



PrivateEye

Image Viewer
by David Thomas, © 1999–2021
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Welcome

PrivateEye is an image viewer for RISC OS.

It requires RISC OS 3.6 or later and a Boot sequence with the Nested Wimp and a 32-bit Shared C Library.

Features

- Loads and displays bitmap and vector images
 - Sprites, JPEGs, GIFs and PNGs
 - DrawFiles and ArtWorks
- Bitmap effects
 - Adjust gamma, brightness and contrast
 - Blur and sharpen
 - Change saturation and apply histogram effects
- Alpha channel support
- Bitmap rotation with interactive preview
 - Rotation is lossless for JPEGs
- Native JPEG display using SpriteExtend
 - Inbuilt lossless “cleaning” transparently loads progressive JPEGs
- JFIF, Exif and Adobe metadata information display
- Multiple-channel histogram
- Display images may be saved
 - Convert JPEGs, GIFs and PNGs to into Sprites
- Any number of images may be open concurrently
- Customisable key map
- Lots of interactive help (use it!)

Supported Image Formats

On loading, PrivateEye may convert images into a RISC OS-native format. This means that bitmap images like GIFs, PNGs and (optionally) JPEGs are converted to Sprite format when loaded.

The converted image is referred to as the *display image*. Operations such as saving, rotation and the effects system operate on the display image only.

Sprites

All varieties of Sprite are loaded and displayed, if the host OS understands them. For example, RISC OS 5 may be unable to load the alpha-blended and CMYK format Sprites native to RISC OS Select.

PrivateEye treats any alpha channel data in 16 million colour format Sprites as transparency information. The alpha data is expected to reside in the top byte of each 32-bit pixel. This is the same format used by *Tinct*, *Composition* and *Variations* but different to the format used by RISC OS Select which instead stores the alpha channel in the mask data portion of the Sprite.

Sprite files containing multiple sprites will only show the first Sprite in the file.

JPEGs

RISC OS's SpriteExtend module, version 0.99 or later, is used to directly display JPEGs. This allows images larger than available free memory to be displayed by decompressing and plotting on the fly.

Progressive (multiple scan) JPEGs are supported even if the host OS doesn't support them. PrivateEye has an inbuilt version of *jpegtran* which is used to convert JPEGs into a baseline format that SpriteExtend can render.

JPEGs may be optionally be converted to Sprite when loaded (see the Choices window.)

GIFs

GIFs are converted into Sprite format when loaded.

PrivateEye presently has no animation support, so animated GIFs will only show the first frame.

PNGs

PNGs are converted into Sprite format when loaded.

Where possible, simple on/off transparency is retained as a Sprite mask. If the transparency is not simple then a 32bpp image with an alpha mask is created.

PNGs with 16 bits per component will be truncated to 8 bits, as there is no RISC OS format capable of holding that level of detail.

Where present, the *bKND* chunk is used to set the colour of the window background.

DrawFiles

The DrawFile module is used to display DrawFiles.

A border of 16 OS units is added in display.

ArtWorks

The ArtWorks rendering modules are used to display ArtWorks files.

AWViewer must have been seen by the Filer for this to work. Note that ArtWorks itself won't do: it must be AWViewer. All RISC OS machines since the Risc PC have shipped with a copy of AWViewer on the hard disc.

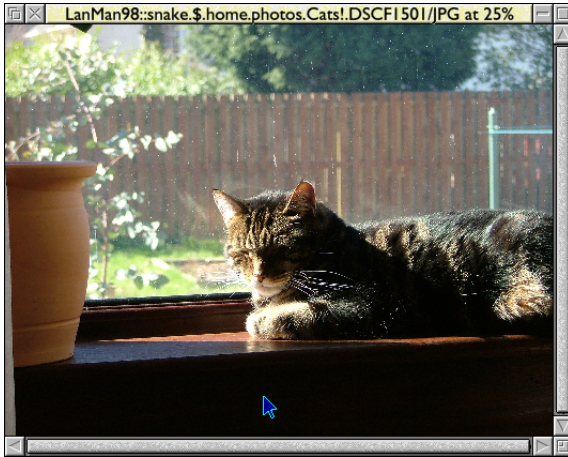
Unrecognised Formats

If the file type is not recognised PrivateEye will inspect the contents of the file to see if it is a format that is understood. If so, it will set the file type appropriately and then load the file.

Otherwise, it will use Computer Concepts' FFG protocol to load images it does not natively understand. For this to work you must have *TransFSI*, *TranTIFF+*, or similar, installed.

Viewer Windows

The *viewer window* is PrivateEye's main interface.



Loading Images

To view an image, drag it from a directory display to the icon bar icon. You can load any number of images, each will be shown in its own viewer window.

