1.1. Hardware
HP Pavilion dv6. i7 (4 real processors, & 4 virtual). 8Gb RAM. 1Tb Hard Drive. 2GB double graphics card (ATI & internal).
Keyboard: foreign, 104 keys.

1.2. OS: Dual Boot
1. xUbuntu 12.10 GNU/Linux 64 bits.
2. Windows 7 Home
(dual boot from grub)

Unless explicitly noted, further comments below follow for the Ubuntu GNU/Linux.

1.3. (x)Ubuntu 12.10

1.3.1. Config
It usually has this local IP address in our home wifi network:
192.168.0.196

1.3.2. Extra software

Images
- geeqie: with hierarchical keywords and tags, fast, slideshow, etc.
  http://geeqie.sourceforge.net/

MP3 extraction from Audio CD
Media Management (Music and Videos!)

- bangarang
  (using tags for files, including video, from nepomuk)
- xnoise
  http://www.xnoise-media-player.com/
- Alternative music manager
  quodlibet (for linux, windows, mac, etc)

```
sudo add-apt-repository ppa:lazka/ppa
```

1.3.3. Suspend & resume

How did I make it work?
(not using tuxonice, that's for sure, because of the issues with the ati graphics card)

I did read at some point these pages:

- https://help.ubuntu.com/community/BinaryDriverHowto/ATI
- http://ubuntuforums.org/showthread.php?s=b6b03d4180d141bb91c594c3020c799d&p=11712748

AMD/Intel Hybrid Graphics works

If you do want to make the switch possible between your Intel and your AMD graphics cards, then this post is for you. If you do not own a AMD hybrid graphic card, please leave this thread, and post your problems in a thread made for AMD single graphic or Intel single graphic.

**Edit:** The solution seems not to work with ATI 5xxx graphic cards, try at your own risk.
**Warning:** Works only for muxless systems.
**Warning 2:** Check if your BIOS is updated, if not update it ! (You will need Windows). This is your computer manufacturer that "implements the switch on your mother card, and modify the video drivers for Windows to work on your computer". If an AMD 6630m (for example) works on a HP computer, this doesn't mean the same video card will work for sure (for example) on a ASUS computer.

**Edit bodhi.zazen:** Best check hardware compatibility before following this tutorial. If your hardware is not listed as supported, this tutorial will not help you. See http://wiki.cchtml.com/index.php/Hardware

The following solution has been tested on a DELL Vostro 3550, with an AMD 6630m card and an Intel HD 3000 (Sandybridge) card (integrated into a Intel core i5). The version of Ubuntu used is 12.04 LTS (further versions should works too). **The system is very stable, and everything works well.**
This tutorial requires the use of the terminal, but still is simple if you're a beginner, you will just have to past some commands on it
Before beginning this tutorial, we will suppose you are following it on a fresh install (i.e. You did not install vgaswitchroo or fglrx (via jockey-gtk : The proprietary driver installer application from Ubuntu). Please also install all updates available for your computer before starting (and reboot if you're proposed to).

**STEP 1 - Installing latest AMD catalyst drivers :**

As I'm writing this the latest version is 12.4, please check this page to know if there is a new version : http://wiki.cchtml.com/index.php/Ubuntu/Amd-Catalyst_Guide (this also includes the guide to install them).

First we're going to download all the prerequisite packages :

```bash
sudo apt-get install build-essential cdbfs fakeroot dh-make debhelper
debconf libstdc++6
sudo apt-get install dkms libqtgui4 wget execstack libelfg0 dh-modalias
sudo apt-get install linux-headers-generic xserver-xorg-core libgcc1
```

If you're using Ubuntu 64bits please run those two commands (32bits users don't have to) :

```bash
sudo apt-get install ia32-libs lib32gcc1 libc6-i386
cd /usr ; sudo ln -svT lib /usr/lib64
```

We can now download the AMD catalyst 12.4 driver :

```bash
cd ~/; mkdir catalyst12.4; cd catalyst12.4/
wget http://www2.ati.com/drivers/linux/amd-driver-installer-12-4-x86.x86_64.run
chmod +x amd-driver-installer-12-4-x86.x86_64.run
```

And create Ubuntu packages of it :

```bash
sudo sh ./amd-driver-installer-12-4-x86.x86_64.run --buildpkg Ubuntu/precise
```

Now let's install them :

```bash
sudo dpkg -i fglrx*.deb
```

and configure the Xserver (xorg.conf file) for the first time :

```bash
Code:
```
Seeds For Change - seeds4c.org

```bash
sudo aticonfig --initial -f
```

Now reboot your computer.

Test the switch to the discrete card:

```bash
sudo aticonfig --px-dgpu
```

Then reboot again your computer.

**STEP 2 - Enabling, fixing the bug for direct rendering on the integrated card:**

*Thanks to Niccola*² for finding the actual fix.

