identical to the results that are displayed in the Property Pane of the GUI version. The command line MPEGID can be run in batch files or scripts for high-volume or automated applications. Its output can be directed to a file for a saved text report.

You may also demultiplex an elementary stream from an input MPEG-1 system stream, MPEG-2 program stream, or MPEG-2 transport stream using the command line MPEGID.

MPEG-4 media files can not be demultiplexed from the command line.

The command line executable is not available with the demo version of MPEGID.

To run the command line version of MPEGID:

1. (Windows only) Open an "MS-DOS" Command Prompt window.
2. At the command prompt or in a script, enter the line:

   `mpegid [-b buffer_size] input_file`

   For *input_file*, give the name of the input media file. The name may be specified by full path, relative path, or by filename only. If only the filename is given, then MPEGID will look for the input file in the current directory. Optionally, you can specify the amount of data that MPEGID should inspect by giving the `-b` argument where *buffer_size* is a number of kilobytes. By default, MPEGID looks at the first 2 MB (2097152 bytes) to identify the input file.

If you get a message that the name that you entered is not recognized as a command, then the MPEGID command line executable is not in a location that is recognized by the PATH environment variable. On a UNIX system (Linux or Mac OS X) you should either create a symbolic link from the MPEGID program to a directory that is in your PATH variable or include the location of the MPEGID program in the PATH variable. On a Windows system, you need to add the path of the MPEGID installation folder to the PATH variable.

To demultiplex an elementary stream from the command line:

1. (Windows only) Open an "MS-DOS" Command Prompt window.
2. At the command prompt or in a script, enter the line:

   `mpegid -d id [-v subtype] input_file output_file`

   For *input_file*, give the name of the input media file. The file must be an MPEG-1 system stream, MPEG-2 program stream, or MPEG-2 transport stream. If the file is a system stream or program stream, then *id* is the value of the stream_id that identifies the elementary stream that will be demultiplexed. If the file is a transport stream, then *id* is the value of the PID that is associated with the elementary stream. If the input file is a VOB and you are extracting an Dolby AC-3 audio stream, then the `-v` argument must be specified. In this case, *subtype* is the value of the VOB subtype that identifies the AC-3 stream. The *output_file* argument is the name for the output elementary stream file. The *input_file* and *output_file* arguments may be specified by full path, relative path, or by filename only. If only the filename is given, then MPEGID will look for the file in the current directory.

Chapter V

Additional Support

5 Additional Support

This chapter includes more information about using the MPEG Stream Identifier and where to go if you have additional questions. It has the following sections:

- Frequently Asked Questions (FAQ) 42 is a list of questions and answers that includes tips for using MPEGID.
- References 44 is a reference list of MPEG standards documents.
- Technical Support 45 tells you how to contact Manzanita Systems for technical support assistance.

5.1 Frequently Asked Questions (FAQ)

Before reporting any problems, please check this list to see if there is a known solution:

- *Why does MPEGID identify Video Objects (VOBs) as MPEG-2 Program Streams?*

  VOB files used in DVD-Video are just MPEG-2 Program Streams with additional data streams that contain navigation and search information. MPEGID displays the VOB sub-type that uniquely identifies each Dolby AC-3 audio stream.

- *MPEGID can't identify a stream that I believe is an MPEG stream. Why not?*

  The stream may be corrupted or may not be using a valid format. However, if your think MPEGID is incorrect in its identification, contact our technical support (e-mail support@manzanitasystems.com). We would be interested in analyzing your stream to see why it cannot be identified.

- *MPEGID reports an Duration for my stream that seems wrong. When I play the stream, the duration is longer than the one given by MPEGID. Why?*

  Your stream may be variable bit rate or there may be a rate change somewhere in the stream. For all input streams except transport streams, MPEGID gets the bit rate from the stream syntax, which for variable rate streams is usually the maximum bit rate. For transport streams, MPEGID determines the bit rate from the initial PCRs in the stream. Because the Duration is calculated from the input file size and the bit rate, it may be different than the actual duration.

- *I have transport stream files that I know contain System Information data streams. These streams don't appear in the Multiplex View. Why not?*

  For transport streams, MPEGID only identifies elementary streams that are listed in a Program Map Table. System Information PIDs that are not defined in a PMT will not be shown.

- *I've installed MPEGID on my Linux system and I tried running the command line version. I get a "command not found" message. What's wrong?*

  If you get a message that the name that you entered is not recognized as a command, then the MPEGID executable is not in a location that is recognized by the PATH environment variable. You should either create a symbolic link from the MPEGID program to a directory which is in your PATH variable or include the location of the MPEGID program in the PATH variable.

- *I find MPEGID to be very useful, but I frequently use files that are in a standard format that is not supported by MPEGID. Can you add this format? It would be helpful to me.*

  We are very interested in getting input from our customers. We would definitely like to add new formats to future releases of MPEGID. Please send your request to support@manzanitasystems.com. Any information, e.g., specifications and references, about your format is helpful.