To re-use an existing viewer window drag the image into that viewer window.

If the image does not have the correct file type, then

PrivateEye will attempt to identify the correct type and set it.

Input Focus

When you click in a viewer window it gains the input focus. You can then use the keys detailed below to scroll, scale, etc.

Scrolling Around

If parts of the image are not visible, you can scroll around either by dragging within the window using SELECT—the *grab* tool—or by using the cursor keys.

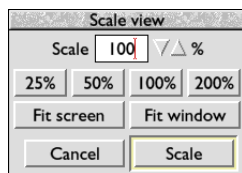
On suitable OS versions, the mouse scroll wheel may also be used to scroll vertically.

You can scroll to a specific point by holding CTRL and clicking SELECT at the desired position.

Scaling The View

You may need to scale the image to fit it to the screen, or to view an area in detail. There are a number of controls for this.

The *Scale view* dialogue is available from the viewer menu or by pressing F11. The default scale of 100% shows the image at a 1:1 pixel ratio.



There are standard preset scales of 25%, 50%, 100% and 200%. **FIT SCREEN** fits the view to the size of the screen. **FIT WINDOW** fits the image to the current size of the viewer window. Click **SCALE** to make the scale level take effect.

With the Scale view dialogue open, you can also use the UP and DOWN keys to change the scale by 5%. This takes immediate effect. Using SHIFT in conjunction doubles the step size to 10%. (PAGE UP and PAGE DOWN perform the same function.)

Scaling with the Keyboard

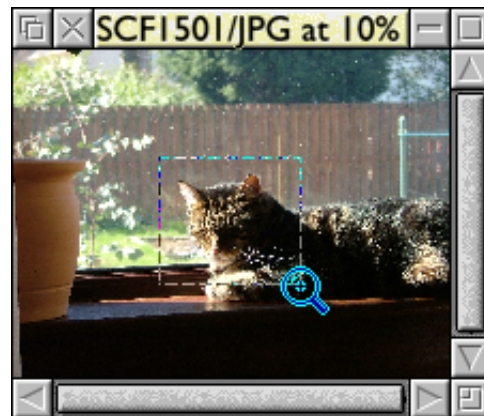
CTRL W and CTRL Q zoom in and zoom out respectively.

CTRL T toggles between the previously selected and the current scale level. CTRL D resets the scale to 100%.

Scaling with the Mouse

A SHIFT SELECT click will zoom in around the clicked point. SHIFT ADJUST click does the same but zooms out. If multiple steps are configured then a zoom effect will be used.

Dragging ADJUST in the viewer window drags out a zoom box. The area of the image highlighted will be scaled to fit the window.



Moving Between Files

Pressing SPACE, or alternatively PAGE DOWN, will move the viewer onto the next file in the directory. PAGE UP moves to the previous file.

The order of the files in the directory determines the previous / next viewed image.

Saving

F3 opens the Save dialogue. This saves a copy of the display image.

Delete

CTRL K deletes the currently viewed image. It uses the multitasking Filer_Action window to perform the deletion so will interface with *Recyclone*, etc.

New views

Should you need to view an image at two different scales, or view multiple different parts of a single large image, you can create a new view by pressing CTRL N. This opens up a new view of the same image.

Additional views require no significant additional memory.

Embedding

Dragging with SHIFT CTRL SELECT inside the viewer window allows you to embed the viewer window inside another window.

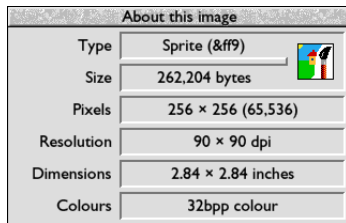
To un-embed a window perform the same action again but release the drag when over the icon bar.

This uses a feature of the Nested Wimp intended for embedding Java plugins inside web browser windows.

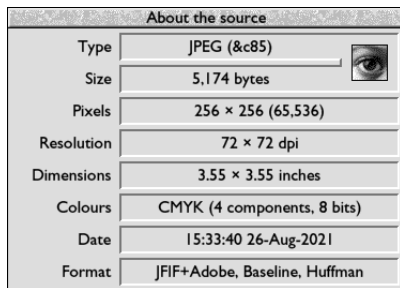
Image Information

PrivateEye has **two** image information windows.

Image Info shows information about the display image. It is available from the viewer menu, or with SHIFT F1, and looks like this:



Source Info shows information about the source image. It is available from the viewer menu, or with CTRL F1, and looks like this:



The information windows often display the same or similar information. However, if a change to the size of the image was made, e.g. a rotation, or a change in the image was required upon loading, e.g. converting from JPEG to Sprite, then the information may differ. For example, Sprite files appear to be 4 bytes longer when loaded than when on disc. This is because the in-memory structure of a sprite *is* 4 bytes longer.

