Information for SiS Users

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1. Introduction

This driver is written by Thomas Winischhofer and is a (nearly) complete re-write of a driver written for the SiS6326 and SiS530 by Alan Hourihane and others.

It currently supports the following chipsets:

- old series: 5597/5598, 6236/AGP/DVD, 530/620
- 300 series: 300/305, 540, 630/730
- 315 series: 315, 550, 650, 651, M650, 740
- 330 series: 330 ("Xabre"), 661FX, M661FX, 741, 760

The driver supports:

- 8/16/24 bits color depth; old series also 15;
- XAA (XFree86 Acceleration Architecture)
- XVideo (Xv)
- Render (XRAND)
- Hardware cursor; 315/330 series: Color HW cursor;
- 6326: TV output
- 300/315/330 series: TV output via Chrontel TV encoders or SiS video bridges
- 300/315/330 series: LCD output via LVDS transmitters or SiS video bridges
- 300/315/330 series: Dual head mode; Xinerama; Merged framebuffer mode;

This document gives an overview over the driver's features and configuration options. Please see http://www.winischhofer.net/linuxsisvga.shtml for detailed documentation and updates. Support for the 661, 741 and 760 is entirely untested as of this writing, and possibly incomplete for LCD output.

2. XF86Config Options

The following options are of particular interest for the SiS driver. Each of them must be specified in the Device section of the XF86Config file for this card.

2.1 For all chipsets

Option "SWCursor", "HWCursor"
: These options select whether the software (SW) or hardware (HW) cursor should be used. The default is using the hardware cursor.

Option "NoAccel"
: Disables 2D acceleration. Default: 2D acceleration is enabled.

Option "Turboqueue"
: SiS chipsets have the option to extend the engine command queue on VRAM. This concept is called "TurboQueue" and gives some performance improvement. Due to hardware bugs, the TurboQueue is disabled on the 530/620, otherwise enabled by default.

Option "Rotate"
: This option enables clockwise ("CW") or counter-clockwise ("CCW") rotation of the display. Enabling either CW or CCW rotation disables the RandR extension. Default: no rotation.

Option "ShadowFB"
: This option enables the shadow framebuffer layer. By default, it is disabled.

Option "NoXVideo"
: Disables the XVideo support. Default: XVideo support is enabled.

Option "CRT1Gamma"
: Enables or disables gamma correction. Default: gamma correction is enabled.

2.2 old series specific options

Option "FastVram"
: Enables 1 cycle memory access for read and write operations. The default depends on the chipset used.

Option "NoHostBus"
: For 5597/5598 only. This option, if set, disables the CPU to VGA host bus. Disabling the host bus will result in a severe performance regression.

VideoRAM size
: The SiS 6326 can only directly address 4096K bytes of video RAM. However, there are some cards out there featuring 8192K (8MB) of video RAM. This RAM is not addressable by the engines. Therefore, by default, the driver will only use 4096K. This behavior can be overridden by specifying the amount of video RAM using the VideoRAM keyword. If more than 4096K is specified, the driver will disable 2D acceleration, Xv and the HW cursor. On all other chipsets, this keyword is ignored.

Option "NoYV12"
: Due to hardware bugs, XVideo may display a corrupt image when using YV12 encoded material. This option, if set, disables support for YV12 and hence forces the Xv-aware application to use either YUV2 or XShm for video output.

Option "TVStandard"
: (6326 only) Selects the TV output standard. May be PAL or NTSC. By default, this is selected by a jumper on the card.

2.3 300/315/330 series specific options

Option "ForceCRT1"
: Enables or disables CRT1 (= the external VGA monitor). By default, the driver will use CRT1 if a monitor is detected during server start. Some older monitors can't be

detected, so they may require setting this option to true. To disable CRT1 output, set this option to false.

Option "ForceCRT1Type"
: SiS 650, M650 and 651 with either 301LV or 302LV video bridge only. May be VGA or LCD. Specifying LCD will force the driver to use the VGA controller's CRT1 channel for driving the LCD, while CRT2 is free for TV usage. Default is VGA.

