(EN)

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iATKOS ML2 Installation Guide

The oscar goes to Apple and OSX86 community..

Thanks to @mhr_pii, @dramen and @krmtna for their works..

Thanks to @denizckosar for the artwork..

Thanks to all the GGRN people..

>> Attention! <<

What is this?

- This is OSX86.
OSX86 is a collaborative project to run the Apple's Mac OS X computer operating system 10.4 and above on non-Apple personal computers with x86 and x86_64 architecture compatible processors (a.k.a. our PC's :)

>> Noob style definition: Install Mac on PC <<

What is iATKOS Project?

- iATKOS is the code name of Leopard (10.5), Snow Leopard (10.6), Lion (10.7) and Mountain Lion (10.8) OSX86 installer releases of OSX86.Türk team.

Simple and all-in-one OSX86 installation for basic and compatible hardware is the aim of this project.

1- a) iATKOS ML2 is an OSX86 installer and it is designed for Non-Apple X86_64 Intel CPU computers.
b) This installer includes Apple's Mac OS X Mountain Lion 10.8.2 (Build 12C54).
c) You do not need any other OS X system on your target computer to install OS X Mountain Lion. You only need iATKOS ML2 dmg file burned to a Dual Layer DVD/Blu-Ray or restored on a USB media.

2- Hardware Compatibility and Requirements for iATKOS ML2:

You will want to know about the details of your computer before attempting to install this system.

To get your hardware details (Vendor IDs, Device IDs), you can
- Fire up a Linux Live CD and boot from it (ie. Parted Magic, Ubuntu Live CD). Type "lspci -nn" in terminal, press enter and take notes.
- Boot from iATKOS ML2 media, open terminal, type "lspci -nn", press enter and take notes.
- Get/install Everest Ultimate Edition on Windows and use it to export the information.

Check your hardware details and do the comparing with the hardware support list below.

- Motherboard

- Simply, Intel chipsets from 945G to C606 are supported.
Common chips are 945, 965, 975, P35, P43, P45, P55, G31, G41, G43, X58, H61, HM65, HM67,

H67, P67, Z68, Z77, X79, C602 and C606.
- Besides the main chipset model, a motherboard has many components. Every component itself may or may not be compatible and even may be problematic for Mountain Lion. Also, BIOS of the motherboard may be problematic to run Mountain Lion. **Because of these reasons, some motherboards will not be able to run this OS easily, some of them will need hard efforts in order to make it partially work and some of them will never run it.**

- CPU
- Intel Core2Duo and newer 64bit (EM64T) capable processors are supported.
- AMD CPUs are not supported.

- Graphics Card
- Intel Graphics HD 3000 and HD 4000 are supported, **the rest Intel igpus are not**. This means Intel HD 2000, Intel HD, X3100, X3150, X4500, GMA950 and GMA900 are not supported.
- nvidia vga cards from G80 core to the newest kepler series (G80, G84, G86, G92, G94, G96, G98, C79, GT200, GT215, GT216, GT218, GF100, GF104, GF106, GF108, GF110, GF114, GF116, GF119, GK104, GK106, GK107) are supported on 10.8.2.
This does not mean that all of them will work (of course) but most of them will work out of box (OOB) with iATKOS ML2.
Some of them will work with issues (some are known issues and some may not be) and some of them may not work. You will have to try and see it yourself.
Device id injection to Apple's stock Mountain Lion drivers will be needed for many nvidia cards and iATKOS ML includes this operation as automated. However nvidia's drivers released for Mountain Lion does not need that injection (also included in iATKOS ML2 as a choice) but anyway after software update, injection will probably be needed again which iATKOS ML took care of that problem too.
- About ATI, for now 7xxx is not supported on Mountin Lion 10.8.2. 7xxx support will most likely come with 10.8.3.
Most of the ATI 6xxx/5xxx/4xxx cards work with modified drivers and the users will have to take the additional steps to use such cards after installation.