Notice that source info window has additional **DATE** and **FORMAT** fields. Some formats (presently only JPEG) will fill out the **FORMAT** field with details of the structure of the image.

Many of the entries don't apply to vector formats so in those cases it will simply display a dash.

Metadata

Some image files may contain embedded information additional to the image data. PrivateEye calls this *metadata*. The *Metadata window* lets you see this information.

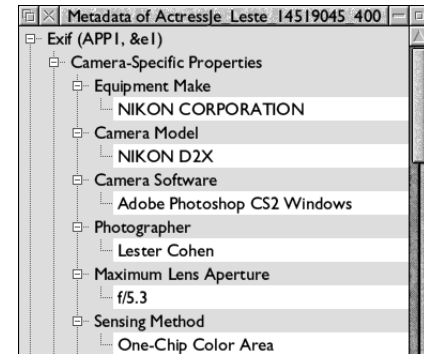
*The Metadata window is presently only available for JPEG images loaded in their native format. If you want to use this feature you may need to disable **CONVERT TO SPRITE** in the JPEG choices.*

Open the Metadata window by choosing **METADATA** from the viewer window's menu or by pressing SHIFT CTRL F1. One metadata window may be opened for each image.

The menu entry will be greyed out if no metadata is present.

Use

The metadata is presented in a tree format like this:



Individual branches of the tree can be collapsed or expanded to hide or reveal relevant data by clicking the controls at the left.

Click MENU to open up a small menu which lets you collapse or expand all tree branches.

Classes of Metadata

There are three common types of JPEG metadata which PrivateEye understands:

Exif

- The standard for digital camera data.
- Contains information including time, date, camera make, model, resolution, focus and flash.

Adobe

- Output by Adobe applications, primarily Adobe Photoshop.
- Contains information proprietary to Adobe applications such as effect settings.

The Adobe segment also includes *IPTC-NAA* data.

- Contains information about captions, headlines, keywords, photographer, copyright holder, etc.

JFIF Comments

- JFIF provides for multiple blocks of plain, unformatted text data.

Examples

IPTC-NAA

Images containing this type of metadata may often be found on The Internet Movie Database

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

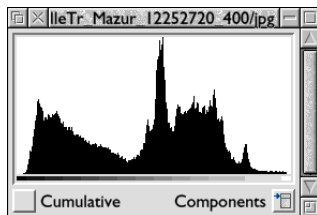
Histogram

The *Histogram window* displays a histogram of an image's *luma*: the brightness portion of the image.

*The histogram window is only available for 8bpp grey and 32bpp colour bitmap formats. If you want to use this feature with a JPEG then **CONVERT TO SPRITE**.*

It can also show the histogram of red, green, blue and, where available, alpha, components.

Open the Histogram window by choosing **HISTOGRAM** from the viewer window's menu or by pressing CTRL I. One histogram window may be opened for each image.



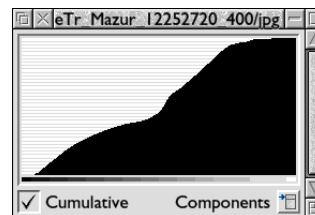
The histogram lets you see which tones contain the greatest amount of detail. In the above example, the low level at the right hand side of the graph indicates an absence of detail in the brightest part of the image.

You can use this information to guide your choices when

making adjustments with the Effects window.

Display Options

The **CUMULATIVE** option displays the histogram as an increasing amount from left to right.



The **COMPONENTS** pop-up opens a menu which lets you choose which colour channel to view: luma, red, green, blue or alpha (where present).

Scale Bars

Light grey horizontal bars are drawn across the display for every 3.125% of total pixels shown (32 intervals.)

Luma Calculation

Luma is a weighted sum of gamma corrected components.

Luma here is calculated using the Rec. 601 coefficients of

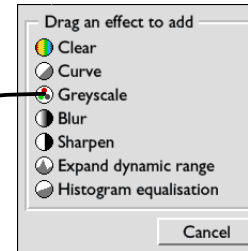
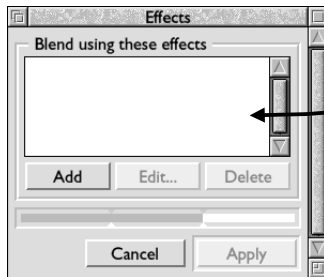
$$Y' = 0.299 R' + 0.587 G' + 0.114 B'.$$

Effects

The *Effects window* lets you apply a multitude of effects to bitmap images.