Option "ForceCRT2Type"
: Selects the CRT2 output device type. Valid parameters are LCD, TV, SVIDEO, COMPOSITE, SCART, VGA, NONE. NONE disables CRT2. SVIDEO and COMPOSITE are only for systems with a SiS video bridge and select the desired plug type. For Chrontel systems, TV should be used instead. VGA means secondary VGA and is only available on some SiS video bridges (301, 301B, 301C).

Option "CRT2Gamma"
: Enables or disables gamma correction for CRT2. This is only supported for SiS video bridges. Default: gamma correction for CRT2 is enabled.

Option "DRI"
: Although this option is accepted for all chipsets, it currently only makes sense on the 300 series; DRI is only supported on these chipsets. This option enables/disables DRI.

Option "TVStandard"
: Selects the TV output standard. May be PAL or NTSC, on some machines (depending on the hardware) also PALM and PALN. Default: BIOS setting.

Option "TVXPosOffset", "TVYPosOffset"
: These options allow relocating the image on your TV. Both options take an integer within the range of -16 to 16. Default: 0. Not supported for Chrontel 7019.

Option "CHTVOverscan"
: For Chrontel TV encoders only. Selects whether TV output should be overscan or underscan.

Option "CHTVSuperOverscan"
: For Chrontel 7005 TV encoders in PAL mode only. Selects whether TV output should be super-overscan (slightly larger than the viewable area) or not.

Option "SISTVXScale", "SISTVYScale"
: For SiS video bridges only. These options allow zooming the image on your TV. SISTVXScale takes an integer within the range of -16 to 16. SISTVYScale accepts -4 to 3. Default: 0. Not all modes can be scaled.

2.4 300 series specific options

Option "MaxXFBMem"
: DRI requires the linux kernel's SiS framebuffer driver "sisfb" and some other modules which come with either the linux kernel or XFree86. (On *BSD, the DRI driver does not require any framebuffer driver.) Sisfb takes care of memory management for texture data. In order to prevent the X driver and sisfb from overwriting each others video memory, sisfb reserves an amount of video memory for the X driver. This amount can either be selected using sisfb's mem parameter, or auto-selected depending on the amount of total video RAM available. However, the X driver needs to know about the amount of RAM sisfb reserved. For this purpose, the Option "MaxXFBMem" exists.

: XFree 4.3.0 disabled SiS DRI support due to a lack of maintenance of the SiS DRI driver. XFree86 4.4 contains a newly written SiS DRI driver by Eric Anholt.

If you intend to use DRI, I recommend setting the total video memory in the BIOS to 64MB in order to at least overcome the lack of memory swap functions.

Sisfb can be used for memory management only, or as a complete framebuffer driver. If you start sisfb with a valid mode (ie you gain a graphical console), the X driver can communicate with sisfb and doesn't require setting the MaxXFBMem option at all. The X driver will receive enough information from sisfb in this case.

However, if you use sisfb for memory management only, ie you started sisfb with mode=none and still have a text mode console, there is no communication between sisfb and the X driver. In this case, you need to set MaxXFBMem to the same value as you gave sisfb with its mem parameter. If you didn't specify any mem parameter, sisfb will reserve 12288KB if more than 16MB of total video RAM is available, 8192KB if between 12 and 16MB of video RAM is available, 4096KB in all other cases.

Then you need to specify any of these amounts as the parameter for the MaxXFBMem option. The value is to be given without 'KB'.

2.5 315/330 series specific options

Option "RenderAcceleration"
: Enables or disables RENDER acceleration. By default, RENDER acceleration is enabled.

Option "XvOnCRT2"
: 315, 650, 740, 330 only. This option selects whether the XVideo (Xv) overlay should be displayed on CRT1 or CRT2. Setting this options means CRT2. The other CRT will only display the (blue) color key.

Document based on 4.1 version written by Joanjo Santamarta and 3.3 version written by Xavier Ducoin.

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$XFree86: xc/programs/Xserver/hw/xfree86/doc/sgml/SiS.sgml,v 3.9 2004/02/15 02:16:49 dawes Exp $