

Default

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NUMBER	DATE	DESCRIPTION	NAME

Contents

1	Default	1
1.1	IsisPPC documentation	1
1.2	Disclaimer	2
1.3	Introduction	2
1.4	MPEG	3
1.5	MPEG video	3
1.6	MPEG audio	4
1.7	MPEG system	4
1.8	Requirements	5
1.9	Installation	5
1.10	Usage	6
1.11	Options	7
1.12	Preferences	8
1.13	Overlay	9
1.14	3D-View	9
1.15	History	10
1.16	FAQ	10
1.17	Bugs	12
1.18	Future	12
1.19	Thanks	12
1.20	Author	13

Chapter 1

Default

1.1 IsisPPC documentation

IsisPPC - an MPEG-Player for PowerPC-equipped Amiga ↔
computers

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Written by André Osterhues

Disclaimer

Please read this first

Introduction

What is IsisPPC? And what is MPEG?

Requirements

Which Hard- and Software is required?

Installation

How to install IsisPPC?

Usage

Things you have to consider

Options

WB ToolTypes and CLI arguments

Preferences

User's preferred settings

FAQ

Frequently Asked Questions

History

History of versions

Bugs

Also called »Programmfehler«

Future
What will be supported in the future?

Thanks
Thanks to...

Author
The one who...

1.2 Disclaimer

Disclaimer
=====

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1.3 Introduction

Introduction
=====

IsisPPC is an
MPEG
-Player for Amiga computers.

Some Features:

- Starts from Workbench as well as from CLI
 - Display in 8/15/16/24 Bit on Workbench or any Public-Screen (auto-sensing)
 - Display in 8/15/16/24 Bit on CyberGraphX-Screens
 - Display on a cube in a
3D-View
(only Cybervision64/3D)
 - Usage of the Video-
-

Overlay
(only CyberVision64/3D)

-
- Control-Panel
 - Automatic resizing at window size change
- VideoCD/CD-I support (using external drivers from BurnIt)
- Audio support via AHI V4
- Supports MPEG audio layer I-III

1.4 MPEG

MPEG

====

The name MPEG refers to the Moving Pictures Experts Group, a consortium of digital video and audio processing experts. In the year 1993, the draft of this group was published by the ISO (International Organization for Standards) and thus declared a standard.

There is a distinction between
MPEG video

,

MPEG audio
and
MPEG system

One of the goals has been to reach as good picture and sound quality as possible using as few storage memory as possible. As an upper bound for storage memory usage, 192 KByte per second was defined.

For comparison: Without data compression, just the video data would consume over 3700 KByte per second. Additionally, there would be about 172 KByte per second for sound in stereo CD quality.

1.5 MPEG video

MPEG video

=====

In MPEG video, an animation is divided into single pictures, called "frames". There are three different types of frames: I-, P- and B-frames

I-frames (intra):

These frames are compressed similar to the well-known JPEG pictures. Data is stored independantly from previous or following frames.

P-frames (predictive):

Here, only changes concerning the previous I- or P-frame are stored. To display P-frames, data from the previous I- or P-frame must be decoded and available.

B-frames (bidirectionally predictive):

In B-frames, a steady motion of single picture parts between the previous and the following frame is being searched. In the best case, just the motion itself is coded and stored. B-frames require fewest memory, but can only be decoded after the previous and the following(!) frame has been decoded.

A typical sequence of MPEG-frames would be (in order of display):

```
I  B  B  P  B  B  P  B  B  I...
1  2  3  4  5  6  7  8  9 10
```

They would be ordered like this in the MPEG video file:

```
I  P  B  B  P  B  B  I  B  B...
1  4  2  3  7  5  6 10  8  9
```

With the SKIP option, you can control which types of frames will be decoded and displayed (see
Options
).

1.6 MPEG audio

MPEG audio
=====

In MPEG audio, we distinguish Layer-I, Layer-II and Layer-III. Together with the number in the term, also the complexity of the Layer increases; while Layer-I and -II are quite easily comprehensible (and can be played in real-time on 68060-equipped Amigas), Layer-III is rather complex.

In practise, however, Layer-II is used for most VideoCDs/CD-Is. Layer-III is used for DVD (Digital Versatile Disc) applications.

IsisPPC supports playback of all three layers.