- Network
- Common wired and wireless network devices listed below will be auto-detected by iATKOS ML2 and most of them will work OOB.
- Users that have other compatible network devices will have to search for the drivers to make them work on OS X.
Supported chips:
Wired:
- Intel Gigabit and Intel Pro/100
- Realtek RTL 8139/8111/8168
- Atheros AR8121/AR8113/AR8114/AR8131/AR8151/AR8161/AR8171/AR8132/AR8152/AR8162/AR8172
- Broadcom BCM57780, BCM57781, BCM57785
- Marvell 88E8035, 88E8036, 88E8038, 88E8039, 88E8056, 88E8001
Wireless: Some chips (ie. Atheros ar5008, Broadcom BCM4311) are natively supported by OS X. So, this is not the complete wifi support list of OS X, this is the additional support list.
- Atheros 9285, 9287, 9227
- Broadcom 4312, 4321, 4322, 43224, 43225, 43227, 43228 (Some of these broadcom chips need rebranding in order to work on OS X.)

- Minimum 1GB RAM

- Minimum 15GB free space on target partition

You may also visit Wiki HCL pages and other OSX86 platforms for more support.

Mostly, compatibility of a hardware can be defined by its chipset and device id, but this is not a rule. Motherboards/VGA cards/other computers parts with same

chipsets and device ids of different brands may have differences that can result with incompatibility.
Therefore > Search, read and try it on your computer before asking like "Will this hardware/computer work with iATKOS ML2?".
Simply, if a hardware is absolutely not compatible for OSX86 10.8.2 (i.e. Broadcom BCM4313, Atheros AR5007, etc.), then it is also not compatible for iATKOS ML2.

3- Check the md5 of the iATKOS dmg file that you downloaded and make sure that the md5 checksum matches the one posted on our website. If not, then you have a faulty dmg image file.

4- Read the instalation steps carefully and if something goes wrong, don't panic. Scroll down to the troubleshooting guide. Make sure you have read/applied the steps of troubleshooting guide before posting in the forum!

Information:

- 64-bit/32-bit thing:
Mac OS X Mountain Lion is a 64-bit operating system which means that it can only boot in 64-bit mode.
32-bit applications will work but loading a 32-bit compiled driver/module/kext is not possible for Mountain Lion. Therefore applications that need their own 32bit-only modules (kexts) may partially or totally fail.

- You can make clean, upgrade and refresh installs to your existing OSX86 system using iATKOS ML2. Please read the related section.

- Easy installation on Software RAID volumes. No additional user actions needed. Please read the related section.

- nvidia graphics cards will have less problems with OS X 10.8 using iATKOS ML2 because of the automated id injection.

- Network devices will be auto-detected.

- Onboard sound devices will be auto-detected. Thanks to Andy Vandijck and Voodoo team.

- Using software updater to apply main system updates just like real Macs on most computers is possible using iATKOS ML2. Please read the related section.

- This installer may not include all the necessary drivers required by your setup. Additional steps may be needed to be taken by the user to setup and use such components.

- Main system is fully stock. We are running iATKOS main system on our real Macs!

- Intro track > "Flu - Şarj-ı Deşarj"

- German translation by @stahlgewitter.

- Hebrew translation by @רומן חורול (Roman Horol).

- French translation by @julianbougnon.

Before Installation:

- BIOS settings:

- Set your BIOS to its default settings.
- Execute Disable bit: Enabled
- XD (if exists): Enabled
- Limit CPUID Max: Disabled
- Set all cores of the CPU active/enabled.
- Virtualization (if exists): Enabled or Disabled, try it.
- Hyper-threading: Enabled or Disabled, try it.
- HPET (High Precision Event Timer/PCH): Enabled
- SATA Mode: AHCI
- Set all the Overclock/Performance/Turbo etc. values to Auto.
- Set the UEFI mode settings (if exists) to compatible mode

- Preparing a Target for installation:

- A target partition or disk will be needed for installation.

- If you are not an advanced user, I advice you to use a clean harddisk with no personal data/OS as for target and unplug all the other harddisk drives connected to your motherboard just to be safe.

- If you are not an advanced user and if your target disk includes personal data and/or any OS, **I advice you to backup your data before anything.**

- **Parted Magic** or **OS X Disk Utility** can be used for partitioning and such operations for preparing a target.

- Use Parted Magic if you are not an advanced user.

-Parted Magic: Parted Magic is a Linux Live OS project for harddrive operations. Download the iso image from >> **http://partedmagic.com** << Burn it to a CD/DVD with any suitable application and boot your computer with it. Run the partition editor application and create your target.

-OS X Disk Utility: Boot iATKOS ML2, choose the language, run Disk Utility via Utilities menu and create your target.