*The Effects window is only available for 32bpp colour bitmap formats. If you want to use this feature with a JPEG then **CONVERT TO SPRITE**.*

Open the Effects window by choosing **EFFECTS...** from the viewer window's menu or by pressing CTRL E. An effects dialogue will appear containing an empty list:



Drag and drop an effect from the effects palette to the effects window to add it. The viewer window will immediately update with a preview of the effect.

The overall level of the effect is controlled with the slider at the bottom of the window. Dragging the slider updates the preview.

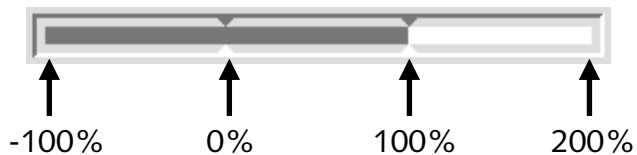
Click **APPLY** to make the effect permanent.

Adding Effects

Click **ADD** to start adding effects. The *effects palette* window will pop up:

Level Slider

Effects are computed and blended against the original image. The *level slider* controls the amount of blending.



Rather than ranging from 0% (original image) to 100% (processed image) it ranges -100%..200%. This is because the blender is *extrapolative*: it can produce results outside the normal range.

Setting the level outside the 0..100% range causes extrapolative results. For example, adding a “clear to black” effect then applying a level of -100% causes the image to be **brightened**.

Multiple Effects

You can add multiple effects at once. Multiple effects are applied in sequence from top-to-bottom. The result is then blended with the original image.

Editing Effects

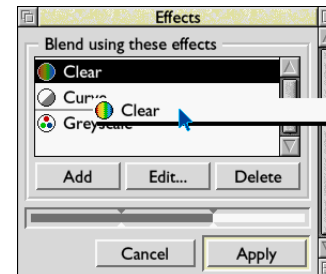
The effects are shown in a scrolling list. Effects can be selected with SELECT and de-selected with ADJUST.

The **EDIT...** and **DELETE** buttons beneath the list will highlight when the respective actions are available.

To delete the currently selected effect, click **DELETE** or press the DELETE key.

Re-ordering Effects

The ordering of effects can be significant: drag and drop effects to re-order them. While you drag the effect a light grey indicator line will show you the position where the effect will be inserted.



Individual Effects

Clear

Simply clears the image to the specified colour.

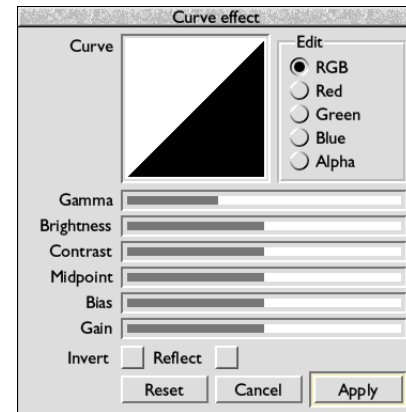
Clicking the **EDIT...** button will open up a RISC OS standard ColourPicker dialogue.

The Clear effect is only of use by itself, as any further effects added later in the list will be applied to a plain colour.

Curve

The *Curve* effect offers a combined control for gamma, brightness, contrast, midpoint, bias and gain adjustment. You can also invert the curve (flip it left-to-right) and reflect it around its middle.

Clicking the **EDIT...** button will open up the *Curve effect dialogue*. By default it shows a linear mapping (no change):



Choose the channel to edit from the radio buttons on the top right hand side, then drag the sliders to adjust the curve.

Click **RESET** if you want the default settings back.

Greyscale

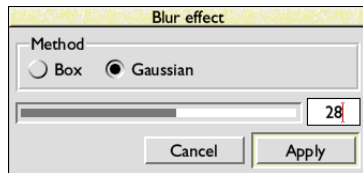
The *Greyscale* effect discards all chroma information leaving only the luma present.

As with the histogram, this uses the Rec. 601 weightings.

Blur

The *Blur* effect offers a choice of either a box blur or a gaussian blur. Both can specify a radius of up to 47 pixels.

Clicking the **EDIT...** button will open up the *Blur effect* dialogue:



Note that using box blur with large radii can result in visible banding.

Sharpen

The *Sharpen* effect provides a mild sharpening effect, using a 3x3 convolution matrix.

Expand dynamic range

This effect looks for unused space in the shadows and highlights of the histogram and stretches the image to occupy all of the available volume.

The RGB channels are stretched by the same amount so this will preserve colours.

