

## SL 10.6.8 / Lion Graphics Acceleration using the nVidia GT 550M

### The XPS17 (L702x):

- i7-2630QM – BIOS A11
- nVidia GT 550M w/1080p 3D LCD panel, full resolution w/QE and CI
- 640GB 7200 RPM (drive0)
- 500GB 7200 RPM (drive1)
- Blu-ray (RO), DVD-DL (RW)
- 8MB DDR3 (2 slots)
- DELL 1510 Wireless
- Intel Centrino 1030N Wireless (w/Bluetooth)
- 2 USB 3.0; 2 USB 2.0; HDMI; MiniDisplayPort
- Realtek Ethernet Built-In
- Intel (ALC665) Audio
- nVidia Audio (not working yet so no HDMI audio)
- No 3D under Mac OS X yet
- No SDXC card reader yet

**You should have a complete and bootable backup before you start.**

You will want to use **PlistEdit Pro** or something similar for this fix; it will much be easier. While I am sure you could use **TextEdit** successfully, it would be a gigantic pain. The following instructions assume that my original install has been followed to this point; if not, please alter accordingly.

The DSDT has changed; the original '\_DSM' under the NV3D section has been re-installed. A 'device-properties' key has been added to the **com.apple.Boot.plist** going forward; this change has corrected the GPU handling allowing GPU accelerated video when demanded by applications. If you do not have a Dell XPS L702x, use the included DSDT source files to determine any modifications to your DSDT; you must have a compatible **DSDT.aml** to continue.

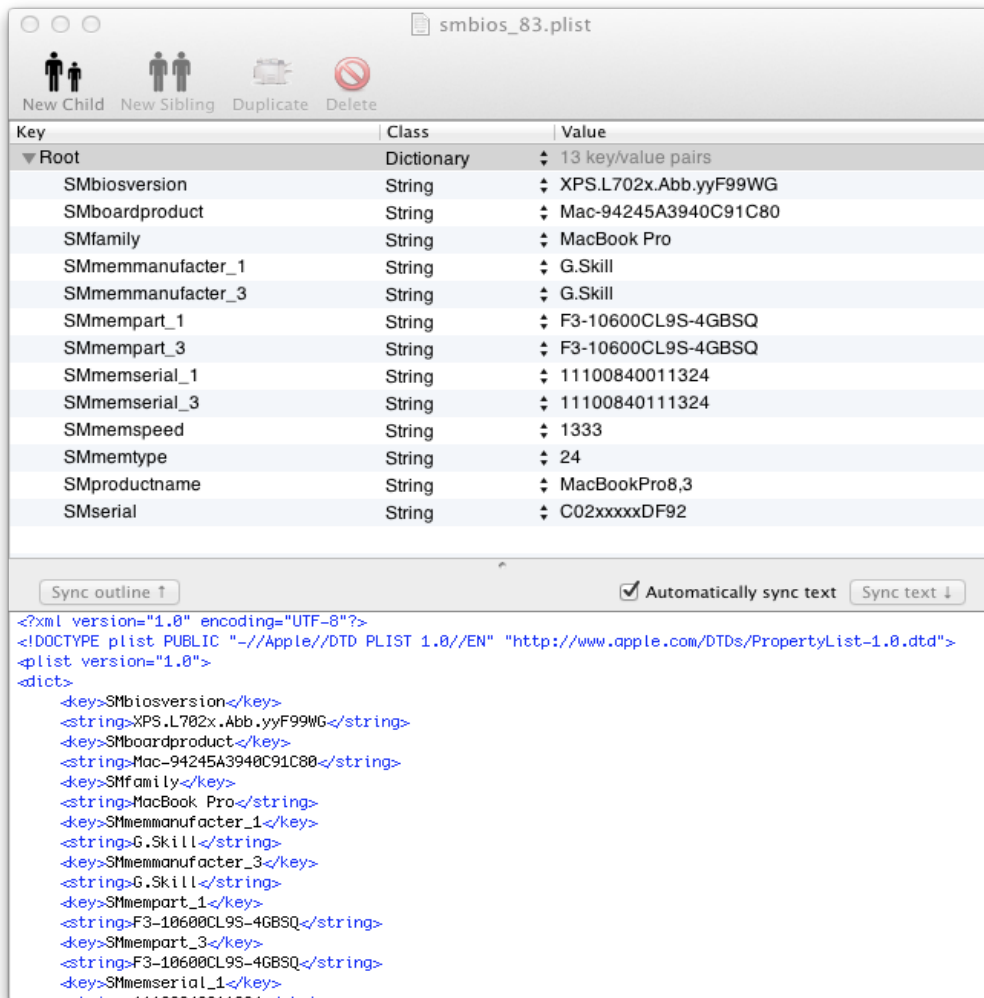
### Before we start:

You may have noticed that the 'About This Mac' function reports a MacbookPro 13"; this is an error in the serial number used. If you do not care about correcting this, just ignore any instructions about modifying the **smbios.plist**. **If you would like this to match then you MUST de-authorize your iTunes on this machine before any smbios.plist changes and re-authorize your iTunes after we are finished.** The necessity for this procedure is a result of modifying the Apple serial number as it is (1) used to identify your machine to Apple as well as (2) the last 4 characters of the serial number indicate the hardware model.

**Please note:** I no longer have a Snow Leopard machine to test as I am now running Lion. There are no modifications from SL 10.6.8 to Lion 10.7.0 in the DSDT.aml, com.apple.Boot.plist or 99% of kexts. It was an easy transition and the nVidia GT550M is much more stable although I still run my Mach Desktop app. Video still freezes occasionally but Lion appears to fix it automatically ... I am still watching this issue (pardon the pun).

## SMBIOS modifications:

There are three **smbios\_8n.plist** files in the **StevesUpdate** folder; the last four characters in the serial number designate the model of MacbookPro: 13" = DH2G; 15" = DF8V; 17" = DF92. There are NO other differences in these three files. I have made a suggestion as to how you might fill this out to make it uniquely yours although there is no guarantee that it will actually be unique (lots of Hackint0sh-ers out there); using your Plist editor, open the **smbios\_8n.plist** you want to use. Of course, you could open your existing file and modify it; this may be easier for you.



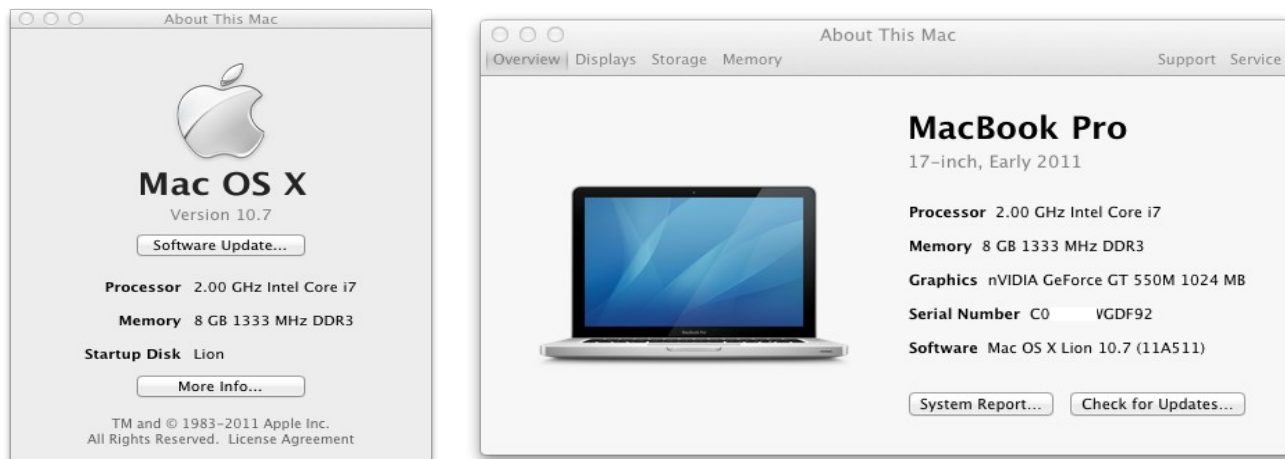
There are two keys which should be modified; **SMBiosversion** and **SMserial**. You will need your Dell Express Service Code (or any other unique code up to 7 digits) to complete these modifications.