Create your target partition formatted as HFS+ (Mac OS Extended (Journaled)).

-Partition Type: You can choose **MBR (Master Boot Record/msdos)** or **GPT (Guid Partition Table)** for your target harddisk via partitioning options.
If you don't need/want to change your existing partition table type, just do not touch it. If you want to change it, note that all your existing data on target harddisk will be gone.
GPT:
Advantages:
-You can add/remove partitions and change the size of them on a GPT partitioned drive without repartitioning and you can even do it on-the-fly on a running OS X system partition.
-You can create up to 128 bootable partitions on a GPT partitioned drive.
-You can use Software RAID only on GPT partitioned drives for OS X.
Disadvantages:
-Multiboot is not so easy to manipulate for newbies.

MBR:
Advantages:
-Pretty easy to manipulate multiboot
Disadvantages:
-Partitioning operations with OS X Disk Utility need recreationing of the whole partition table.
-No Software RAID for OS X
-2TB partition size limit
-You can have max 4 bootable partitions (4 primary partitions) for OS X. You can only boot the OS X installations on the rest of the partitions (logical partitions when more than 5) over first 3 primary partitions.

- I advice **MBR** for your target harddisk if your are not an advanced user.
The target should be a Primary Partition for MBR partitioned harddisks.

Starting the Installation:

- Boot your computer from iATKOS ML2 media **(Dual Layer DVD, Blu-Ray or USB Media)**
Most OSX86 compatible computers will be able to boot iATKOS ML2 media by default (without entering commands), but some computers will need some boot flag(s)/command(s) to be entered at boot promt.

If you are booting from DVD/Blu-Ray, then you need to press F8 in first 10 seconds for boot promt.

Common boot flags/commands for iATKOS ML2 install media:

- You can enter without quotes (").
- You can try combinations by adding a space between them, i.e. "-v cpus=1".

"GraphicsEnabler=Yes" This is needed for **Intel HD 4000** installation.

"cpus=1" This may be needed for some 2011 socket motherboards and some laptop computers. TSC Sync should be selected for those 2011 socket motherboards during install.

"UseKernelCache=No" This command is needed for computers that freeze at any point (including "PCI Configuration Begin" line) or computers that act weird :) this can be a CMOS reset or ignoring other SATA ports issue.
By entering this command, ElliottRTC.kext and modified IOPCIFamily.kext will be loaded during install.

"-v" Verbose mode.

"-x" Safe mode.

"USBBusFix=Yes" This option is to fix USB related issues of some motherboards that can cause freeze or USB ports to fail.

"npci=0x3000" Computers that freeze on "[PCI Configuration Begin]" line may try this command.

"ATIConfig=xx" "xx" is the ATI framebuffer name for target model (search it on google). This may be needed for some Intel HD 4000 + ATI gpu computers to boot with "GraphicsEnabler=Yes" command.
If you used this command to boot iATKOS ML2 media, then you will also need to use it to boot

your ML2 system.

- Select the language

Clean Install:

1- Run Disk Utility via Utilities menu and erase the target for clean install

2- Select the destination for installation

3- Click Customize* and select what you need

4- Click Install

Upgrade from previous versions:

- You can upgrade your existing Lion (10.7.x) and Mountain Lion (10.8.x) installations to Mountain Lion 10.8.2 or make a refresh install to your problematic 10.8.2 system (keeping your applications, user accounts, user settings and user data) by using iATKOS ML2.

To upgrade from Snow Leopard (10.6.x), you should first upgrade to Lion (10.7.x) by using iATKOS L2 or any other methods.

- I advice you to try a clean install to another hdd on your computer before upgrade, to see that if it actually works on your computer or not and to determine your install selection list.

- You will need to re-install your special device drivers after upgrade. i.e. your m-audio firewire sound driver, your 3G modem driver, your ATI video card driver..

- Some of your applications that runs on the previous versions of OS X may not be compatible with Mountain Lion 10.8.2, so know that they may fail after upgrade.
Search for your existing software/driver compatibility for Mountain Lion before upgrading to Mountain Lion.

- You will need to prepare your selection list just like a clean install.

1- Select the destination for installation

2- Click Customize* and select what you need

3- Click Install

* Customize:

- This is the most important part of the installation.
- There is already a basic default profile chosen and adding 2 or 3 packages to default profile will

probably be enough for most computers.
- You may have to try plenty of times to find the best configuration for your computer if you don't have enough experience on target hardware, so don't come to the forum complaining like "I installed 3 times but it still does not work..".
- Please read the descriptions of the packages carefully.

