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Bootloaders

Clover



Clover v.2 Instructions

Started by ErmaC, Sep 14 2012 09:18 AM

Bootloader, EFI, Clover,

Page 3 of 3

Slice

Posted 28 April 2014 - 12:58 PM


Property List Editor

It is helpful for config.plist editing.

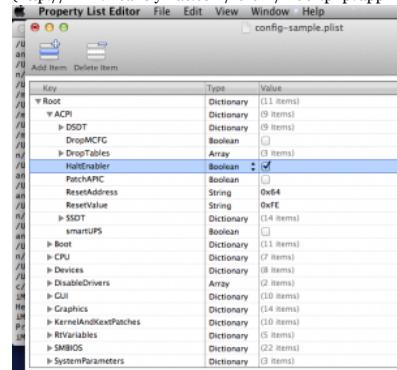
This is utility from old Xcode, looks and works better then new version.

Unpack the archive, copy these frameworks into /Library/Frameworks/

The application may be placed in your convenient folder.

 (http://www.insanelymac.com/forum/index.php?app=core&module=attach§ion=attach&attach_id=139967) **PListEditor.zip**

(http://www.insanelymac.com/forum/index.php?app=core&module=attach§ion=attach&attach_id=139967) **6.12MB** 391 downloads



(http://www.insanelymac.com/forum/uploads/monthly_04_2014/post-

112217-0-94739200-1398657505.png)

Slice

Posted 12 May 2014 - 08:02 PM

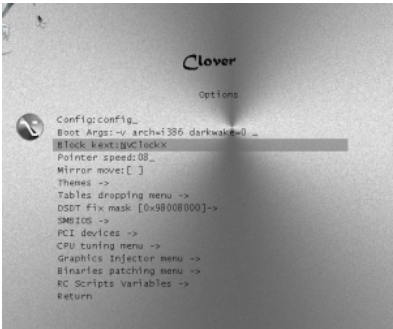
Blocking Bad Kext

I encounter a bad situation when I installed a kext (it is GeforceSensor) that caused KP. I install it into SLE without checking if it works.

Then I can't boot even with `-x`, `-v`, `-s`. It always loaded and panics.

So I created a revision of Clover that is able to block one kext in /S/L/E.

Test with NVClockX.kext. It is not vital for system so I can experiment with it.



(http://www.insanelymac.com/forum/uploads/monthly_05_2014/post-

112217-0-61740900-1399892494.png)

Ordinary boot

zone leak detection enabled
standard timeslicing quantum is 10000 us
mig_table_max_displ = 73
NVClockX: NVClock Darwin port by alphamerik (C) 2010
NVClockX: usr-sse2 (C) 2010
AppleACPICPU: ProcessorId=0 LocalApicId=0 Enabled
AppleACPICPU: ProcessorId=1 LocalApicId=1 Enabled

With BlockKext

zone leak detection enabled
standard timeslicing quantum is 10000 us
mig_table_max_displ = 73
HWInfo: [Debug] Initialising...
HWInfo: HWInfo get information from Clover bootloader, (c)Slice 2013
IntelCPUMonitor: Based on code by mercurysquad, superhai (C)2008. Turbostates measurement added by Navi
User defined TJMax=0
AppleACPICPU: ProcessorId=0 LocalApicId=0 Enabled
AppleACPICPU: ProcessorId=1 LocalApicId=1 Enabled

So yes, the kext is not loaded by boot.efi. Don't forget to boot without cache!

But then surprise!!!

```
slice$ sudo kextstat | grep -v apple
Password:
Index Refs Address Size Wired Name (Version) <Linked Against>
18 4 0x566db000 0xa000 0x9000 org.netkas.FakeSMC (3.3.1) <13 7 5 4 3>
19 0 0x56236000 0x4000 0x3000 org.slice.HWInfo (1) <18 7 4 3>
20 0 0x566e5000 0x6000 0x5000 org.slice.IntelCPUMonitor (1.1) <18 7 5 4 3>
23 0 0x56763000 0x7000 0x6000 org.mozodojo.ITEIT87x (1.0.3) <18 7 5 4 3>
36 0 0x56746000 0x5000 0x4000 com.yourcompany.driver.AppleACPIPS2Nub (1.0.0d1) <13 7 5 4 3 1>
38 0 0x564b4000 0x3000 0x2000 net.osrom.kext.Disabler (1.0.1) <4 3>
79 0 0x5d46b000 0x14000 0x13000 org.usrsse2.NVClockX (1.0.1d1) <18 14 7 5 4 3>
85 0 0x564b7000 0x23000 0x22000 org.voodoo.driver.VoodooHDA (2.8.4) <84 14 7 5 4 3>
```

It is loaded! Why? I think it is loaded by kernel that is not affected by FSInject.efi
But it is loaded much later and give me an ability to boot with -s before the KP will occur.
Yes, this is workaround in the case above.