**SMBiosversion** contains 'Abb' which I modify to the current Dell bios level, 'A11' in my case; as this line may be modified in the future with no ill effect, this seems an appropriate place. If your bios identification is longer or shorter, or you do not have a Dell, feel free to modify this string as I know of no particular limitations; though it is probably best to not write a Sonnet here. For Dell folks, I placed the first 2 characters of my Express Code in this key replacing the 'yy'.

Modify your **SMserial** with five unique characters in place of the 'xxxxx'; for Dell folks, I placed the last 5 characters of my Express Code in this key. This needs to be a fixed value; it is used to lock applications (such as iTunes) to your machine so modifying it is like moving to a new machine.

Notice the **SMboardproduct** key; this key drives some decisions during install and boot, I believe. This board ID is for the 15" early 2011 MacbookPro with the i7-2635QM processor and matches my machine best. It is not required and you could probably delete it with little effect; on the other hand it seems to me to make other things better although I really couldn't quantify that for you. For sure, other early 2011 board product ID's have an effect as they are actually listed in some kexts so I would suggest careful modification of this data if you choose to modify it.

Hit the enter key and save your changes; replace the **/Extra/smbios.plist** file with your newly modified file. Reboot and start the **About This Mac** application to see the changes; this might be a good time to re-authorize your iTunes.



### Graphics Acceleration:

Two parts here: first, we need to 'fix' our nVidia settings so the built-in display called 'Display-A' is the active display after boot; second, we need to notify the **AppleGraphicsPowerManagement.kext** (AGPM) that we have a supported device; we will do that by adding a new key to that kext.

The **video.plist** in the **StevesUpdate** folder is used to build the video data for the device-properties entry in the **/Extra/com.apple.Boot.plist** file. If you already have this entry for your audio, simply add the video keys from the **video.plist** to the plist (xml) you used to build the audio and build them both at the same time. If you have a **device-properties** entry but no supporting plist or xml file then we can build the necessary xml.

We are going to use the **gfxutil** command line tool to build the data as well as the plist (xml) files necessary. For practice, we can build an XML from the device-properties in the **com.apple.Boot.plist** file included in **StevesUpdate** folder; the output of this should match the **video.plist** included in the folder. Open a **TextEdit** (**/Applications/TextEdit.app**) window, choose the **Format** drop-down from the Apple Menu Bar and click the 'Make Plain Text' option; this removes any text formatting from the output file.

Open the **/StevesUpdate/com.apple.Boot.plist** file with your plist editor, copy the data in the key 'device-properties' and paste it in the text edit window. Save this as **Steve.hex** in your **/Documents** folder.



Now open a terminal session (**/Applications/Utilities/Terminal.app**); when it opens, the current directory is your user ID. Type 'sudo -s' and press <Enter>. Type your password and press <Enter>. Type 'cd ./Documents' and press <Enter>. The **gfxutil** program is in **/Downloads/StevesUpdate** so the command to build this test xml is a little different as the inputs/outputs won't be used. Here is the

command stated in English which, I believe, should explain the options sufficiently:

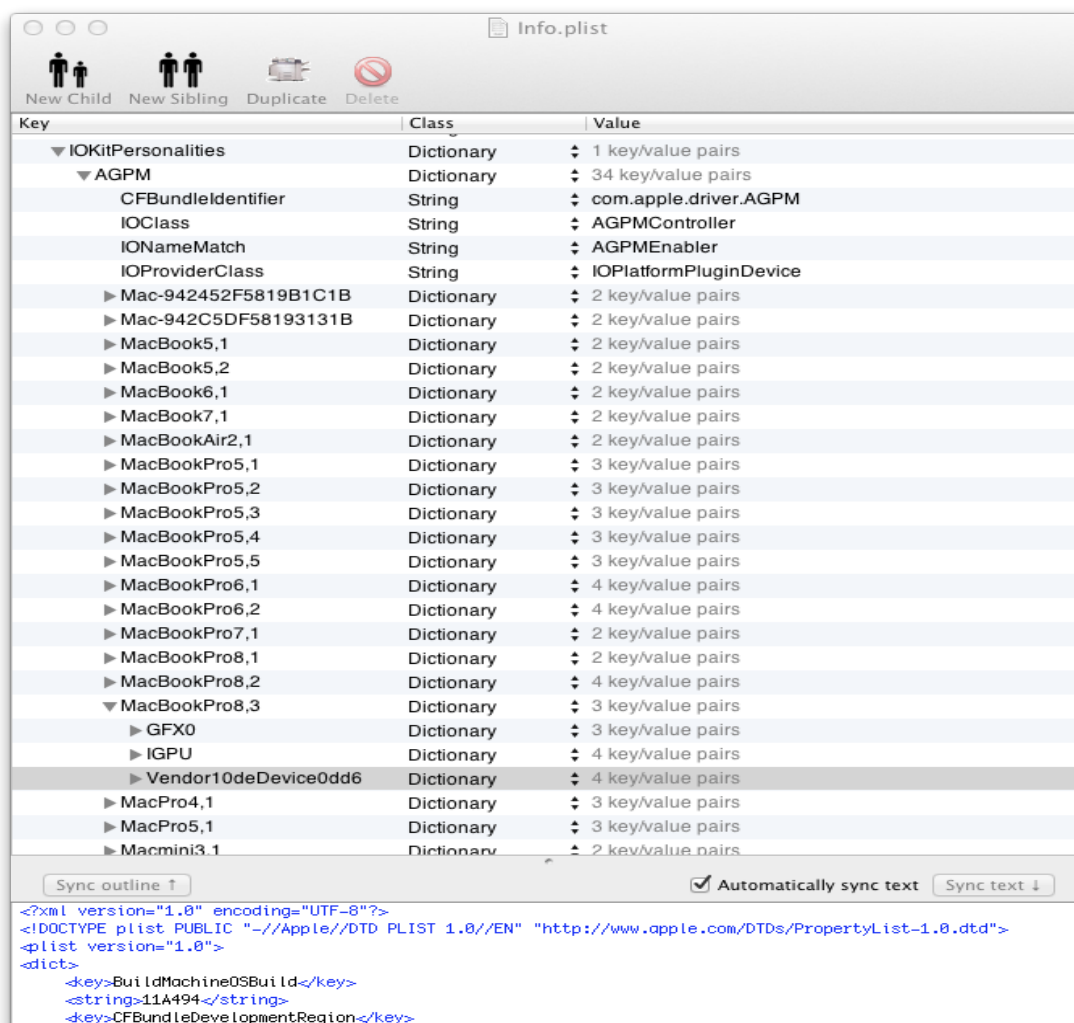


*execute the program **gfxutil**, found in the <me>/Downloads/StevesUpdate/ folder; using an input file (-i) format of hex, an output file (-o) format of xml, the input file is found in the current directory (./) with the name of **Steve.hex** and the output file should be created in the current directory (./) with the name of **Steve.xml**. When we look in the /Documents directory, we find a file named **Steve.xml** which will match the **video.plist** file in the folder /StevesUpdate.*

To prepare the data for your device-properties key in your **com.apple.Boot.plist** file, type the last two lines shown. This will create the data in the **/StevesUpdate** folder as **video.hex**.