*If you ever apply an fglrx update, or your system automatically update fglrx, YOU WILL HAVE to repeat STEP 2, otherwise direct rendering will be missing on integrated gpu (i.e. No Unity 3D or Gnome Shell or Gnome Classic + Compiz on the Intel graphic). If you have an other solution (like loading a script on startup) please post it.*

Open the `/etc/X11/Xsession.d/10fglrx` file with root rights:

```bash
go su gedit /etc/X11/Xsession.d/10fglrx
```

If you're using a 32bits system add at the end of 4th line this text : "`/usr/lib32/dri`" without the quotes. The file should now look like this:

```bash
LIBGL_DRIVERS_PATH=/usr/lib/fglrx/dri
if `uname -m` = 'x86_64'; then
  if -d /usr/lib32/fglrx/dri; then
    LIBGL_DRIVERS_PATH=${LIBGL_DRIVERS_PATH}:/usr/lib32/fglrx/dri:
    if ! -z $LD_LIBRARY_PATH; then
      LD_LIBRARY_PATH=${LD_LIBRARY_PATH}/usr/lib32
      export LD_LIBRARY_PATH
    fi
    export LIBGL_DRIVERS_PATH
  fi
fi
```

If you're using a 64bits system add at the end of 4th line this text : "`/usr/lib/x86_64-linux-gnu/dri`" without the quotes. The file should now look like this:

```bash
LIBGL_DRIVERS_PATH=/usr/lib/fglrx/dri
if `uname -m` = 'x86_64'; then
  if -d /usr/lib32/fglrx/dri; then
    LIBGL_DRIVERS_PATH=${LIBGL_DRIVERS_PATH}:/usr/lib32/fglrx/dri:
    if ! -z $LD_LIBRARY_PATH; then
      LD_LIBRARY_PATH=${LD_LIBRARY_PATH}/usr/lib32
      export LD_LIBRARY_PATH
    fi
    export LIBGL_DRIVERS_PATH
  fi
fi
```
Now save the file.

**STEP 3 - Enjoy your hybrid graphic system ! :**

Reboot your computer to see the changes, it should boot up with the discrete card.

**Useful informations, commands :**

Power consumption is a lot better now, it seems that my battery last 4 times more with the integrated card, but this isn't still good as in Windows. If someone find or know tricks to decrease power consumption a little more please post it !

I do not recommend to update the catalyst driver once it's installed (if it works), if you really want to upgrade then check this page to find instructions : http://wiki.cchtml.com/index.php/Ubuntu[10]

The AMD driver GUI application doesn’t provide settings for screen configuration, but only 3d settings. This is a missing feature.

**Switching commands :**

Code:

```
aticonfig --pxl # List current activated GPU
sudo aticonfig --px-dgpu # Activate discrete GPU (High-Performance mode),
must re-start X to take effect
sudo aticonfig --px-igpu # Activate integrated GPU (Power-Saving mode),
must re-start X to take effect
```

Verify the Open GL’s libraries used :

Code:

```
fglrxinfo
```

Verify if the direct rendering is used :

Code:

```
glxinfo | egrep render
```
Install mesa-utils, and test the card 3d power (compare the fps):

```
sudo apt-get install mesa-utils
glxgears
```

If something goes wrong and your computer doesn't boot (i.e. black screen), press CTRL+ALT+F3, log yourself into your account and enter those commands:

```
sudo rm /etc/X11/xorg.conf
sudo startx
```

And you should be able to see your desktop.

**List of fully supported computers**: // Updated 05/16/2012 (American date format).

- **ACER 7750g**, Intel HD 3000, AMD 6650m, HDMI Intel/AMD: not tested/not tested, VGA Intel/AMD: not tested/not tested

- **DELL Inspiron 14R (N4110)**, Intel HD 3000, AMD 6470m, HDMI Intel/AMD: not tested/not tested, VGA Intel/AMD: not tested/not tested

- **DELL Vostro 3550**, Intel HD 3000, AMD 6630m, HDMI Intel/AMD: not tested/not tested, VGA Intel/AMD: working/working

- **HP Envy 14t-2000 CTO**, Intel HD 3000, AMD 6630m, HDMI Intel/AMD: not tested/not tested, Mini DisplayPort Intel/AMD: not tested/not tested

- **HP ENVY 15-3090CA**, Intel HD 3000, AMD 6630m, HDMI Intel/AMD: not tested/not tested, Mini DisplayPort Intel/AMD: not tested/not tested

- **HP Pavilion dm4-2160sf**, Intel HD 3000, AMD 6470m, HDMI Intel/AMD: not tested/not tested, VGA Intel/AMD: not tested/not tested

- **HP Pavilion dm4-2110sp**, Intel HD 3000, AMD 6470m, HDMI Intel/AMD: not tested/not tested, VGA Intel/AMD: not tested/not tested

- **HP Pavilion dv6-6102sg**, Intel HD 3000, AMD 6770m, HDMI Intel/AMD: not tested/not tested, VGA Intel/AMD: not tested/not tested

- **HP Pavilion dv6-6169sl**, Intel HD 3000, AMD 6770m, HDMI Intel/AMD: not tested/not tested, VGA Intel/AMD: not tested/not tested

