﻿Plex86/Bochs VGABios

--------------------

The goal of this project is to have a LGPL'd Video Bios in plex86,

Bochs and qemu.

This VGA Bios is very specific to the emulated VGA card.

It is NOT meant to drive a physical vga card.

Cirrus SVGA extension

---------------------

The Cirrus SVGA extension is designed for the Cirrus emulation in Bochs and

qemu. The initial patch for the Cirrus extension has been written by Makoto

Suzuki (suzu).

Install

-------

To compile the VGA Bios you will need :

- gcc

- bcc

- as86

- ld86

Untar the archive, and type make. You should get a "VGABIOS-lgpl-latest.bin"

file. Alternatively, you can use the binary file "VGABIOS-lgpl-latest.bin",

i have compiled for you.

Edit your plex86/bochs conf file, and modify the load-rom command in the

VGA BIOS section, to point to the new vgabios image file.

Debugging

---------

You can get a very basic debugging system: messages printed by the vgabios.

You have to register the "unmapped" device driver in plex86 or bochs, and make

sure it grabs port 0xfff0.

Comment the #undef DEBUG at the beginning of vgabios.c.

You can then use the "printf" function in the bios.

Testing

-------

Look at the "testvga.c" file in the archive. This is a minimal Turbo C 2.0

source file that calls a few int10 functions. Feel free to modify it to suit

your needs.

Copyright and License

---------------------

This program has been written by Christophe Bothamy

It is protected by the GNU Lesser Public License, which you should

have received a copy of along with this package.

Reverse Engineering

-------------------

The VGA Bios has been written without reverse-engineering any existing Bios.

Acknowledgment

--------------

The source code contains code ripped from rombios.c of plex86, written

by Kevin Lawton <kevin2001@yahoo.com>

The source code contains fonts from fntcol16.zip (c) by Joseph Gil avalable at :

ftp://ftp.simtel.net/pub/simtelnet/msdos/screen/fntcol16.zip

These fonts are public domain

The source code is based on information taken from :

- Kevin Lawton's vga card emulation for bochs/plex86

- Ralf Brown's interrupts list avalaible at

http://www.cs.cmu.edu/afs/cs/user/ralf/pub/WWW/files.html

- Finn Thogersons' VGADOC4b available at http://home.worldonline.dk/~finth/

- Michael Abrash's Graphics Programming Black Book

- Francois Gervais' book "programmation des cartes graphiques cga-ega-vga"

edited by sybex

- DOSEMU 1.0.1 source code for several tables values and formulas

Feedback

--------

Please report any bugs, comments, patches for this VGA Bios

on savannah pages at: http://savannah.nongnu.org/projects/vgabios/

You can find the latest release at : http://www.nongnu.org/vgabios/

For any information on bochs, visit the website http://bochs.sourceforge.net/

For any information on Qemu, visit the website http://wiki.qemu.org/

History

-------

vgabios-CVS : Jul 08 2014

- Volker

- fixed building VBE modes list (check maximum y resolution)

- ensure PCIR is aligned to 4 bytes (patch by David Woodhouse)

- README: update feedback address and Qemu link

vgabios-0.7a : Oct 30 2011

- Volker

. added HDTV resolutions (patch by Tristan Schmelcher)

. added PCI ROM support to the VBE-specific images

. implemented vgabios functions with AX=0x112x (patch by Hugo Mercier)

. fixed DAC palette in 8 bpp VBE and Cirrus modes (using the same palette

as VGA mode 0x13)

. Makefile cleanup (patch by Gerd Hoffmann)

vgabios-0.6c : Apr 08 2009

- Volker

. added DPMS support to cirrus vgabios (patch from Gleb Natapov)

. use VBE LFB address from PCI base address if present

. added support for a lot more non-standard VBE modes (e.g. widescreen modes)

. minor bugfixes

vgabios-0.6b : May 30 2008

- Volker

. added PCI data structure for the Cirrus VGABIOS images

. minor bugfixes in biossums utility, VBE support and makefile

vgabios-0.6a : Aug 19 2006

- Volker

. added minimal support for the video parameter table (VPT)

. Cirrus SVGA now supports the "no clear" bit in Cirrus and VESA mode

. Bochs VBE protected mode interface improved

. save/restore video state support for Bochs VBE and standard VGA added

. generate vbetables.h dynamicly

. VBE video memory increased to 8 MB (VBE dispi ID changed to B0C4)

. lots of 4bpp VBE fixes (all 4bpp VBE modes now enabled)

. VGA compatible setup for VBE modes added

vgabios-0.5d : Dec 29 2005

- Volker

. Bochs VBE protected mode interface added (based on a patch by malc@pulsesoft.com)

