Video issues with S3 resume
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During S3 resume, hardware needs to be reinitialized. For most
devices, this is easy, and kernel driver knows how to do
it. Unfortunately there's one exception: video card. Those are usually
initialized by BIOS, and kernel does not have enough information to
boot video card. (Kernel usually does not even contain video card
driver -- vesafb and vgacon are widely used).

This is not problem for swsusp, because during swsusp resume, BIOS is
run normally so video card is normally initialized. It should not be
problem for S1 standby, because hardware should retain its state over
that.

We either have to run video BIOS during early resume, or interpret it
using vbetool later, or maybe nothing is necessary on particular
system because video state is preserved. Unfortunately different
methods work on different systems, and no known method suits all of
them.

Userland application called s2ram has been developed; it contains long
whitelist of systems, and automatically selects working method for a
given system. It can be downloaded from CVS at
www.sf.net/projects/suspend . If you get a system that is not in the
whitelist, please try to find a working solution, and submit whitelist
entry so that work does not need to be repeated.

Currently, VBE_SAVE method (6 below) works on most
systems. Unfortunately, vbetool only runs after userland is resumed,
so it makes debugging of early resume problems
hard/impossible. Methods that do not rely on userland are preferable.

Details
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There are a few types of systems where video works after S3 resume:

(1) systems where video state is preserved over S3.

(2) systems where it is possible to call the video BIOS during S3
    resume. Unfortunately, it is not correct to call the video BIOS at
    that point, but it happens to work on some machines. Use
    acpi_sleep=s3_bios.

(3) systems that initialize video card into vga text mode and where
    the BIOS works well enough to be able to set video mode. Use
    acpi_sleep=s3_mode on these.

(4) on some systems s3_bios kicks video into text mode, and
    acpi_sleep=s3_bios,s3_mode is needed.

(5) radeon systems, where X can soft-boot your video card. You'll need
    a new enough X, and a plain text console (no vesafb or radeonfb). See

 http://www.doesi.gmxhome.de/linux/tm800s3/s3.html for more information.
 Alternatively, you should use vbetool (6) instead.

(6) other radeon systems, where vbetool is enough to bring system back
 to life. It needs text console to be working. Do vbetool vbestate
 save > /tmp/delme; echo 3 > /proc/acpi/sleep; vbetool post; vbetool
 vbestate restore < /tmp/delme; setfont <whatever>, and your video
 should work.

(7) on some systems, it is possible to boot most of kernel, and then
 POSTing bios works. Ole Rohne has patch to do just that at
 http://dev.gentoo.org/~marineam/patch-radeonfb-2.6.11-rc2-mm2.

(8) on some systems, you can use the video_post utility mentioned here:
 http://bugzilla.kernel.org/show_bug.cgi?id=3670. Do echo 3 > /sys/power/state
 && /usr/sbin/video_post - which will initialize the display in console mode.
 If you are in X, you can switch to a virtual terminal and back to X using
 CTRL+ALT+F1 - CTRL+ALT+F7 to get the display working in graphical mode again.

Now, if you pass acpi_sleep=something, and it does not work with your
bios, you'll get a hard crash during resume. Be careful. Also it is
safest to do your experiments with plain old VGA console. The vesafb
and radeonfb (etc) drivers have a tendency to crash the machine during
resume.

You may have a system where none of above works. At that point you
either invent another ugly hack that works, or write proper driver for
your video card (good luck getting docs :-(). Maybe suspending from X
(proper X, knowing your hardware, not XF68_FBcon) might have better
chance of working.

Table of known working notebooks:

Model	hack (or "how to do it")
Acer Aspire 1406LC	ole's late BIOS init (7), turn off DRI
Acer TM 230	s3_bios (2)
Acer TM 242FX	vbetool (6)
Acer TM C110	video_post (8)
Acer TM C300	vga=normal (only suspend on console, not in X), vbetool (6) or video_post (8)
Acer TM 4052LCi	s3_bios (2)
Acer TM 636Lci	s3_bios,s3_mode (4)
Acer TM 650 (Radeon M7)	vga=normal plus boot-radeon (5) gets text console back
Acer TM 660	??? (*)
Acer TM 800	vga=normal, X patches, see webpage (5) or vbetool (6)
Acer TM 803	vga=normal, X patches, see webpage (5) or vbetool (6)
Acer TM 803LCi	vga=normal, vbetool (6)
Arima W730a	vbetool needed (6)
Asus L2400D	s3_mode (3)(***) (S1 also works OK)
Asus L3350M (SiS 740)	(6)
Asus L3800C (Radeon M7)	s3_bios (2) (S1 also works OK)
Asus M6887Ne	vga=normal, s3_bios (2), use radeon driver