Open your **com.apple.Boot.plist** with your plist editor and add the device-properties key. Open the **/StevesUpdate/video.hex** file with the **TextEdit.app** and copy ALL of the text shown; go back to the plist editor and paste the copied data into the new device-properties entry. Save your **com.apple.Boot.plist** file.

Copy the **AppleGraphicsPowerManagement.kext** from the **/S/L/E** directory to your desktop. Right-click on the kext and choose 'Show Package Contents'; open the **Contents** folder and right-click on the **info.plist** file. Mouse-over 'Open with ...' and choose your plist editor. Open the IOKitPersonalities dictionary and the AGPM dictionary; your screen will look something like this.



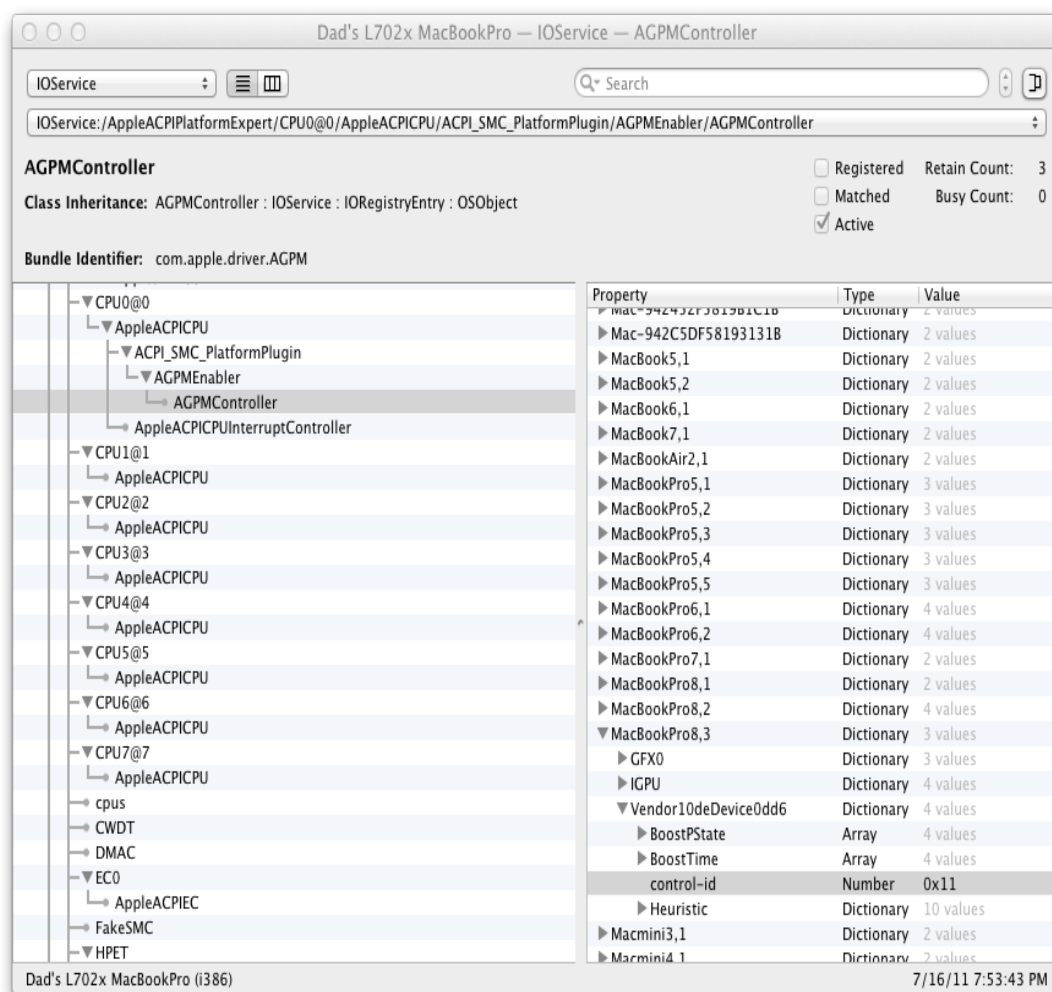
Open the matching key for your smbios.plist choice; MacBookPro8,3 shown. Right-click on the **/StevesUpdate/Vendor10deDevice0dd6.plist** file and choose your plist editor. Right-click and copy the **Vendor10deDevice0dd6** key.

