RGBAevd

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RGBAevd & RGBAevdR

ShapeShifter External Video Drivers for 24-bit RGBA32 CyberGraphX screens Copyright © 1996 Niels Knoop

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1.2   Introduction

This archive contains two external video drivers for ShapeShifter running on 24-bit CyberGraphX screens with pixelformat RGBA32. They were written for and tested on the Piccolo-SD64 only, but should work on other boards as well provided that they use the same pixelformat.

Maybe you don't like the periodical processor load and artefacts caused by a refreshed display and wished that ShapeShifter supported direct access to the video memory of your graphics board in 24-bit? Then take a look at RGBAevd which does just that.

On the other hand, you might have noticed that ShapeShifter's internal CyberGraphX driver doesn't work on the Piccolo-SD64 in 24-bit anymore - apparently since PiccoSD64 1.24 changed the pixelformat from RGB24 to RGBA32 - but would still like to use this kind of refreshed display, preferably using your 040/060 MMU. In this case, RGBAevdR will help you.

1.3   RGBAevd

The problem with 24-bit Mac screens on the Piccolo-SD64 is that the Mac uses the pixelformat ARGB32, while the SD64 (under CyberGraphX since version 1.24 of PiccoSD64) uses RGBA32. A directly addressed SD64 screen would therefore show wrong colors.

The idea behind RGBAevd is to simply shift the Mac display by one byte in order to make the Red, Green and Blue bytes of the Mac match those of the SD64 screen, while the unused Alphachannel bytes can be ignored. To avoid trashing the first byte in front of the real display memory on the SD64 which might cause fatal results, RGBAevd also shifts the Mac display by one line and enlarges ShapeShifter's screen and window accordingly. Look at the following figure to get the idea:

Piccolo-SD64: RGBa....RGBaRGBaRGBa....RGBa Mac-Display : aRGBaRGBaRGB....aRGB

This trick works because the M68020 and later processors of the M68000 family (which are needed in order to run ShapeShifter anyhow) support word and longword operations on odd addresses. However these misaligned accesses cost some speed. In effect RGBAevd trades in display memory bandwidth for direct access.

RGBAevd's display shares the advantages as well as the disadvantages of direct displays in general: It avoids the periodical processor load and artefacts caused by a refresh and renders smooth operation of the Mac mousepointer possible, but also trashes other CyberGraphX screens when you flip them to front unless you use a ShapeShifter freezer utility like the one included into MultiCX by Martin Berndt.

If you don't mind the temporary artefacts of refreshed displays and have a fast Amiga, you might want to take a look at RGBAevdR as an alternative.

1.4 RGBAevdR

RGBAevdR offers a refreshed 24-bit display which doesn't overwrite other screens when flipping them to front. This is actually exactly what ShapeShifter's internal CyberGraphX driver is supposed to do, but apparently no longer does since PiccoSD64 1.24 changed the pixelformat to RGBA32. In fact RGBAevdR is a workaround for this bug and uses the internal RGBA32 refresh routine of ShapeShifter, including MMU support. It will hopefully be made obsolete soon by a new release of ShapeShifter which solves this problem.

When using MMU-refresh with a 040 or 060 processor, RGBAevdR might be faster than RGBAevd , although the visual impression isn't as nice. I strongly suggest using the Amiga mousepointer.

1.5 Requirements

In order to run RGBAevd or RGBAevdR you need:

- An Amiga running ShapeShifter and CyberGraphX - ShapeShifter 3.0d or later - CyberGraphX (PiccoSD64 1.24 or later for the Piccolo-SD64) - A graphics board which supports the RGBA32 pixelformat in 24-bit

RGBAevdR additionally requires:

- CyberGraphX 2.10 or later (cybergraphics.library 40.60 and up)

Optional, but highly recommended for use with RGBAevdR:

- A 040 or 060 processor with MMU

1.6 Installation

Simply copy RGBAevd & RGBAevdR into the "Video Drivers" drawer inside your ShapeShifter drawer.

1.7 Usage

In the ShapeShifter Graphics Settings window, select 24 bit as Color Depth, External as Screen Type and either RGBAevd or RGBAevdR as External driver.

Then press the Choose button and select a 24-bit CyberGraphX mode in the Screen mode requester. If you want to modify the display dimensions you can enter your own values next to Size. However, RGBAevdR doesn't support displays narrower than the selected screenmode, and Autoscroll on oversized displays doesn't seem to work with CyberGraphX 24-bit screens as of version 2.18. You can drag the screen to move the visual region with the mouse while pressing the screen drag qualifier(s) as selected with IControl, though.

When running RGBAevdR on Amigas with 68040 or 68060 processors with MMU, the field MMU refresh should be selected in order to avoid refreshing unchanged areas of the screen and thus to get reasonable speed.

The field Amiga mouse pointer can be selected to use the hardware cursor of the Piccolo-SD64 instead of a Mac software cursor. This option is highly recommended for use with RGBAevdR. However, as of ShapeShifter version 3.5, the hardware cursor always shows your Amiga mousepointer image and thus doesn't reflect changes of the Mac pointer like busypointers.

When you're done you might want to save your settings globally using Save or - if you are using ShapeShifter 3.3 or later - into an individual project using Save As... from the main menu.

If some settings are not suitable or a problem occurs, RGBAevd and RGBAevdR will display an error requester telling what is wrong and terminate.

1.8 Credits

I would like to thank the following people:

- Francesco Doro for great betatesting and nice e-mail conversation about the SD64 ;-) - Hendrik Horak for the Piccolo-SD64 and for lending me half his A3000 - Christian Bauer for ShapeShifter and its great EVD interface - Frank Mariak & Thomas Sontowski for CyberGraphX - Frank Wille for PhxAss

1.9 Copyright

RGBAevd & RGBAevdR are Freeware. Use them at your own risk.

1.10 Author

If you have questions, comments or bugreports you can reach me via e-mail using the address given below.

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