

YP

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Chapter 1

YP

1.1 YP - The YAFA animation player

YP - The YAFA animation player
V0.90 (Thu 06-Mar-97)

Introduction

Requirements

Usage

Technical stuff

YAFA file format

Wildfire

Bugs/History

Copyright/Distribution

Author

1.2 YP/Introduction

The program YP is a player for
YAFA
animation files.

It has some features that let your AMIGA become a real multimedia machine:

-play directly from disk

or

preload the complete animation for maximum playback speed

-can use all

AGA screenmodes
-has a special
batch file mode
(for LARGE anim shows!)

-can play frame-synchronous sound effects (ProTracker modules, 8SVX samples)

1.3 YP/Requirements

Hardware

-MC68020 or higher
-AGA chipset
-recommended: FastRAM, HardDisk

Software

-AmigaOS V39 (3.0) or higher
-xpkmaster.library and compressors (LIBS:compressors/xpk?????.library)
if XPK compressed
YAFA
animations are to be played

1.4 YP/Usage

Shell start

Workbench start

Batch mode

Runtime control

Display types

1.5 YP/Usage/Shell start

When launched from shell YP has two modes of operation:

- 1) YP <YAFA file> [options]
- 2) YP -batch <batch file> [general+sound options]

For details about the batch mode see
here

.

The options are not case-sensitive, and also the order of options and anim filename on the command line is not important.
If you type 'yp -h' or 'yp ?' then YP prints the list of available options.

Another handy thing is the ASL filerequester that opens if there is something wrong with the specified YAFA file (if there was no name given or if it was misspelled or if the file is no YAFA anim).

The shell options can be divided into three sections:

General options

The general options let you choose a type of display and other modes that influence the behavior of YP for the complete time it is running.

```
-pubscr
  (or -ps) <name>

-modeID
  (or -mid) <hex number or 'req'>

-info
  (or -i)

-wait
  (or -w)

-verbose
  (or -v)

-stats
  (or -st)

-nodeactivate
  (or -nd)

-fastblit
  (or -fb)

-scale
  (or -sc)

-fastXPK
  (or -fx)
```

Animation options

The animation options are used to set buffer sizes and other things that are specific for each animation.

```
-firstframe
  (or -ff) <number>

-lastframe
  (or -lf) <number>

-speed
  (or -s) <number>

-buffers
  (or -b) <number>

-asyncbuff
```

```

        (or -ab) <number>

-caching
  (or -c)

-loadall
  (or -l)

-zoom
  (or -z)

-dither
  (or -d)

```

Sound options

The sound options are used to make some noise while the anims are played.

```

-module
  (or -mod) <ProTracker module name> <startframe> <stopframe>

-sample
  (or -smp) <IFF sample name> <startframe> <stopframe> <channel>
  <volume> <repeat>

-executable
  (or -exe) <command> <startframe>

```

1.6 YP/Usage/Workbench start

YP can be launched from Workbench either directly via its own icon ↔
 or via
 the "Default Tool"-field of an anim's icon.

All

```

  shell options
  are usable as ToolTypes. The ToolTypes-parsing is not
  case-sensitive, the leading "-" must be omitted and the long versions of the
  options keywords must be used. (eg. "fastxpk" instead of "-fx" in the shell)

```

It is possible to pass several anims to YP at once using the Multiselect-
 feature of Workbench (hold SHIFT key, single-click anim icons, double-click
 YP icon). The anims are played one after each other like in
 batch mode

.

1.7 YP/Usage/Runtime control

While YP is running it can be controlled via some keystrokes:

```

F1..F10  set playback speed
Space    pause/continue
s        sleep
n        next anim (in batch mode)

```


Return single frame steps (continue with Space)
 ESC/LMB exit

1.8 YP/Usage/Display types

In the current version YP offers three display types:

The 'hardware-display'

This display is used by default. It is in fact a low resolution screen of the default monitor (PAL or NTSC depending on the Amiga hardware).

The full screen dimensions are 352x290 (PAL) and 176x145 (PAL

2x2 zoom

).

Smaller anims are displayed in the center of the screen.

This display is programmed on hardware level and is currently the most stable one (concerning screen double-buffering and anim batch mode).

If the width of the screen is a multiple of 64 (64, 128, 192, 256 or 320)

then YP switches to a special AGA mode that uses 64-bit Bitplane-DMA-reads

thus making CPU accesses to Chip-RAM much faster. This speedup is most

notable with screens deeper than 6 bits (more than 64 colors).