Here are the common and important ones for customizing your installation:

Bootloader Options

- **Graphics Enabler:** This should be selected for most VGA cards except for some newer models like nVidia Kepler GTX 6xx series, some ATI 6xxx/5xxx series gpus.
Booting with additional **"ATIConfig=xx"** command may let some of these ATI cards work with GraphicsEnabler. "xx" is the ATI framebuffer name for target model (search it on google).
- **Kernel Cache:** This flag may be problematic for some laptop computers. These laptop computers can use this option only after proper dsdt edit.
- **USB Fix:** This flag may fix USB problems of some problematic motherboards. If you had to boot with "USBBusFix=Yes" flag, then you would probably need to check this too.
- **PCI Root-1:** This flag is needed for most of the Gigabyte motherboards for GPU acceleration.
- **Kernel Patcher:** This patch is needed for some less compatible computers like Atom CPU computers, some of the HP laptop computers, etc.
- **Graphics Mode:** This should be selected for Intel HD 4000 and for some other GPUs. Select the package that matches your main screen resolution.

Patches

- **IOPCIFamily:** You must select this if your computer freezes at "[PCI Configuration Begin]" message booting in verbose mode.
- **TSC Sync:** If you had to boot with "cpus=1" flag, then you may need to check this.
- **Mac Model:** Select one of the iMac, MacMini or MacBook Pro models for Intel HD 3000/4000. For other computers, select a Mac model that has similar hardware configuration with your computer to have a better compatibility and better OS X performance.

Drivers

Main Hardware

- **AHCI Internal:** Select this package if your main drive color is orange on your desktop. Orange means it is a hotplug volume, grey means it is internal. It does not have any effects on your system performance.
- **Non-AHCI SATA:** Select this to use Non-AHCI Intel SATA. Select this package for older computers.

Hardware Monitor

- **VGA cards:** Do not select this if you have multiple graphic cards.
- **PS/2:** PS/2 keyboard/mouse driver. Select this driver for most laptop computers.

VGA

nVidia

- **nVidia's 10.8.2 drivers:** Select this for multi gpu support using with Intel HD 4000 and to have the ability to use up to 4 monitor simultaneously on most kepler series cards.
- **Disable nVidia drivers:** Select this if you need to disable nVidia GPU for computers with Intel HD 3000/4000.

ATI

- **Disable ATI drivers:** Select this if you need to disable ATI GPU for computers with Intel HD 3000/4000.

Intel

- **HD 3000:** Select with Graphics Enabler and a Mac Model (MacBookPro or MacMini) for your Intel HD 3000.
- **HD 4000:** Select only one EFI String package. First 3 are for most common hardware configurations, so try them first. Set your graphics memory size matching the memory value of the EFI string package you select (read the description of the package) and set DVMT to "Maximum" by your BIOS setup. Select Graphics Enabler, one of the Graphics Modes matching your main screen and a Mac Model for your computer (iMac or MacBookPro8,1).
- **Disable Intel drivers:** Select this if you need to disable Intel integrated GPU. It

may be needed for some Intel HD 4000 computers. For those HD 4000 computers, you will need to install intel vga drivers located at /Library/Temp directory using Kext Utility after booting your new iATKOS ML2 system once.

- Most ATI Mobility VGA cards are not compatible with this system and most compatible ATI cards need their custom packages/modifications which is not included in this release. You must search and find the appropriate driver/solution by your own for such ATI hardwares, so do not continuously ask for ATI support on forum.

Software RAID:

Information:

- Software RAID combines two or more physical harddisks or their partitions (RAID slices) into a single logical unit. RAID's various designs involve two key design goals: increase data reliability and/or increase input/output performance.

- You can easily create RAID volumes and install Mountain Lion on them using iATKOS ML2.