1.7 MPEG system

```
                MPEG system
=====

Here,
                MPEG video
                and
                MPEG audio
                data are stored
together in a single file. This method is used mainly for Video CDs.
```

1.8 Requirements

```
Requirements
=====
```

Minimal configuration:

- an Amiga with a PowerPC and 68040 CPU
- AmigaOS 2.0
- a graphic card with CyberGraphX support (or AGA with CyberGraphX AGA)
- CyberGraphX Version 2.0 (v40)
- AHI V4+
- at least 4 MB RAM
- a CD-ROM-Drive for VideoCD/CD-I playback

Ideal configuration:

- PowerPC 604e/200MHz and 68060 CPU
- AmigaOS 3.x
- a CyberVision64 or CyberVision64/3D
- 16 MB RAM or more
- a double-speed CD-ROM-Drive

Memory requirements:

- At least 2 MB free RAM

Libraries:

- gtlayout.library v39+
- ppc.library v45+
- cgxvideo.library v40+ for Overlay option
- cgx3dvirgin.library v2+ for 3D-View option
- BurnIt_Master.driver and subdrivers for VideoCDs

1.9 Installation

```
Installation
=====
```

The installer script will install all required files for you.

If you rather want to install IsisPPC by hand, follow these steps:

1. Copy the file IsisPPC into a directory of your choice.
2. Ensure that the following libraries are in the LIBS: drawer:
 - asl.library
 - cgxsystem.library
 - cgxvideo.library, if you want to use the overlay of the CyberVision64/3D
 - cgx3dvirgin.library, if you want to use the 3D-View of the CyberVision64 ←
/3D
 - gtlayout.library
 - ppc.library
3. If you want to use the CD track option of IsisPPC, install these files to the LIBS: drawer:
 - BurnIt_Master.driver
 - the BurnIt_Drivers/BurnIt_CDrom subdirectory with the driver for your CD-ROM drive

Please make sure you have AHI V4+ installed (can be found on Aminet).

1.10 Usage

Usage

=====

IsisPPC can be started from Workbench as well as from CLI. The ToolTypes and CLI arguments are explained on the

Options
page.

Right after the program start, a control panel will appear.
The meaning of most of the tapedeck gadgets should be clear:

>	Play	Start playback or continue after pause
	Pause	Pause playback or step if already paused
<<	Backward	Spool backward
>>	Forward	Spool forward
^	Eject	Eject MPEG (Note: this one doesn't quit the program)
<	Previous	Previous VideoCD track
>	Next	Next VideoCD track

Below the tapedeck gadgets are three additional gadgets:

Load	Load MPEG and start playback
Prefs	Set/change preferences
Quit	Exit program

There is also a menu with all these options.

Keyboard settings (display window has to be activated):

```

- ' '          Play
- 'p' 'P'     Pause/Step
- '<'         Backward
- '>'         Forward
- 'e' 'E'     Eject
- '-'         Previous
- '+'         Next

- 'l' 'L'     Load
- 's' 'S'     Prefs
- 'q' 'Q' 'ESC' Quit

- 'f' 'F'     Full window size
- 'r' 'R'     Reset window size
- 'h' 'H'     Half window size
- 'd' 'D'     Double window size
- 'z' 'Z'     Zoom window
- 'a' 'A'     Window alignment (improves AGA speed)
                Selection recommended after dragging the window

```

Additional for 3D-View:

```

- '2' and '8' turn cube around X-axis
- '4' and '6' turn cube around Y-axis
- '3' and '9' turn cube around Z-axis
- '1' and '7' Zoom cube
- '[' and ']' Lighting mode

```

1.11 Options

Options

=====

The following Workbench ToolTypes/CLI arguments are supported:

```

NAME=<MPEG filename>      The name of the MPEG file (with path)
SCREEN                    Display on a 8/15/16/24bit screen
PUBSCREEN=<pubscreen name> Display on a public screen
OVERLAY                  Display in an
                        overlay
                        window
                        (only possible with the CyberVision64/3D)
COLORKEY                  Usage of color keying (see
                        Overlay
                        )
BACKDROP                  Usage of Workbench-Backdrop (see
                        Overlay
                        )
3D                        Usage of 3D-View (see
                        3D-View
                        )
SCREENMODE=<screen mode name> Screen mode string
DEPTH                    Screen depth