Histogram equalisation

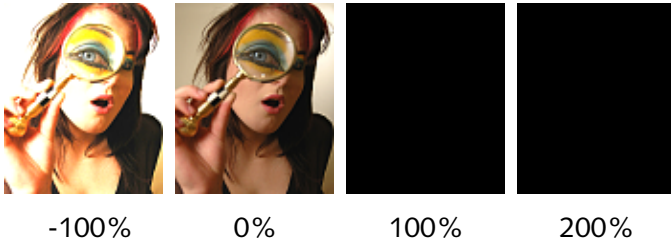
Attempts to create an even spread of values across the available colour volume.

This is useful for extracting obscured detail from images, but processes RGB separately so can lead to colour distortion.

Examples

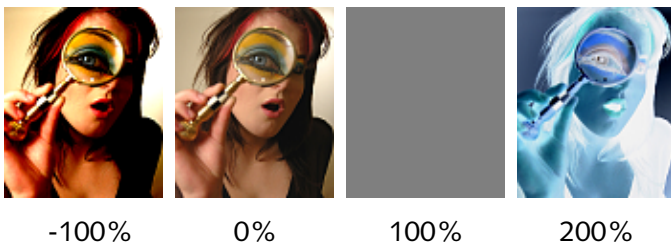
Changing brightness

Add a Clear effect. Set it to black. Dragging the slider to the left will increase the image's brightness.



Changing contrast

Add a Clear effect. Set its colour to 50% grey. Dragging the slider to the left will increase contrast; to the right will decrease contrast.



Changing saturation

Add a Greyscale effect. Dragging the slider to the left will increase saturation; to the right will decrease saturation.



Sharpening an image

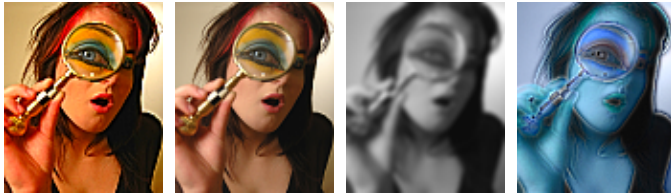
Add a Blur effect (yes, really!) then drag the slider to the left past the left-most 'notch'.

Sharpening this way is sometimes called *unsharp mask*.



Combined saturation and sharpening

Add a Blur effect then a Greyscale effect. Dragging the slider to the left will simultaneously increase saturation and sharpen; to the right will decrease saturation and blur.



-100%

0%

100%

200%

Memory Use & Speed

The effects system creates two temporary bitmaps of the same size as the original image. Therefore applying effects to large images will claim a lot of memory.

Similarly large images can also take some time to process. The full image is always processed. The update after dragging the effect level slider may not always be instant.

Further Information

The effects window's blending technique is based on "*Image Processing By Interpolation and Extrapolation*" by Paul Haeberli and Douglas Voorhies.

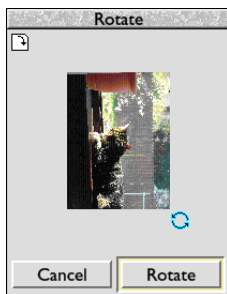
<http://www.graficaobscura.com/interp/>

Rotate

The *Rotate dialog* can rotate Sprites and JPEGs in multiples of 90 degrees. It can also flip, transpose and transverse.

Rotate and transform functions are only available for Sprites and JPEGs.

Rotation and transformation of JPEGs is lossless. That means it does not perform a full decompress-transform-compress cycle which would result in quality degradation. Instead it uses *libjpeg's* lossless rotation code.



CTRL O opens the Rotate dialog. The dialog is straightforward to use. Simply drag the thumbnail image and it will spin around its centre. As you rotate the image it will snap to the nearest 90 degrees. Release when it appears in the desired orientation. Click **ROTATE** to apply

the rotation.

Dragging with ADJUST behaves similarly, except that it performs an initial horizontal flip. SELECT and ADJUST allow all possible flips and rotations to be applied.

The icon in the top left hand corner of the window shows which rotation, or transformation, will occur.

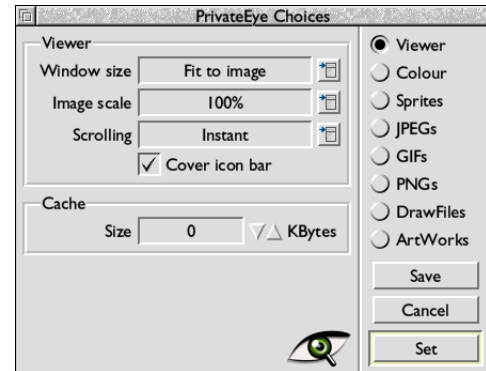
Keys

The equivalent key presses in the viewer window are CTRL L and CTRL R to rotate left and right respectively and CTRL H and CTRL V respectively to perform horizontal and vertical flips.