The 'gfxlib-display'

If an anim is in HAM mode or is wider than 352 pixels then YP automatically switches to this display, which can also be done by using the

-modeID

option. The main advantage of this display is the ability to use ↔
 any of the

AGA screen modes. Anims are centered on the display, the AGA BorderBlank feature is activated. Screen double-buffering is synchronized with the display using a VBlank interrupt, so the anim playback speed depends on the vertical frequency of the respective monitor driver.

The 'pubscreen-window'

This display type is activated by the

-pubscr

option.

It is programmed in a 'high-level' manner using graphics.library and is not meant to be really useful (yet) as it still has some serious problems like the very slow blitting-routines and the lack of display double-buffering.

It could be improved to make use of graphics boards but:

-I don't have any experience in programming for CyberGFX etc.

-I don't have access to such hardware (for program testing).

So if you want to help implementing graphics board support in YP don't hesitate to contact

me

!!

1.9 YP/Usage/Batch mode

The batch mode is a unique feature that allows a sequence of anims ↔
 to be

played as if they were one large anim. All specified anim files are opened

and initialized at program start so that they can be played without a visible gap between each other.

Batch files have the same structure like the command line in single anim mode (but without the program name 'YP' of course!), each line contains a YAFA file name and corresponding anim options, sound options may also be specified here (appended to any of the lines).

batch file example

Infect & WK-Artworks have produced some big anim demos that use YP ←
's

outstanding performance:

```
DATAWORLD -released at The Party 1995
WILD SUMMER -released at The Summer Party 1996
DATAWORLD 2 -released at The Party 1996
```

These demos are available on Aminet and on several CD-ROM publications.

1.10 YP/Technical stuff

Making it efficient

Protecting the 'illegal' display against Intuition

Built-in XPK routines

1.11 YP/Technical stuff/Making it efficient

Making it efficient

YP is programmed in C (gcc 2.7.0). The most CPU-intensive routines (such as C2P, planar image zooming, Delta-decompression) are coded and carefully optimized in assembler (ASM-One 1.25).

The 'realtime system' in YP has been developed during the last few months. It is based on a VBlank interrupt for counting the speed values and switching the screen buffers, a SoftInterrupt for transferring the frame from the load buffer to the screen buffer (doing C2P, Delta-decompression etc.) and the OS process itself for loading the frames using asynchronous I/O (sends DOS packets to the filesystem).

I spent quite a lot of time on optimizing the player, and I think I nearly reached the limit now. The major bottleneck is the sloooooow Chip-RAM which makes it impossible to play large anims (eg. 640x480x8) at high speed. But this doesn't hurt too much as I think it is simply unreasonable to deal with animations of that size on today's AMIGAs (I'm talking about full screen action and not static presentations or titling).

A friend of mine has a 68060 with lots of Fast-RAM and a fast HD, and he can play 'Dataworld' at 78fps on his A1200! So don't lament that YP runs too slow on your machine...

1.12 YP/Technical stuff/Protecting the 'illegal' display against Intuition

Protecting the 'illegal' display against Intuition

The 'hardware-display' is a method normally used in demos: switch off multitasking and bang in your own copperlists. The 'gfxlib-display' of YP is also not very system conform, it is made with MakeVPort() and MrgCop(), and then comes LoadView() and makes it visible.

These methods are quite efficient because they are on a very 'low level' in the system software. The problem is that YP can't disable the multitasking OS since it has to make use of it for loading and playing. But when the OS is running other tasks can open screens, or the user could switch the screens using <LCommand M>. This would definitely kill YP's display!

I experimented a while and found a good way to prevent other tasks from destroying the 'illegal' display: YP installs it's own input handler at a high priority that 'eats' all inputs, and LockIBase() makes it impossible for Intuition to do anything. This works fine as far as I have tested it, no screen blanker has a chance when YP is running :-)

Of course YP can't use Intuition itself when it has locked IBase, so one has to be very careful when using the

```
-executable
option.
```

1.13 YP/YAFA file format

The animation file format YAFA is a try to develop a new standard ←
that is

able to supersede IFF-ANIM. The strength of YAFA lies in the great variety of compression options which makes it easy to adapt anim files to certain requirements. Massive compression using XPK may be the goal of the user of a fast machine, while the user of a slower computer prefers faster playback at the cost of less compression.