- *MPEGID identifies the output of my encoder as a transport stream. When I try to play it on a decoder, it doesn't play correctly. What is wrong?*

MPEGID does not verify input streams for compliance. Manzanita Systems offers a compliance and verification program, the MPEG-2 Transport Stream Analyzer (MP2TSA). MP2TSA will perform a full analysis on your transport streams. Please visit our website, www.manzanitasystems.com, for more information about MP2TSA.

- *The output in the Multiplex Pane indicates "No data seen for this elementary stream" but I know that that elementary stream exists. Also, in the Property Pane, there is a more detailed description of the stream. Why is that?*

  This is because MPEGID only looks at a limited portion of the beginning of the file. If the elementary stream data does not occur in that portion of the stream, i.e. it's first occurrence is later in the stream than what was analyzed, then MPEGID will indicate it did not see the data for this stream. However, because the stream was listed in the PMT, it will be acknowledged in the Property Pane as being defined in the multiplex.

5.2 References

The following list of documents are the primary references used by MPEGID:

1. ISO/IEC 11172-1:1993: Information technology -- Generic coding of moving pictures and associated audio for digital storage media at up to about 1.5 Mbits/s - Part 1 : Systems.

2. ISO/IEC 11172-2:1993: Information technology -- Generic coding of moving pictures and associated audio for digital storage media at up to about 1.5 Mbits/s - Part 2 : Video.

3. ISO/IEC 11172-3:1993: Information technology -- Generic coding of moving pictures and associated audio for digital storage media at up to about 1.5 Mbits/s - Part 3 : Audio.

4. ISO/IEC 13818-1:2000: Information technology -- Generic coding of moving pictures and associated audio information -- Part 1: Systems.

5. ISO/IEC 13818-2:2000: Information technology -- Generic coding of moving pictures and associated audio information -- Part 2: Video.

6. ISO/IEC 13818-3:1998: Information technology -- Generic coding of moving pictures and associated audio information -- Part 3: Audio.

7. ISO/IEC 13818-7:1997: Information technology -- Generic coding of moving pictures and associated audio information -- Part 7: Advanced Audio Coding (AAC).

8. ISO/IEC 14496-10 Information Technology - Coding of audio-visual objects - Part 10: Advanced Video Coding.

9. ISO/IEC 13818-1 Information technology - Generic Coding of Moving Pictures and Audio: Systems -- Amendment 3: Transport of AVC video data over ITU-T Rec H.222.0 ISO/IEC 13818-1 streams.

10. Advanced Television Systems Committee: ATSC Digital Television Standard, Document A/53 Revision E, with Amendments No. 1 and 2.

11. Advanced Television Systems Committee: Guide to the Use of the ATSC Digital Television Standard, Document A/54.

12. Advanced Television Systems Committee: Digital Audio Compression (AC-3, E-CA-3) Standard, Document A/52 Revision B.

13. Advanced Television Systems Committee: Program and System Information Protocol for Terrestrial Broadcast and Cable, Document A/65 Revision C with Amendment No. 1.

5.3 Technical Support

Manzanita Systems provides this online User's Manual with your copy of MPEGID as the first level of support. If you do not find an answer to your question in the User's Manual, contact Manzanita Systems technical support by phone, fax, or Internet. Manzanita Systems technical support is available as follows:

Phone

1-858-679-8990
Monday through Friday
9:00 a.m. - 5:00 p.m. PST

Fax

1-858-679-8991

E-mail

support@manzanitasystems.com

Web Site

www.manzanitasytems.com
Product news, FAQ, maintenance release and update information

Chapter VI

Purchasing and License Agreement

6 Purchasing and License Agreement

This chapter tells you how to register your copy of MPEGID and acquire a license key to unlock the full version. It contains the following sections:

- Registration Benefits 48 gives the benefits to which you are entitled as a registered user of MPEGID.
- Purchasing a Registered Copy 49 gives the pricing and ordering instructions for MPEGID.
- Unregistered User License Agreement 50 is the legal agreement to which you are bound when you install and run the demo version of the MPEGID program.
- Registered User License Agreement 51 is the legal agreement to which you are bound when you install and run the full, registered version of the MPEGID program.

6.1 Registration Benefits

As a registered user, you will receive the following benefits:

- An activation key to unlock the full version of MPEGID. The full version entitles you to run your copy of MPEGID for an unlimited time.
- An integrated demultiplexer to extract video and audio elementary streams from input system stream, program stream , transport stream, and MPEG-4 media files.
- Access to a command line version of MPEGID.
- A software license that entitles you to update your copy of MPEGID with future patches and releases*.
- Free technical support by e-mail, FAX, or mail for at least 90 days starting from your registration date.
- Announcements of future MPEGID releases and new Manzanita products.

* Manzanita Systems reserves the right to introduce an upgrade charge for major new releases.

6.2 Purchasing a Registered Copy

When you register your copy of MPEGID with Manzanita Systems, you will be given a license key that will enable you to unlock the full version. The MPEGID license agreement 51 entitles no more than one user to use a single registered copy at a time.

Pricing

The registration fee for MPEGID is $49.95 USD per single user license.