Choices

The Choices window is available from the icon bar menu. It provides control over a number of different aspects of PrivateEye's behaviour.

Viewer Choices



WINDOW SIZE controls the size of the viewer window.

- **FIT TO IMAGE** sizes viewer windows to fit exactly the contained image.
- **FIT TO SCREEN** makes viewer windows at least the size of the screen.

IMAGE SCALE controls the image scale applied when a new image is loaded. The choices are similar to those in the **SCALE VIEW** dialogue except for **PRESERVE** which re-uses the previously selected scale, or 100% if a new viewer window is opened.

SCROLLING controls how many steps are used when scrolling and zooming. The more steps you configure the smoother the effect will be. However, too many steps can also slow down if the image is complex to redraw.

PrivateEye tries to keep the viewer window in the same position when moving between images. **COVER ICON BAR** controls whether it will avoid obscuring the icon bar with viewer windows. If not set, viewer windows will be made smaller and positioned to avoid the icon bar.

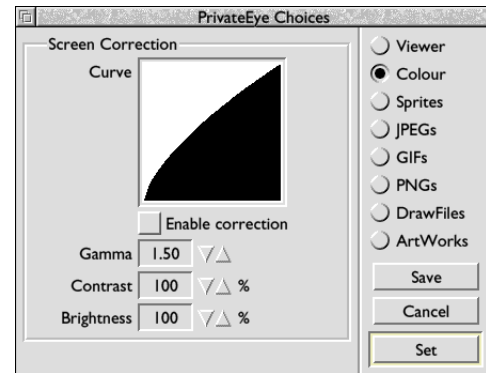
Cache Choices

PrivateEye can set aside memory in which to retain discarded images. When configured, if you close an image it will be placed in the cache. Then if you later try to view that image again, the cached entry will be retrieved instead of re-loading the image

SIZE controls the size of the cache. The default is zero which disables the cache. Choose a non-zero KByte value to enable the cache.

Use **EMPTY CACHE** on the icon bar menu to discard all cached images.

Colour Choices



Screen Correction provides a simple gamma, contrast and brightness control which affects the whole desktop.

ENABLE CORRECTION turns on the automatic setting of these values when PrivateEye is loaded.

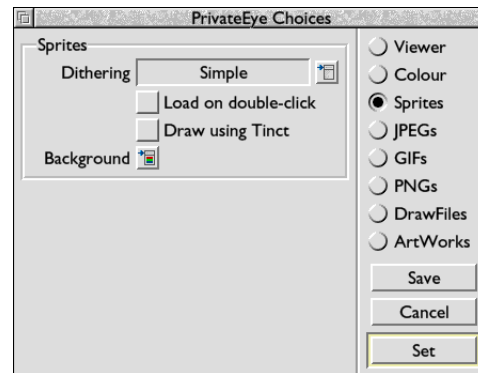
Common File Format Choices

There are some choices which exist for every file format that PrivateEye supports. To avoid repetition, they are described here in advance.

LOAD ON DOUBLE-CLICK controls whether the respective format will be loaded when double-clicked on in a directory display.

BACKGROUND opens a ColourPicker dialogue which selects the background colour PrivateEye will use for masked images and also when in “fit to screen” mode. If **NONE** is chosen for the colour then a checkered background will be used.

Sprite Choices

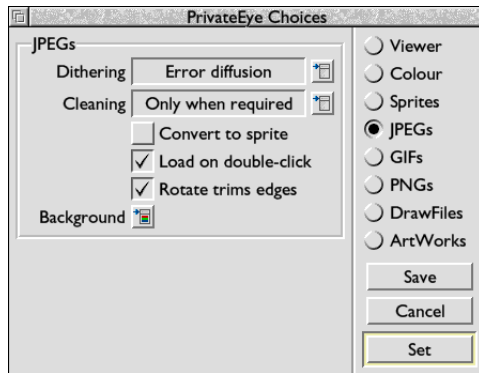


The Sprite choices will affect any file format which is converted into Sprite format for display (i.e. GIFs, PNGs and, optionally, JPEGs).

DITHERING can be set to **NONE** or **SIMPLE**. **SIMPLE** instructs the OS to use a simple stipple pattern (an *ordered dither*) to better approximate unavailable colours in modes with less than 16 million colours.

DRAW USING TINCT will draw the Sprite, where possible, using the *Tinct* module. Tinct offers higher quality error diffusion than the regular OS sprite plotting routines, and a number of other features. PrivateEye uses Tinct in any case to display images which contain alpha channel data.

JPEG Choices



By default JPEGs are retained in memory in their native format. If this is not desirable, perhaps to speed up redraw or to be able to use the Histogram or Editing windows, then enable **CONVERT TO SPRITE**. The JPEG will be decompressed on loading into an 8bpp grey or 32bpp colour Sprite.