```

DITHER=ORDERED FS2 steinberg2)	Dither mode for 8bit display (ordered or floyd- ↔
CDTRACK=<track number>	Playback from VideoCD/CD-I track
FPS	Number of frames per second
	Two values have a special meaning:
	0 = as fast as defined in the MPEG file
	-1 = as fast as possible
FAST	Faster decompression with lower quality (slightly blurred picture)
SKIP=<percentage> FAQ)	Percentage of frames to be skipped (see also
MUTEAUDIO	Turn off audio output
LOOP frame has been	The MPEG film will be repeated after the last ↔ displayed
RESTART again	After playing one MPEG, the file requester pops up ↔
STATS	Print timing statistics after playing

1.12 Preferences

Preferences

=====

Input

Input	Get MPEG stream from "AmigaDOS file" or "CD track"
Default path	Default path for file requester
Device name	SCSI device of CD-ROM drive
Device unit	SCSI unit of CD-ROM drive

Display

Display Backdrop" or "3D-View"	Type of display: "PubScreen", "Screen", "WB- ↔
Overlay Colorkey"	Type of overlay: "No overlay", "Overlay" or " ↔
Dithering steinberg2)	Dither mode for 8bit display (ordered or floyd- ↔
PubScreen name ")	Name of PubScreen (if Display is set to "PubScreen ↔
Screen mode	Screen mode (if Display is set to "Screen")

Speed

FPS	Number of frames per second
Skip	Percentage of frames to be skipped
Fast	Faster decompression with lower quality (slightly blurred picture)

Audio

AHI unit	AHI unit to playback sound (setup with SYS:Prefs/ ↵
AHI)	
Volume	Sound volume (0 = silent, 100 = loud)
Balance	Sound balance (-50 = left channel, 0 = centered, 50 = right channel)
Mute	Turn off audio output
Misc	

Loop	The MPEG film will be repeated after the last ↵
frame has been	
	displayed
Statistics	Print timing statistics after playing

1.13 Overlay

Overlay
=====

The CyberVision64/3D has a special feature compared to conventional graphics cards: the overlay.

An Overlay is in principle a rectangular part of the screen, which cannot be hidden by windows or other picture elements. To put it in other words: an overlay is always the frontmost element in the hierarchy.

Using the OVERLAY option has the following advantages:

- 1) The CPU doesn't have to perform a colour space conversion (the conversion from YUV to RGB data is done by the graphics card).
- 2) The graphics processor also scales the output. That means that it (virtually) doesn't matter if the video is shown in a small window or on the whole screen.

So, with an overlay, the graphics output speed is increased strongly.

Unfortunately, by using an overlay some parts of the original Amiga "look and feel" get lost. The screen on which an overlay is displayed cannot be dragged anymore. Further, it sometimes looks strange if one wants to drag another window on top of the IsisPPC window and the IsisPPC output covers that window. But this effect can be eliminated by using the COLORKEY option (other window can lay above the IsisPPC window then).

Colorkey
=====

When using color keying, the window background is filled with a specific color. The Overlay is only shown where this color is located. If another window lays above the IsisPPC window, the IsisPPC window's key color is covered by that window and only the non-covered part of the Overlay is displayed.

1.14 3D-View

3D-View
 =====

When this option is used, the MPEG anim is mapped onto a cube on a 640*480*15 screen.

The cube can be turned around and zoomed by using the numeric keyboard. The window sizing keys ('f', 'r', 'h', 'd') also work in this display. Note that when using a full screen display, the cube cannot be rotated. This is because all edges of the cube must remain in the visible area of the view and a rotation would cause some edges to leave this view.

This effect requires a CyberVision64/3D and cgx3dvirgin.library v2+ installed in LIBS:.

1.15 History

History
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15.12.1998	V2.12	Included new BurnIt drivers
03.08.1998	V2.11	Finally, added 3D support for CV64/3D Removed some 'obsolete code' :^) Fixed some bugs concerning overlay functions Fixed audio bugs Included new BurnIt drivers
27.03.1998	V2.9	Fixed nasty bug Removed some obsolete code in the audio decoder Improved error output Included new BurnIt V2.0 drivers (BurnIt_Master, MMC, Plextor, Ricoh6200, Teac, Toshiba)
16.03.1998	V2.8	Fixed read handler bug introduced with double buffered file I/O of V2.4
10.03.1998	V2.7	Minor bugfixes; recompiled with SAS/C PPC beta 19
26.02.1998	V2.6	Wrong audio bitrate was displayed (had no effect on output quality)
20.02.1998	V2.5	Now audio-only files can be played Fixed bug with audio layer I mono files
15.02.1998	V2.4	Double-buffering file I/O
12.02.1998	V2.3	Design bug fixed Output of audio statistics
12.02.1998	V2.2	Improved Prefs design New Prefs subsection "Audio" Optimized audio decoder for layers II and III
06.02.1998	V2.1	Align menu on AGA screens
24.01.1998	V2.0	Bugfixes, completely reworked major parts of program
??..11.1997	V1.20	first public release