Purchasing by Credit Card

You must contact Manzanita Systems directly to register and pay your MPEGID registration fee. You can use your MasterCard, VISA, or American Express card.

Your order can be placed 24 hours a day, 7 days a week by fax at 1-858-679-8991 or by e-mail to sales@manzanitasystems.com.

You can also call 1-858-679-8990 between the hours of 8:00 AM and 5:00 PM (Pacific Time), Monday through Friday (except US holidays).

Please provide your name, credit card number, expiration date, billing address, telephone number, and e-mail address when you order.

Your license key will be e-mailed to you within one (1) business day. Therefore, it is important that you provide your valid e-mail address.

Submitting a Purchase Order

We can accept purchase orders from government and accredited educational institutions and major corporations. Please address questions to sales@manzanitasystems.com, or call us at 1-858-679-8990.

6.3 Unregistered User License Agreement

This is the legal agreement to which you are bound when you install and run the demo version of the MPEGID program. The demo version of MPEGID is provided at no charge to you for your evaluation.

As an unregistered user of MPEGID you agree to the following:

1. You are free to share copies of MPEGID with others, however, you may not alter the software in any way.
2. You may not sell copies of MPEGID or otherwise distribute it for profit.
3. You may not reverse engineer, decompile, or disassemble the MPEGID program.
4. By installing and using MPEGID, you acknowledge that you have read this license, understand it, and agree to be bound by all of its terms.

Copyright MPEGID is owned by Manzanita Systems, Inc. and is protected by United States copyright laws and international treaty provisions. Therefore you must treat the MPEGID software like any other copyrighted material. You may not print copies of any user documentation provided in "online" or electronic form.

Limited Warranty and Remedies The MPEGID program is provided "as is" without warranty of any kind, either express or implied, including, but not limited to warranties of merchantability or fitness for a particular purpose. In no event shall Manzanita Systems, Inc. be liable for any damages whatsoever (including, without limitation, damages for loss of business profits, business interruption, loss of business information, or other pecuniary loss) arising out of the use or inability to use MPEGID, even if Manzanita Systems, Inc. has been advised of the possibility of such damage.

6.4 Registered User License Agreement

This is a legal agreement between you (either an individual or an entity) and Manzanita Systems, Inc. By installing the MPEGID software package and by using the full, registered MPEGID program, you agree to be bound by the terms of this Agreement.

Grant of License This License Agreement ("License") permits you to use one copy of the MPEGID software, which may include user documentation provided in "online" or electronic form. The MPEGID software is licensed as a single product. Its component parts may not be separated for use on more than one computer or by more than one user at any time. The software is "in use" on a computer when it is loaded into the temporary memory (i.e. RAM) or installed into the permanent memory (e.g. hard disk) of that computer.

Copyright The MPEGID software is owned by Manzanita Systems, Inc. and is protected by United States copyright laws and international treaty provisions. Therefore you must treat the MPEGID software like any other copyrighted material. You may not copy any printed materials accompanying the MPEGID software product, nor print copies of any user documentation provided in "online" or electronic form.

Other Restrictions This License is your proof of license to exercise the rights granted herein and must be retained by you. You may not rent or lease the MPEGID software, but you may transfer your rights under this License on a permanent basis, provided you transfer this License, the MPEGID software and all accompanying printed materials, retain no copies, and the recipient agrees to the terms of this License. You may not reverse engineer, decompile, or disassemble the MPEGID program.

Limited Warranty Manzanita Systems, Inc. warrants that the MPEGID program will perform substantially in accordance with the accompanying printed material and on-line documentation for a period of 90 days from the date of purchase. Manzanita Systems, Inc. additionally warrants that the MPEGID program is believed to be free from defect of workmanship and material or viruses. Manzanita Systems, Inc. will provide technical support to investigate and resolve any problems reported by you within the warranty period.

Customer Remedies Manzanita Systems' entire liability and your exclusive remedy shall be, at Manzanita Systems' option, either (a) return of the price paid or (b) repair or replacement of the MPEGID software that does not meet this Limited Warranty and that is returned to Manzanita Systems with a copy of your receipt. This Limited Warranty is void if failure of the MPEGID software has resulted from accident, abuse, or misapplication. Any replacement MPEGID software will be warranted for the remainder of the original warranty period or 90 days from the date of purchase, whichever is longer.

No Other Warranties To the maximum extent permitted by applicable law, Manzanita Systems, Inc. disclaims all other warranties, either express or implied, including but not limited to implied warranties of merchantability and fitness for a particular purpose, with respect to the MPEGID software and any accompanying documentation.

No Liability for Consequential Damages To the maximum extent permitted by applicable law, in no event shall Manzanita Systems, Inc. be liable for any damages whatsoever (including, without limitation, damages for loss of business profits, business interruption, loss of business information, or other pecuniary loss) arising out of the use or inability to use the MPEGID software, even if Manzanita Systems, Inc. has been advised of the possibility of such damage.

Index

- A -

- B -

- C -

- D -

- E -

- F -

- H -

- I -

- L -

- M -

- N -

- O -

- P -

- Q -

- R -

- S -

- T -

- U -

- V -

- W -