Delta-compression like it is used in IFF-ANIM and YAFA is useful for 'static camera and some flying objects'-like animations, but it gains nothing at 'crazy camera flight through a tunnel'-like animations. IFF-ANIM offers no alternative here, but with YAFA you can choose among the lots of XPK packers that are available. When it comes to maximizing XPK compression ratios the option to store the frames as chunky images is another switch to try.

YAFA features:

```
-bit depth 1...8 (2...256 colors, HAM6, HAM8)
-planar or chunky frames for all depths
-optional timecode-per-frame
-optional palette-per-frame
-optional Delta-compression
-optional XPK-compression
-annotations (similar to ANNO in IFF-8SVX)
```

Software developers!

The YAFA anim file format can be the replacement of IFF-ANIM. Please consider implementing YAFA loaders/savers in your animation software in order to make

YAFA more popular and easier to handle. Player programs for graphics cards are needed too.

There is a documentation on the YAFA file format available on Aminet:

doc/misc/YAFA-doc.lha

For further help and support you are welcome to contact

me

.

1.14 YP/Wildfire

Wildfire - where dreams become virtuality

A Special Effect Program and many more

Wildfire is not only another brandnew image-processing-program - it's a professional animation-processor with some really new concepts.

It allows you for example the creation and processing of animations in several formats, the generation of time-dependant special-effects and the design of large projects containing several animations and frame-synchronized sound-effects.

Because the common animation-formats on the Amiga have too many lacks or restrictions we have tried to create a better one: YAFA. This animation-format for example features many compression-methods and realtime-zooming.

One of the outstanding features of Wildfire is the fact that it makes for you no difference if you apply changes to a whole animation or if you process only one image. A single image is only a very special case of an animation.

In contrary to common image-processors you can use envelopes instead of plain numbers as effect-parameters. This makes the easy creation of time-dependant special-effects possible.

So you haven't to fight against the "do"-loops in an ARexx-script to get an animation outside your image-processor anymore.

All of the numerous effects can be arranged in any number and combination. Because the output of any of these effects can be one of the 8 temporary-buffers Wildfire allows you to PROGRAM IMAGES in an comfortable way !

Main Features:

-fast and comfortable Converter:

input: YAFA, ANIM5/7/8, mpeg, image-sequences

output: YAFA, ANIM5/7/8, image-sequences

-Preview for almost any operation

- Project-Editor which allows the creation of large and complicated projects easily using the mouse
- Effect-Generator featuring time-dependant parameters via envelopes
- a stunning library of effect-PlugIns
- some really new effects, real 3D-effects
- (un)loading of PlugIns at any time
- Envelope-Editor
- Timecodes-Editor
- Transition-Maker for easy creation of transitions between two animations
- easy-to-use Player-interface
- Filmstrips to simplify the perfect timing of huge projects
- AnimInfo-function displaying size-profiles etc.
- fontsensitive GUI without MUI
- internal gadget-toolbox which handles mathematical expressions instead of only plain numbers
- calculator which allows for example the export of user-defined symbols to the gadgets in the whole-program
- Drag&Go
(using drag.gadget 0.2 Copyright © 1996 Jörg Kollmann, see bonus drawer!)
- ARexx-port with about 400 commands
- macros, custom-windows, docks
- import of images from other programs
- Developer-Kit (with working example) which allows you to create your own effect-PlugIns
- and many more

Wildfire is SHAREWARE and can be downloaded from Aminet. (gfx/edit)

1.15 YP/Bugs, History

Known bugs

The

gfxlib-display

still has some problems:
-there is some annoying 'trash' between two anims in batch mode
-palette-per-frame can cause problems with double-buffering
 (LoadRGB32() needs more time than the VBlank; currently I got no idea how
 to fix this, please contact
 me
 if you know how to switch colors and
 bitmaps simultaneously in a clean way using graphics.library)

History

v0.90 (Thu 06-Mar-97)

- major speedup for the
 hardware-display
 (thanx to Bernd Rösch for the tip!)

v0.89 (Sat 01-Mar-97)

- code cleanup and optimization
- SeekAsync() fixed (finally?)
- when launched by
 Wildfire
 then the requesters open on the Wildfire screen
- single frame step added (RETURN key)

v0.88 (Thu 26-Dec-96)