Go back to the open **info.plist** plist editor window, right-click on the appropriate dictionary entry and choose 'Paste as child'. I decided to add this key to all three MBP8,n entries just in case I might choose a different machine in the future; this is probably unnecessary but it doesn't hurt. Note the two **SMboardproduct** entries near the top; should you decide to use either of those, you will need to add this child to them, also. Save your changes and close your editor; back out of the Finder window.

Open the **Kext Helper b7.app** and drag your **AppleGraphicsPowerManagement.kext** from the desktop into the Kext Helper 0.7 window. Enter your password, then press the EASY INSTALL button. Once Kext Helper is finished, it probably will not close; right-button click on the ICON in the Dock and choose Force Quit then when it quits just close the error window.

Copy your new DSDT.aml (or mine if your using it) into your /Extra directory. Reboot.

How do we know it worked? Well you should be able to check your IORegistry and 'About This Mac'; some relevant pictures follow:





Dad's L702x MacBookPro — IOService — IOHWCControl

IOService

IOService:/AppleACPIPlatformExpert/PCI0@0/AppleACPIPCI/PEG0@1/IOPCI2PCIBridge/PEGP@0/NVDA,Display-A@0/NVDA/AGPM/gpu-control/IOHWCControl

**IOHWCControl**

Class Inheritance: IOHWCControl : IOHWMonitor : IOService : IORegistryEntry : OSObject

Bundle Identifier: com.apple.driver.AppleHWSensor

Registered Retain Count: 6  
Matched Busy Count: 0  
Active

Property	Type	Value
CFBundleIdentifier	String	com.apple.driver.AppSensor
control-id	Number	0x11
current-value	Number	0x3
IOClass	String	IOHWCControl
IOMatchCategory	String	IODefaultMatchCateg
IOPowerManagement	Dictionary	2 values
IOProbeScore	Number	0x0
IOPropertyMatch	Dictionary	1 value
IOProviderClass	String	IOService
location	String	primary-gpu-control
max-value	Number	0x3
min-value	Number	0x0
target-value	Number	0x3
type	String	gpu-control
version	Number	0x2
zone	Number	0x0

Dad's L702x MacBookPro (i386) 7/16/11 7:53:43 PM

MacBook Pro

▼ Hardware

- ATA
- Audio (Built In)
- Bluetooth
- Card Reader
- Diagnostics
- Disc Burning
- Ethernet Cards
- Fibre Channel
- FireWire
- Graphics/Displays
- Hardware RAID
- Memory
- PCI Cards
- Parallel SCSI
- Power
- Printers
- SAS
- Serial-ATA
- Thunderbolt
- USB

▼ Network

- Firewall
- Locations

**nVIDIA GeForce GT 550M:**

Chipset Model: nVIDIA GeForce GT 550M  
Type: GPU  
Bus: PCIe  
PCIe Lane Width: x16  
VRAM (Total): 1024 MB  
Vendor: NVIDIA (0x10de)  
Device ID: 0x0dd6  
Revision ID: 0x00a1  
ROM Revision: nVIDIA GeForce GT 550M OpenGL Engine  
Displays:  
**Display:**  
Resolution: 1920 x 1080 @ 60 Hz  
Pixel Depth: 32-Bit Color (ARGB8888)  
Main Display: Yes  
Mirror: Off  
Online: Yes  
Rotation: Supported  
Connection Type: DisplayPort  
**Display Connector:**  
Status: No Display Connected

Dad's L702x MacBookPro ► Hardware ► Graphics/Displays