- RAID levels or types for OS X:
Striped RAID (RAID-0): A RAID-0 set splits data evenly across multiple disks with no parity information for redundancy. RAID0 is normally used to increase performance for both read and write. It can also be used as a way to create a small number of large virtual disks out of a large number of small physical ones. Simply it is a way to use the disks like using the dual or more channel RAMs, so it increases the read and write performance more than a bit. RAID0 sets are advised for the main system volumes to increase the performance of the OS.
Mirrored RAID (RAID-1): A RAID-1 set creates an exact copy of a set of data on two or more disks. This is mostly for data safety and also an increase of performance for read operations is expected. The RAID array can only be as big as the smallest member of the slices. RAID1 sets are used for security and advised for data storage volumes.
Concatenated Disk set: Which is not exactly a RAID level. The slices are merely concatenated together, end to beginning, so they appear to be a single large disk. It provides no data redundancy. This may be thought of as the inverse of partitioning. Whereas partitioning takes one physical drive and creates two or many more logical volumes, concatenation uses two or more slices to create one logical volume. No increase in performance is possible and neither increased data reliability is possible.

- Boot helper partition: OS X Software RAID systems boot using boot helper partitions and so the bootloader will be installed to boot helper partition instead of the RAID slice. If one of the RAID slices of your target RAID volume is disk0s2, then its hidden boot helper partition named as "Boot OS X" is disk0s3. Do the math for the others. iATKOS ML2 will do this installation automatically.

- Create RAID volumes: You can easily create RAID volumes using OS X Disk Utility. Do the partitioning if you need to, click on the target disk and then click on RAID tab, choose RAID type, name it and by pressing "+" create a new RAID set. Add the target partitions or disks to RAID set by dragging them and when you are done, click to "Create" button. The added partitions or disks will be the slices of your RAID set, in a few seconds your RAID volume will be mounted and ready for installation.

- iATKOS ML2 RAID operations:
- For RAID target, ML2 installs the bootloader to the boot helper partition of the preceding disk of the RAID set, so the first disk by your bios will be the Mac OS X boot disk.
You can install any foreign bootloaders to other harddisks of your RAID set, there will be no harm

for your RAID set. On my test 3x RAID0 system, second HDD has Grub bootloader and the third one has Windows bootloader, all of them are installed seperately and running fine. Grub and Chameleon can easily boot all of the 3 OS' and also windows can be manipulated to boot them.

RAID Install Steps:

1- **Create RAID volume as described above**

2- **Select the RAID volume as destination**

3- **Click Customize* and select what you need**

4- **Click Install**

Main System Updates:

Using software updater to apply main system updates is easier with iATKOS ML2 for most computers.
Some drivers and patches will be overwritten and some will be non-functional, so computers that need these drivers and patches will need to take some actions after updating. These packages are:

- **SSD Trim support:** You will have to reinstall /Library/Temp/IOAHCIFamilyTrim.kext after updating.
- **Sound:** Delete /System/Library/Extensions/AppleHDA.kext after updating before first reboot, otherwise you may face kernel panic.
- **nVidia's 10.8.2 drivers:** They will be overwritten after the update. If you need nVidia's drivers then download them from nvidia.com (if exists for your new updated system) and install after update before reboot, or do not update your system until nvidia releases drivers for the new 10.8 update.
- **OpenCL RAM 2GB+ patch:** This patch may be non-functional after update. You will have to wait/follow OSX86 world for the patch for the new OS X version.
- **Disable nVidia drivers:** You will need to erase new nvidia drivers coming with the update.
- **Disable ATI drivers:** You will need to erase new ATI drivers coming with the update.
- **HD 3000/4000:** Intel 7 chipset motherboards (77/75) with HD 3000 and Intel 6 chipset motherboards (61/65/67/68) with HD 4000 will need to install IntelHD3000_4000_update.pkg after update before restart, otherwise their system will freeze. IntelHD3000_4000_update.pkg can be found on our forum.
- **Disable Intel drivers:** You will need to erase new Intel drivers coming with the update.

Every main system update that had some issues with our PC hardwares mostly covered after the release of the update. Therefore, updating like real Macs is not a thing that you can always count on. We can never know what Apple will do for the next update. Until now it had no major problems with X86 PC hardwares.

Multiboot:

iATKOS ML2 has no integrated procedure for multibooting but preparing a multiboot GPT or MBR system with this release is easy.

Here is a "How To" for GPT and MBR triple boot including Mac-Win-Linux. iATKOS ML2, Debian GNU/Linux DVD and Windows7 DVD installers are used in this example.