- added "-fastXPK" unpacking routine for xpkRAKE
 (the original routine in the library modifies the packed data,
 this leads to checksum errors when using YP's "-caching" mode!)

v0.87 (Mon 11-Nov-96)

- Workbench-startup added (featuring multiselect and tooltypes)
- fixed "SeekAsync"-bug
- implemented support for extended Delta-Compression format
 (one or two start-frames as delta-to-empty-frame or plain image)

v0.86 (Tue 29-Oct-96)

- 'info' caused returncode 20
- 'nodeactivate' was always on
- fixed internal XPK routines using the original source codes
- 'fastXPK' is now an official feature

v0.85 (Thu 26-Sep-96)

- Aminet release

(no consistent history available)
many versions with lots of fixes and new features.

first version December 95, used for 'Dataworld' release at The Party 95

1.16 YP/Copyright, Distribution

Copyright

YP is Copyright (c) 1996, 1997 by Michael Henke. All rights reserved.
Commercial use is prohibited, if you want to use it for commercial purposes
you have to get an explicit permission from the
author
first.

YP is released as FREeware. It is allowed to charge a fee to recover
distribution costs, but no profit may be made by selling or otherwise
distributing the program. It is not allowed to distribute YP without this
documentation. Modified versions of the program may not be distributed.

It is not allowed to disassemble or otherwise reverse engineer the program.
If you are interested in the source code please contact the
author
.

Disclaimer

No guarantee is given nor implied that this program is fit for any use.
The program and the information within this text are provided on "AS-IS"
basis. The entire risk as to its quality and performance is with the user.
In no event will the author be liable for direct, indirect, incidental or
consequential damages resulting from any defect in the program. The author
reserves the right to make changes to the program or the documentation
without notice.

1.17 YP/Author

Main code and YAFA format development

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Additional code and author of "WildFire - The animation processor",
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1.18 YP/Option -pubscr

```
-pubscr (-ps) <name>
```

- activates the
pubscreen-window
mode
- <name> is the name of the public screen, case-sensitive
- this display mode is rather experimental, it does not support double buffering which leads to a more or less annoying 'flickering'

1.19 YP/Option -modeID

```
-modeID (-mid) <hex number or 'req'>
```

- activates the
gfxlib-display
 - the modeID is a hexadecimal number, don't use any prefixes (like \$ or 0x) ←
- if 'req' (without the quotes) or an unavailable modeID is specified an ASL screenmode requester opens
- to get the modeID of a certain screen mode use 'req' and the option


```
-verbose
examples: LoRes          0
HiRes-Laced             8004
Multiscan Productivity 39024
```

1.20 YP/Option -info

```
-info (-i)
```

- print some information about the anim(s) (like
-verbose
) but don't play

1.21 YP/Option -wait

```
-wait (-w)
```

- open a black screen before the first and after the last anim,

continue with <Space>

- useful for video recording because you know exactly when the anim starts
- 'hardware-display' only

1.22 YP/Option -verbose

-verbose (-v)

- print some information about the anim(s) and also some more warnings

1.23 YP/Option -stats

-stats (-st)

- print statistics (played frames, play time, frames-per-second) on exit

1.24 YP/Option -nodeactivate

-nodeactivate (-nd)

- do not pause and restore system colors when window gets deactivated
- 'pubscreen-window' only (option
 - pubscr
 -)

1.25 YP/Option -fastblit

-fastblit (-fb)

- use faster blitting routine for copying image data into the window, this usually leads to even more 'flickering'
 - 'pubscreen-window' only (option
 - pubscr
 -)
-

1.26 YP/Option -scale

`-scale (-sc)`

- make the window resizeable, the anims are scaled to the current window size which is quite slow (thats why it's optional)
- 'pubscreen-window' only (option
 - `-pubscr`
 -)

1.27 YP/Option -fastXPK

`-fastXPK (-fx)`

- use YP's internal unpacking routines (currently for FAST, NUKE and RAKE) instead of `xpkmaster.library` and the corresponding compressor libraries
- a significant speed increase can be achieved by this because using `xpkmaster.library` results in some overhead:
 - open/close the compressor library for each `XpkUnpack()` (=every frame!)
 - checksum the packed data before unpacking it
 the latter function can of course be considered as useful because it avoids crashing the unpacking routine on corrupted data, but if you are sure that a YAFA anim is not corrupted (after playing it without '-fx') the risk of crashing YP's unpacking routines should be nearly 0 (ZERO :-)
- the unpacking routines used in YP are based on these compressors:
 - `xpkFAST.library` V1.06 (27-Jul-94) by Christian von Roques
 - `xpkNUKE.library` V1.1 (02-Nov-92) by Urban Dominik Müller
 - `xpkRAKE.library` V1.7 (06-Sep-95) by Karsten Dageförde
 they were testet with many different files and seem to work well. if you encounter problems with them (an anim plays nice without '-fx' but crashes with it) then please contact
 - me
 - and also specify which versions
 of `xpkmaster.library` and the compressor were used for packing.