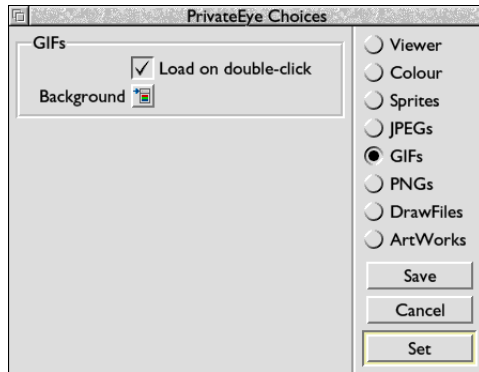
The lossless JPEG rotation code cannot transform boundary blocks. Enabling **ROTATE TRIMS EDGES** will cause those boundary blocks to be discarded by rotate operations.

DITHERING can be set to **NONE**, **SIMPLE** and **ERROR DIFFUSION**. This controls the dithering level used when JPEGs are rendered directly. The options provide increasing levels of quality at the cost of increased rendering time.

CLEANING can be set to **ONLY WHEN REQUIRED** or **ALWAYS**. *Progressive* JPEGs cannot be directly rendered on many versions of RISC OS, so PrivateEye has a built-in version of *jpegtran* which automatically translates those JPEGs into the simpler *baseline* form. Set this option to **ALWAYS** if you encounter a JPEG which fails to render.

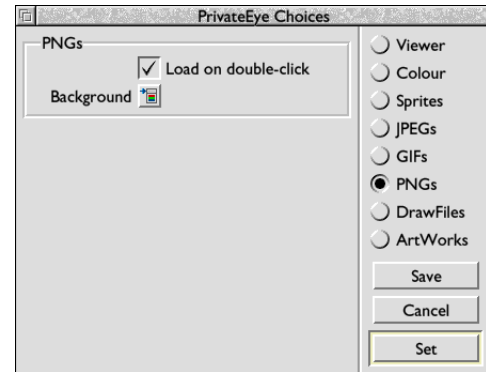
Note that cleaned images will be saved from PrivateEye in their baseline form.

GIF Choices



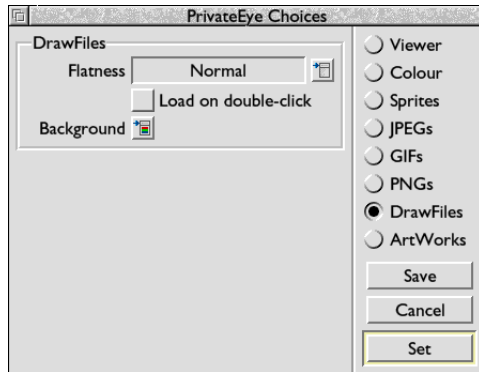
See Common File Format Choices.

PNG Choices



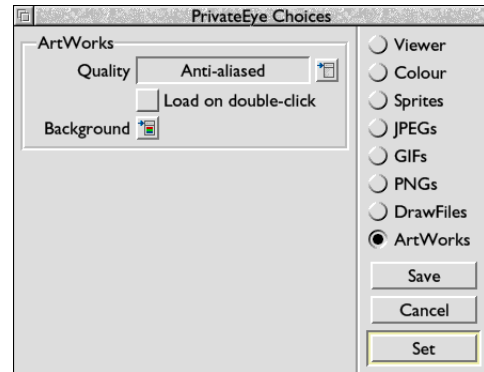
See Common File Format Choices.

DrawFile Choices



FLATNESS can be set to **COARSE**, **NORMAL**, **BEST** or **AUTOMATIC**. It controls how many straight line segments are used to render Bézier curves. The DrawFile module's automatic setting does not always work well. This control is provided to allow the user to force a high-quality render when viewing at high zoom levels.

ArtWorks Choices



QUALITY controls the famous ArtWorks variable quality setting. It offers **OUTLINE**, **SIMPLE**, **NORMAL** and **ANTI-ALIASED**.