- **HP Pavilion dv6-6178sl**, Intel HD 3000, AMD 6770m, HDMI Intel/AMD: working/working, VGA Intel/AMD: working/working

- **HP Pavilion dv6-6192sf**, Intel HD 3000, AMD 6770m, HDMI Intel/AMD: not tested/not tested, VGA Intel/AMD: not tested/not tested

- **HP Pavilion dv7-6070ef**, Intel HD 3000, AMD 6490m, HDMI Intel/AMD: not tested/working, VGA Intel/AMD: not tested/not tested

- **HP Pavilion g4-1001tx**, Intel HD 3000, AMD 6490m, HDMI Intel/AMD: not tested/not tested, VGA Intel/AMD: not tested/not tested

- **HP Probook 4530s**, Intel HD 3000, AMD 6490m, HDMI Intel/AMD: not tested/not tested, VGA Intel/AMD: not tested/not tested

- **Lenovo e520**, Intel HD 3000, AMD 6630m, HDMI Intel/AMD: not tested/not tested, VGA Intel/AMD: not tested/not tested

- **Lenovo G-770**, Intel HD 3000, AMD 6650m, HDMI Intel/AMD: not tested/not tested, VGA Intel/AMD: not tested/not tested
SONY Vaio VPC-SB1S1E, Intel HD 3000, AMD 6470m, HDMI Intel/AMD: not tested/not tested, VGA Intel/AMD: working/working
SONY Vaio VPC-SC1AFM/S, Intel HD 3000, AMD 6470m, HDMI Intel/AMD: not tested/not tested, VGA Intel/AMD: not tested/not tested

If you want to add your computer, please do want it (this will help other users), make a post and indicate your configuration like those above. I will then add it to the working list.

I repeat as many people do not get it: "like those above"! It take you two minutes to write it, this saves me time, and I can update more frequently this thread. Also posts like "It works on HP Pavilion dm4" are USELESS, I won't add a computer with an incomplete computer model number. Exception for computers without a precise model name (example: DELL Vostro 3550, Lenovo e520).

Useful links:
http://en.gentoo-wiki.com/wiki/Fglrx-hybrid-graphics[12] You can also check this Gentoo wiki about hybrid graphics, this is some Gentoo’s users that actually found first a solution on how to make AMD hybrid cards to work on Linux

1.3.4. Battery shrinking when laptop is off (weird!)

Confirmed issue with many more computers. Some people seemed to fix with several BIOS upgrades (unconfirmed). Some others said that the tested in dual boot, and with Windows, battery didn't drain when the computer is off. Issue unresolved so far (Jan 22, 2013)

Some potential solution:

Yes, fixed with this solution.

1.3.5. Turn screen off

See this mini jar program that has a workaround:
http://code.google.com/p/kanta-turn-screen-off/[16]

1.3.6. Extra software installed

Besides most programs indicated in http://ueb.vhir.org/1204[17] I installed a few more. See below.

- Webcamstudio
- autohotkeys-gtk
- freenx
1.3.6.1. How to remap keys

Autohotkey-gtk: GUI based program.

Features:

- KDE and GTK versions available, making AutoKey integrate well into any desktop environment.
- Write Python scripts to automate virtually any task that can be accomplished via the keyboard.
- Built-in code editor (using QScintilla in KDE or GtkSourceView2 in GTK).
- Create phrases (blocks of text) to be pasted into any program on demand (uses the X selection).
- Create collections of phrases/scripts in folders, and assign a hotkey or abbreviation to the folder to display a popup menu.
- Regular expressions can be used to filter windows by their title, to exclude hotkeys/abbreviations from triggering in certain applications.
- Scripts, phrases and folders can be attached to the tray icon menu, allowing you to select them without assigning a hotkey or abbreviation.
- AutoKey can track your usage patterns and present the most frequently used items at the top of the popup menu.

1.3.6.2. FreeNX & NX Server

There is no freenx version for Ubuntu 12.10 yes, so therefore I will temporarily install the nomachine nx server version.

Download NX Free Edition for Linux - amd64

```
Release: 3.5.0-11
Package size: 7.4 MB
Package type: DEB
Requirements: nxclient-3.5.0-7, nxnode-3.5.0-9 for Linux amd64
MD5 signature:
client: 5ea9b3992d80c9ed492a8659590f0384
node: d8fdfc370f11c11ca127b123bb93df4b5
server: 49890767e248aa02a355c33b1d80c3f0
```

To connect through NxClient, you can use the settings needed to use XFCE at the server: using

```
/usr/bin/xfce4-session & “New virtual desktop”
```
1.4. Win7 tweaks

Installed the boot loader EasyBCD:
http://neosmart.net/EasyBCD/\(^{21}\)

There is a free version for non-commercial use when you register to their website. I do have version 2.1.

Once installed and executed there is an option to add records to the boot menu, and you can choose "Linux" as a new record. You can also choose to boot Linux by default instead of Windows.