1.16 FAQ

FAQ

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- Q: When using the video overlay (option OVERLAY), sometimes patterns appear on the right hand side of the window. This is due to hardware bandwidth limitations and has nothing to do with IsisPPC as other programs using the overlay feature suffer from it as well. The effect gets even stronger when using the COLORKEY option.
- A: Use the "CGXMode" program to decrease the display mode's pixel clock. Check if those stripes still appear and decrease further if necessary.
- Q: When selecting an MPEG stream with audio, audio playback stutters.
- A: Increase the "Skip" value in the "Prefs" window to about 50. Click "Use". If audio still stutters, you'll have to increase the value even further. Values >=90 mean "skip all B-frames" and a value of 100 means "skip all B- and P-frames". Take a look at MPEG video for an explanation of B- and P-frames.
- You might also improve speed a bit by using the FAST option.
- Q: I use IsisPPC on an AGA screen. When moving the display window, it gets really slow. Why is this and what can I do?
- A: For AGA display, image data must be converted from chunky to planar and then it is blitted into the Bitmap, which lies in ChipRAM. When the left edge of the display window is not a multiple of 32, data has to be shifted. This requires additional computations, which have to be done in (noncachable) ChipRAM - it gets real slow. When the left edge is a multiple of 32, however, the shifting doesn't need to be done. This improves speed on AGA machines drastically. The "Align" function (from the "Window"-Menu) moves the window in order to assure the left edge lies on a multiple of 32. So, always select "Align" from the menu after dragging the window.
- Q: Audio is only played on one channel.
- A: Use the "Prefs/AHI" program to select a stereo++ mode and set the number of channels to 2.
- Q: Will IsisPPC run on Picasso96 systems?
- A: The P96 protection has been removed in V2.10.
- Q: IsisPPC don't play back the .DAT files I found on VideoCDs. Why?
-

A: First, a bit of CD-ROM theory:

On a CD-ROM, a block may contain up to 2352 bytes. An Audio-CD uses this block size. An ISO-9660 CD-ROM, however, has a block size of 2048 bytes, the other 304 bytes being used for error correction and checksums. And a VideoCD has a block size of 2324 bytes, as error correction is not that important (errors affecting only some video/audio frames in the stream), so only 28 bytes are used for checksums.

Currently, all Amiga CD FileSystems treat VideoCDs as ISO-9660 CDs. When trying to load a .DAT file, the block contains only 2048 instead of 2324 bytes. That's 276 bytes missing in each block! Naturally, IsisPPC cannot properly decode this strange looking stream.

A CD FileSystem which sends 2324 would be required, but there is no such available. This was the reason for implementing the VideoCD direct option.

1.17 Bugs

Bugs

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- Some VideoCDs cannot be recognized correctly. This reason for this is unknown, but when using a CDFileSystem, not even the VideoCD's title is displayed. My CD-Rom drive even refuses these CDs completely (they get ejected). As soon as I get another CD-Rom drive, I will work upon this.
- Audio output level is quite low (again, for unknown reasons).
- If you should discover further bugs, please contact the author

.

1.18 Future

Future plans

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- Index feature for VideoCDs/CD-Is with only one track
- Maybe a slider (like on Macs)

1.19 Thanks

Thanks to (alphabetical order)

=====

- Olaf Barthel, for gtlayout.library
- Martin Blom, for ahi.device
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- Steve Krueger, for the excellent SAS/C (M68k and PPC) compilers
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- Robert Reiswig, for the CyberGraphX, PPC, Osiris and Isis support pages and ↔
for the installer script
- Ralph Schmidt, for ppc.library
- Michael Siegel, for the BurnIt drivers and documentation

- and all the people who have reported bugs =:^)

1.20 Author

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=====

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The latest version of IsisPPC (as well as many of my other programs)
can be found here:

<http://studserver.uni-dortmund.de/~su0583/>

Check out the official CyberGraphX support page at:

<http://www.vgr.com/>