Controls

Mouse Controls

SELECTADJUST
Gain focus.....Gain focus
+SHIFT Zoom in to point...Zoom out from point
+CTRL Scroll to point.....(no action)
+DRAG GrabZoom to box
+SHIFT+CTRL Embed window.....(no action)

Keyboard Controls

Viewer windows accept the input focus when clicked. You can use the following keys while the window has the focus:

↑ ↓ ← →.....Scroll up, down, left, right
CTRL Z.....Scroll to somewhere random
CTRL W.....Zoom in
CTRL Q.....Zoom out
CTRL T.....Toggle to the previous zoom level
CTRL D.....Zoom to 100%
F11.....Open the Scale dialogue

CTRL L.....Rotate left
CTRL R.....Rotate right
CTRL H.....Horizontal flip
CTRL V.....Vertical flip
CTRL O.....Open the Rotate dialogue

CTRL C.....Copy to clipboard

CTRL N.....New view

F3.....Open the Save dialogue

CTRL S.....Convert to Sprite

CTRL I.....Open the Histogram window

CTRL E.....Open the Effects window

PAGE DOWN/SPACE.....Move to the next file in directory

PAGE UP.....Move to the previous file

CTRL F2 & ESC.....Close the viewer window

ESC.....Close the viewer window

ESC.....Cancel a drag (when dragging)

CTRL K.....Kill (delete the file)

F1.....Start Interactive Help

SHIFT F1.....Open the Image Info window

CTRL F1.....Open the Source Info window

SHIFT CTRL F1.....Open the Metadata window

Keymap

PrivateEye's key assignments may be customised or supplemented by editing a file called 'Keys', which is held in PrivateEye's Choices directory:

Choices:PrivateEye.Keys. This usually lives inside your !Boot application as

!Boot.Choices.PrivateEye.Keys.

Sections

Keys is a text file built of sections. Sections begin with a square bracketed line [Like This] and are followed by a series of entries.

Two sections are presently used: [Common] and [Viewer]. Common is searched after a lookup in a more specific section is exhausted.

Entries

Each entry within a section is of the form:

[modifier]keyname:action

Where [] indicates an optional part.

Tokens are case sensitive.

Modifiers

S_SHIFT

C_CTRL

SC_SHIFT CTRL

Special key names

Escape, F1..F12, Print, Backspace, Tab, Return, Space, Logo, Menu, Insert, Home, Delete, Copy, PageUp, PageDown, Up, Down, Left, Right

Common action names

Close, Help

Viewer action names

ConvToSpr, Copy, Effects, Hist, HorzFlip, Info, Kill, NewView, PanDown, PanLeft, PanRandom, PanRight, PanUp, Rotate, RotateLeft, RotateRight, Save, Scale, SourceInfo, StepBackwards, StepForwards, VertFlip, ZoomIn, ZoomOut, ZoomReset, ZoomToggle

Examples

To make a TAB keypress step forwards to the next image, when in a viewer window, add the following to the [Viewer] section of a Keys file:

```
Tab:StepForwards
```

To make SHIFT TAB step backwards to the previous image:

```
S_Tab:StepBackwards
```

History

Version 3.10 (12 Sep 2021)

Progressive JPEGs are now passed straight through to the OS when it is capable of decoding them. This requires RISC OS Select with SpriteExtend 1.30 or RISC OS 5 with SpriteExtend 1.73, or later. You can still force JPEG cleaning on from the choices if you wish.

The information given on JPEGs is enhanced. The source info window will show the details of the file format, being JFIF, Exif, Adobe or a combination thereof; Baseline, Extended Sequential or Progressive DCT coding and whether the packing was Huffman or Arithmetic.

Hand-in-hand with the above is enhanced colourspace reporting. The "Colours" field will show whether the JPEG is encoded as YCbCr (the most common), YCCK (like CMYK), RGB or CMYK. It will report the number of components used, and the depth of those components too.

Multiple effect windows may now be open concurrently.

PrivateEye is now cross-compiled using GCCSDK.

PrivateEye has now been packaged for PackMan.

Version 3.01 (19 Jan 2018)

Fixes

Fixed the image stepping routine (the one which PAGEUP and PAGEDOWN triggers) to cope with filesystems that don't return predictable context values.

Version 3.00 (08 Feb 2017)

Fixes

- Fix: Avoid crashes on Raspberry Pi 3 (Cortex-A53) by fixing a stray "MOVS pc" instruction which had previously gone undetected.
- Fix: Zero page access in choices handling code which would cause a crash on zero page protected OSes.

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PNG support uses *libpng*:

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...and *zlib*:

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JPEG support uses *libjpeg*:

This software is based in part on the work of the Independent JPEG Group.

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Exif decoding uses *exiftags* by Eric M. Johnston.

<http://johnst.org/sw/exiftags/>

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Alpha sprite plotting uses *Tinct* by Richard Wilson.

<http://tinct.net/tinct.asp>

My thanks to all of the above.

Contacting the Author

If you have any comments, bug reports or suggestions for future versions then you can contact me at dave@davespace.co.uk.

If you have a question, then please check it has not already been answered in this documentation or the interactive help before mailing.

Please remember when reporting bugs to describe **exactly** what you were doing when the bug occurred and the version number.