. biossums utility now supports VGABIOS sizes up to 64 kBytes

. VGA mode 0x11: all color planes must be enabled in this 2-color VGA mode

vgabios-0.5c : Jul 07 2005

- Volker

. BIOS configuration word usually reports initial mode 80x25 color text

. vgabios function 0x0e (write teletype): linefeed (0x0a) only increments the

cursor row value

vgabios-0.5b : May 24 2005

- Volker

. fixed return value for the default case in the VBE section (non-debug mode)

. removed unused stuff

vgabios-0.5a : Mar 07 2005

- Volker

. Cirrus SVGA extension (initial patches from Makoto Suzuki, improvements

from Fabrice Bellard)

. vgabios image size is now exactly 32k with a checksum

. a lot of vgabios and vbe functions rewritten in assembler

. dynamicly generated VBE mode info list

. write character function for CGA and LINEAR8 modes

. read/write graphics pixel for some graphics modes

. text scroll feature for some graphics modes

. VBE 8-bit DAC support

vgabios-0.4c : Nov 06 2003

- Christophe

. fix font problem on initial screen of NT4 Loader

vgabios-0.4b : Nov 04 2003

- Volker

. fix offset of character tables

. optimizations of CRT controller accesses

. VBE i/o registers changed to 0x01CE/CF

(suggestion from Daniel Gimpelevich)

. "noclear" flag stored in BIOS area

. fix character height returned by get\_font\_info function

vgabios-0.4a : Aug 17 2003

- Volker

. VBE mode search rewritten (VBE modes with LFB bit removed)

. many bugfixes and optimizations

. write character function implemented for graphics modes

. support for 15bpp, 16bpp, 24bpp and 32bpp VBE modes added

. SVGA mode 0x6A added

. VBE modes 0x102, 0x117, 0x118 and 0x142 (Bochs specific)

vgabios-0.3b : Nov 23 2002

- Christophe

. added lfb-mode numbers (patch from mathis)

. updated the Makefile

. removed display of copyrights.

. changed the Copyright string to "LGPL VGABios developers"

- Volker

. set the cursor shape depending on the current font height

. clear BL before calling int 0x10 function 0x1103 in vgabios\_init\_func

. added some text font functions

- Jeroen

. Forced to new DISPI (0xb0c1) interface (requires latest bochs vbe code)

. Added multibuffering support

. Added new DISPI interface for: virt width, height, x offset, y offset

. Added LFB modes (to be used with the vbe-lfb patch in bochs)

see VBE\_HAVE\_LFB in vbe.c (currently default enabled)

. updated TODO & docs for changes after bochs 1.4

vgabios-0.3a : Mar 10 2002

- Christophe

. Fixed bug in function ah=13

- Jeroen

. updated vbebios implementation to new api

. added vbe\_display\_api documentation

. added 640x400x8, 640x480x8, 800x600x8, 1024x768

(>640x480 needs a special bochs patch atm)

. added 320x200x8 vbe support (uses the standard 320x200x8 vga mode to

display, this allows for testing & having something on screen as well,

at least until bochs host side display is up & running)

. adding lfbprof (vbe) testprogram (+some small fixes to it)

. merging with vbebios 0.2

vgabios-0.2b : Nov 19 2001

- Christophe

. Fixed bug in function ah=13

vgabios-0.2a : Nov 09 2001

- Christophe

. Included bugfix from techt@pikeonline.net about grayscale summing

. Added the "IBM" string at org 0x1e as Bart Oldeman suggested

. Fixed DS and ES that where inverted in the int10 parameters list!

. The following have been implemented :

- function ax=1a00, ax=1a01, ah=1b

- function ax=1130

. Added debug messages for unimplemented/unknown functions

Must be compiled with DEBUG defined. The output is trapped

by the unknown-ioport driver of plex/bochs (port 0xfff0 is used)

vgabios-0.1a : May 8 2001

- Christophe

. First release. The work has been focused only on text mode.

. The following have been implemented :

- inits

- int 10 handler

- functions ah=00, ah=01, ah=02, ah=03, ah=05, ah=06, ah=07, ah=08

ah=09, ah=0a, ah=0e, ah=0f, ax=1000, ax=1001, ax=1002, ax=1003

ax=1007, ax=1008, ax=1009, ax=1010, ax=1012, ax=1013, ax=1015

ax=1017, ax=1018, ax=1019, ax=101a, ax=101b, ah=12 bl=10,

ah=12 bl=30, ah=12 bl=31, ah=12 bl=32, ah=12 bl=33, ah=12 bl=34

ah=13