instead of fglrx in x.org
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Athlon64 desktop prototype      s3_bios (2)
Compal CL-50                    ??? (*)
Compaq Armada E500 - P3-700     none (1) (S1 also works OK)
Compaq Evo N620c                vga=normal, s3_bios (2)
Dell 600m, ATI R250 Lf          none (1), but needs xorg-x11-6.8.1.902-1
Dell D600, ATI RV250            vga=normal and X, or try vbestate (6)
Dell D610                       vga=normal and X (possibly vbestate (6) too, but
not tested)
Dell Inspiron 4000              ??? (*)
Dell Inspiron 500m              ??? (*)
Dell Inspiron 510m              ???
Dell Inspiron 5150              vbetool needed (6)
Dell Inspiron 600m              ??? (*)
Dell Inspiron 8200              ??? (*)
Dell Inspiron 8500              ??? (*)
Dell Inspiron 8600              ??? (*)
eMachines athlon64 machines     vbetool needed (6) (someone please get me model
#s)
HP NC6000                       s3_bios, may not use radeonfb (2); or vbetool
 (6)
HP NX7000                       ??? (*)
HP Pavilion ZD7000              vbetool post needed, need open-source nv driver
for X
HP Omnibook XE3 athlon version  none (1)
HP Omnibook XE3GC               none (1), video is S3 Savage/IX-MV
HP Omnibook XE3L-GF             vbetool (6)
HP Omnibook 5150                none (1), (S1 also works OK)
IBM TP T20, model 2647-44G      none (1), video is S3 Inc. 86C270-294
Savage/IX-MV, vesafb gets "interesting" but X work.
IBM TP A31 / Type 2652-M5G      s3_mode (3) [works ok with BIOS 1.04 2002-08-23,
but not at all with BIOS 1.11 2004-11-05 :-(]
IBM TP R32 / Type 2658-MMG      none (1)
IBM TP R40 2722B3G              ??? (*)
IBM TP R50p / Type 1832-22U     s3_bios (2)
IBM TP R51                      none (1)
IBM TP T30      236681A         ??? (*)
IBM TP T40 / Type 2373-MU4      none (1)
IBM TP T40p                     none (1)
IBM TP R40p                     s3_bios (2)
IBM TP T41p                     s3_bios (2), switch to X after resume
IBM TP T42                      s3_bios (2)
IBM ThinkPad T42p (2373-GTG)    s3_bios (2)
IBM TP X20                      ??? (*)
IBM TP X30                      s3_bios, s3_mode (4)
IBM TP X31 / Type 2672-XXH      none (1), use radeontool
(http://fdd.com/software/radeon/) to turn off backlight.
IBM TP X32                      none (1), but backlight is on and video is
trashed after long suspend. s3_bios,s3_mode (4) works too. Perhaps that gets
better results?
IBM Thinkpad X40 Type 2371-7JG  s3_bios,s3_mode (4)
IBM TP 600e                     none(1), but a switch to console and back to X
is needed
Medion MD4220                   ??? (*)
Samsung P35                     vbetool needed (6)
Sharp PC-AR10 (ATI rage)        none (1), backlight does not switch off
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Sony Vaio PCG-C1VRX/K         s3_bios (2)
Sony Vaio PCG-F403            ??? (*)
Sony Vaio PCG-GRT995MP        none (1), works with 'nv' X driver
Sony Vaio PCG-GR7/K           none (1), but needs radeonfb, use radeontool
(http://fdd.com/software/radeon/) to turn off backlight.
Sony Vaio PCG-N505SN          ??? (*)
Sony Vaio vgn-s260            X or boot-radeon can init it (5)
Sony Vaio vgn-S580BH          vga=normal, but suspend from X. Console will be
blank unless you return to X.
Sony Vaio vgn-FS115B          s3_bios (2),s3_mode (4)
Toshiba Libretto L5           none (1)
Toshiba Libretto 100CT/110CT  vbetool (6)
Toshiba Portege 3020CT        s3_mode (3)
Toshiba Satellite 4030CDT     s3_mode (3) (S1 also works OK)
Toshiba Satellite 4080XCDT    s3_mode (3) (S1 also works OK)
Toshiba Satellite 4090XCDT    ??? (*)
Toshiba Satellite P10-554     s3_bios,s3_mode (4)(****)
Toshiba M30                   (2) xor X with nvidia driver using internal AGP
Uniwill 244II0                ??? (*)
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Known working desktop systems
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Mainboard            Graphics card                hack (or "how to do it")
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Asus A7V8X           nVidia RIVA TNT2 model 64     s3_bios,s3_mode (4)
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(*) from http://www.ubuntulinux.org/wiki/HoaryPMResults, not sure
    which options to use. If you know, please tell me.

(***) To be tested with a newer kernel.

(****) Not with SMP kernel, UP only.