- MBR (Master Boot Record) triple boot -

- Nearly all PC's work on MBR partitioned harddisks. Check it with Disk Utility and if so do no touch it.
If it is GPT then you need to repartition your harddisk that will cause to loose all the data in it. Click to partitioning options, select MBR and do the partitioning.

- Create 3 or more partitions by using iATKOS Disk Utility or Parted Magic Live CD. Mac OS Extended Journaled (HFS+) format for OS X target, MS-DOS (Fat32) for the others. OS targets must be one of the first 3 partitions creating with Disk Utility.

- Add boot flag to Windows or Linux target and install the operating systems in any order you like.
For windows, make sure the windows target disk is the first preceding disk by your BIOS, or unplug the other harddisks. This is a general windows issue.
For linux, do not install linux bootloader to MBR, install it to linux root.

- Boot iATKOS ML2 and install OS X to target as usual.

- If Windows fails to load then you may need to repair Windows (win7 or vista):
Add boot flag to Windows partition, boot Windows DVD, select repair, add boot flag to OS X partition.

- You can also add boot flag to Linux partition to use Linux bootloader for booting the operating systems if you want to.

Now you have triple boot on MBR.

Note: Adding boot flag to MBR partitions: Boot Parted Magic Live CD, right click to partition, select flags and click to boot.

- GPT (Guid Partition Table) triple boot -

- Check the partition table type with Disk Utility.
If it is not GPT, then repartition the drive and change the partition map scheme to GPT by pressing partition options. You will loose all the data on target disk by repartitioning.

- Create 3 or more partitions by using iATKOS Disk Utility. Mac OS Extended Journaled (HFS+) format for OS X target, MS-DOS (Fat32) for the others. Windows and Linux targets should be of the first 3 partitions.

- Boot Windows Media and install it to its FAT32 target.

- Boot iATKOS ML2 and install OS X to target as usual. You have dual-boot with OS X and windows right now.

- Boot Linux media and install the operating system (OS) to its FAT32 target.
Do not install the linux bootloader to MBR, install it linux root.
Do not change the boot flags using Linux media.
Do not modify the partition table, it can be risky for some distros, just erase the target and do the install.

- Now you can boot to OS X and Linux using OSX86 bootloader which boots by default, but

windows fails at this stage because Linux installation broke the hybrid GPT, so we will bring it back on this step.
>>Boot from Parted Magic CD and execute "sudo gptsync /dev/sdX" command on terminal without quotes (X is the BSD letter. Open the partition manager and you can easily see the BSD letter of your target disk).

Now you have triple boot on GPT. By default, OS X bootloader will take the control by these steps. It can boot all of them by just selecting. If you want linux or windows to take the control of multibooting then go on reading..

All the OS' are independent by this way, you can re-install each of them one by one. You just need to care about 2 things:
- gptsync will be needed after Linux re-install
- you need to re-install OS X bootloader after Windows re-install. Boot iATKOS ML2, open terminal by the utilities menu, install the bootloader using terminal (Search on Google). If you use linux for multibooting then this step is not necessary.

There are more combinations to make multiboot work on especially on GPT. If you know the procedures as well, there is no thing like an unrecoverable multiboot error.
i.e. Keep in mind that hybrid GPT may fail when dealing with linux stuff, then windows will not boot. Do not use Linux media for partitioning operations on Hybrid GPT, it breaks Hybrid GPT causing an unbootable windows. There comes the gptsync terminal program, it creates a fake MBR code on GPT drives that make Windows think it works on MBR partitioned hdd.
You can always apply gpysync if hybrid GPT is broken somehow. After bringing back the hybrid GPT partition, windows will work again.

After gptsync, you can add boot flag to other partitions by using OS X or Linux fdisk if you like to boot from another OS. i.e. >> booting from linux and using grub for multiboot manipulation instead of chameleon.
For OS X fdisk, boot iATKOS ML2 and open terminal:

fdisk -e /dev/diskX # X is the BSD number of your target disk
p # p is the fake MBR partition list
f Y # f for adding boot flag to the target partition, Y is the partition number you want to boot from
w # w to write changes
q # q for quit.