1.28 YP/Option -firstframe

`-firstframe (-ff) <number>`

- the first frame of the anim to be played, frames before this are skipped

1.29 YP/Option -lastframe

`-lastframe (-lf) <number>`

- the last frame of the anim to be played
- can be greater than the number of frames in the anim, playing will restart if necessary

1.30 YP/Option -speed

`-speed (-s) <number>`

- set the playing speed for the anim, overrides the value contained in the file
- the speed value is the number of video frames that each anim frame is shown, the smaller the value the faster it plays, minimum is 1

1.31 YP/Option -buffers

`-buffers (-b) <number>`

- set the number of frame buffers for the anim, default is 6
- the buffers are needed for smooth playing while loading from disk, the best number depends on several things (average loading speed, file system fragmentation, CPU and DMA speed etc.)

1.32 YP/Option -asynbuff

`-asynbuff (-ab) <number>`

- set the size of each of the two asynchronous load buffers for the anim, the number is in KBytes, default is 64
- large buffers can make loading faster (depends on drive, filesystem etc.), small buffers reduce memory usage but usually decrease loading performance

1.33 YP/Option -caching

`-caching (-c)`

- make YP load the complete anim to memory before starting to play
-

1.34 YP/Option -loadall

-loadall (-l)

- make YP load and XPK-decompress the complete anim before starting to play

1.35 YP/Option -zoom

-zoom (-z)

- perform realtime 2x2 zooming while playing
- 'hardware-display' only

1.36 YP/Option -dither

-dither (-d)

- perform realtime 2x2 zooming with simple dithering while playing
- 'hardware-display' only

1.37 YP/Option -module

-module (-mod) <file name> <start> <stop>

- the specified ProTracker module is loaded to Chip-RAM before anim playing starts
- module playing starts/stops when the specified anim frames are reached
(NOTE for
 batch files
)
- modules are always loaded using XPK (so YP recognizes uncompressed and XPK- or PowerPacker-compressed files)

1.38 YP/Option -sample

-sample (-smp) <file name> <start> <stop> <channel> <volume> < ↵
 repeat>

- the specified IFF-8SVX sample is loaded to ChipRAM before anim playing starts
- sample playing starts/stops when the specified anim frames are reached (NOTE for


```

          batch files
          )
      
```
- channel is a number 0...3, volume is a number 0...64, repeat is a number: 0=loop forever, other=number of loops
- stereo samples are supported, channel has no meaning then because YP takes two channels for stereo playing automatically
- samples larger than 128 KBytes are not played correctly, this is due to some limitations in the AMIGA audio hardware

1.39 YP/Option -executable

```
-executable (-exe) <command> <start>
```

- the specified AmigaDOS command is executed when the anim frame <start> is reached (NOTE for


```

          batch files
          )
      
```
- NOTE:


```

          use this with care when YP runs on 'hardware-display' or 'gfxlib-display'!
          the command may not do any output to a shell window,
          it may not do anything with windows and screens.
          (actually the complete Intuition system may not be used!
          see also
              tech stuff
          )
      
```
- if <start> is 0 (zero) the command is executed before the player's display is opened (it is allowed to use Intuition)

1.40 YP/Batch file example

This is an example of a batch file used by YP:

```

---cut here-----
;
; comment lines have a ';' as first character

; empty lines are allowed too
; every (real) line contains one animation (and maybe anim options)
; sound options can be appended to every animation line
;     NOTE: in batch files the start/stop frames for sounds
;         are frame numbers in the whole anim sequence

```

```
;          rather than frame numbers of individual anims
ram:example1.yafa -c -lf 200 -mod ram:mod1 1 500
ram:example2.yafa -z -ff 20 -lf 400
---cut here-----
```