In this multiboot example I created 4 volumes, 3 for OS' and 1 for storage. OS volumes are first 3 ones. As you see on this fdisk print out and disk utility screen below, fdisk lists the 4 partitions of fake MBR of my hybrid GPT. You can not see the "Data 2" partition (disk0s5) there because it is the 5th one. 1st partition is the hidden efi, for this reason the OS' are to be installed to first 3 volumes.

```
Enter 'help' for information
fdisk: 1> p
Disk: /dev/disk0 geometry: 30401/255/63 [488395055 sectors]
Offset: 0 Signature: 0xAA55
#: id cyl hd sec - cyl hd sec [ start - size]
------------------------------------------------------------------------
1: EE 1023 254 63 - 1023 254 63 [ 1 - 409639] <Unknown ID>
2: AF 1023 254 63 - 1023 254 63 [ 409640 - 97656256] HFS+
3: 07 1023 254 63 - 1023 254 63 [ 98328576 - 97654784] HPFS/QNX/AUX
*4: 83 1023 254 63 - 1023 254 63 [ 195983360 - 97654784] Linux files*
fdisk: 1> _
```

---

disk utility layout:
250.06GB WDC WD250...
-OS X
-Windows
-disk0s4
-Data 2

Unmounted disk0s4 volume is ext4 linux partition (hd0,4) in this example. I added the boot flag to Linux partition using OS X fdisk and modified the grub.cfg file to boot all of them via grub2.

```
### here is the grub.cfg lines of this example for multibooting
menuentry "OS X" {
insmod hfsplus
set root=(hd0,2)
multiboot /boot
}
menuentry "Windows 7" {
set root=(hd0,3)
chainloader +1
}
menuentry "Debian GNU/Linux.....
###
```

Simple OSX86 Troubleshooting guide:

At times **after installation**, your system may not work properly as in > it may restart, not boot at all or hang at a certain point. These are quite normal and there are some steps to be taken in these cases. It varies from one case to another. This basic troubleshooting guide may help you to solve most of the common problems.

- If you're facing hangs, freezes or kernel panics (which is present as a shutdown symbol on the grey screen just after boot) type "-v" (without quotes) at the boot promt and press enter. This would give you verbose output which is useful for the solution.
You can take a photo of the verbose screen at the point of freeze and post it on our forum or on other OSX86 development platforms to get help.

- To pass the freeze/hang or kernel panic, you may try boot with "-x -v" (without quotes) which boots the computer in safe mode. Then you may have the chance to reach up to OS X GUI to solve your problem.

- White, black or blue screen freezes mostly mean that your graphics card(s) isn't functioning correctly at that time.
You can try to boot with "-x -v" command which mostly to takes you successfully to OS X GUI in safe mode. Then you can search the internet for the solution for your graphics hardware.
Re-installing iATKOS ML2 by re-arranging your install selection list should be the first choice.
You may try with selecting none of the graphics related packages or the appropriate graphics disabler packages for your setup under VGA drivers section during install to make sure that it is a graphics related issue.
Then after a little more reading and search (if needed) you can install iATKOS ML2 with the right settings for your computer and solve the problem.

- You can also try these commands (without quotes) for freezes:
You can try combinations by adding a space between them, i.e. "-x -v cpus=1".

"-f"
"cpus=1"
"npci=0x3000"
Also there might be some commands that you need to enter just because you did not select some of the bootloader options needed for your computer during installation.
"UseKernelCache=No"
"GraphicsEnabler=No"

- "Waiting for root device" - It means that OS X doesn't see your hard disk or boot device for some reason. You can face with this during dvd/blu-ray boot or after system install during hdd boot.
***DVD/Blu-Ray Boot:**
-Change your SATA mode from IDE/RAID to ACHI by your BIOS setup.
-You may need to check other BIOS settings that might be the problem.
-You can try the other SATA ports for your DVD/Blu-Ray drive.
-You can try updating your BIOS version.
These steps usually fix the problem. If not, then you can try to install using a USB media. If still no light, then your hardware is not compatible with OS X at that point.
***USB boot:**
-You can try to boot with "USBBusFix=Yes" command
If it does not help, it can still be solved by dsdt edits for some cases, which needs knowledge and additional operations to iATKOS ML2 restored USB media.
***HDD Boot after installation:**
-Apply the same steps with DVD boot above
-Re-install iATKOS ML2 with re-arranging your install selection list.

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Use iATKOS ML2 on your own risk.
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web: http://iatkos.me/

Good luck. If you enjoy your Mac OS X Mountain Lion System, then buy a real Mac. Remember that this system is only for testing Mac's amazing system. Using OS X without a license is not right.

cheers

uphuck