Since rev.2665

Slice

Posted 20 May 2014 - 03:58 PM

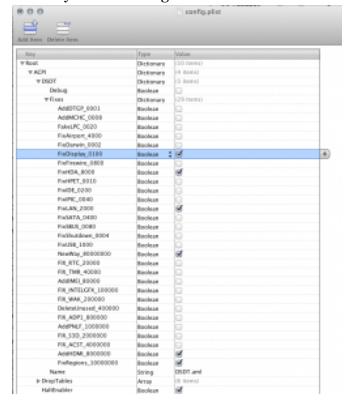
AAPL,slot-name

This is a property that usually injected by DSDT or property strings but this is a wrong way to go.
Actually this property appeared by AppleSMBIOS.kext (see sources if you want).
So in revision 2673 I made more vanilla way to assign this property.
1. DSDT must contain **Name (_SUN, 0x05)**. Or other number. The number must be one byte and avoid 0 and 1 because of stupid optimization.
Sample:

Device (GIGE)

```
{
  Name (_ADR, 0x00050000) // _ADR: Address
  Name (_SUN, 0x02) // _SUN: Slot User Number
}
```

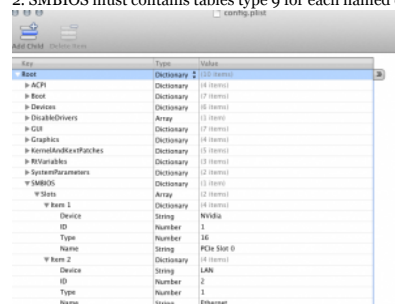
You may write nothing but set DSDT Fix Mask bits for those devices



([http://www.insanelymac.com/forum/uploads/monthly_05_2014/post-](http://www.insanelymac.com/forum/uploads/monthly_05_2014/post-112217-0-35792000-1400568599.png)

112217-0-35792000-1400568599.png)

2. SMBIOS must contains tables type 9 for each named device. To do this write into config.plist like here



([http://www.insanelymac.com/forum/uploads/monthly_05_2014/post-](http://www.insanelymac.com/forum/uploads/monthly_05_2014/post-112217-0-73748800-1400568707.png)

112217-0-73748800-1400568707.png)

Here

- **Slots->Device** is a one of devices {ATI, Nvidia, LAN, WIFI, Firewire}. That's all for now. I can accept more propositions.

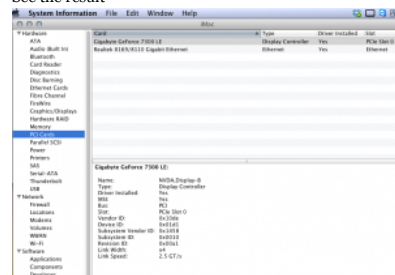
- **Slots->ID** must be the same number as you set into DSDT in _SUN.

- **Slots->Name** will be a string that you want to assign to AAPLslot-name

- **Slot->Type** is intended to be a type of slot. There is a number 0,1,2,4,8,16 means PCI, PCIe 1x, PCIe 2x etc.

3. Clover must be revision 2673+

See the result



([http://www.insanelymac.com/forum/uploads/monthly_05_2014/post-](http://www.insanelymac.com/forum/uploads/monthly_05_2014/post-112217-0-78199800-1400569109.png)

112217-0-78199800-1400569109.png)

Slice

Posted 03 July 2014 - 08:37 PM

Fake CPUID

What to do if your OSX is not supported your CPU?

See table what CPUs supported by different OS versions

| CPU name | CPUID | 10.4.11 | 10.5.8 | 10.6.3 | 10.6.8 | 10.7.2 | 10.7.5 | 10.8.5 | 10.9.2 |
|----------|-------|---------|--------|--------|--------|--------|--------|--------|--------|
| | | | | | | | | | |

| | | | | | | | | |
|-----------|-----------|---|---|---|---|---|---|---|
| Yonah | 0x0006E6 | 1 | 1 | 1 | 1 | 1 | 0 | 0 |
| Conroe | 0x0006F2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Penryn | 0x010676 | 0 | 1 | 1 | 1 | 1 | 1 | 1 |
| Nehalem | 0x0106A2 | 0 | 1 | 1 | 1 | 1 | 1 | 1 |
| Atom | 0x0106C2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| XeonMP | 0x0106D0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| Linnfield | 0x0106E0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 |
| Havendale | 0x0106F0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 |
| Clarkdale | 0x020650 | 0 | 0 | 0 | 1 | 1 | 1 | 1 |
| AtomSandy | 0x020660 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lincroft | 0x0206700 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

If you want to install OSX on Atom CPU then you may see it is not supported.
As well IvyBridge is not supported by 10.7.2 while it will be supported by 10.7.5 after SoftwareUpdate.

For these cases Clover-rev2748+ proposes you to set FakeCPUID in config.plist or even in GUI -> Binaries patching menu

```
<key>KernelAndKextPatches</key>
<dict>
  <key>FakeCPUID</key>
  <string>0x010676</string>
</dict>
```


In this example we tell that the CPU is Penryn supported by all OS versions 10.5+

To illustrate I set for my CPU FakeID=0x0106C2 that is unsupported Atom and as expected I got KP while IntelCPUMonitor sees real CPU - Penryn 😊



(http://www.insanelymac.com/forum/uploads/monthly_07_2014/post-112217-0-41665000-1404387387.jpg)

And vice versa. If you set good model for bad CPU you may successfully start system.

Download a version  (http://www.insanelymac.com/forum/index.php?app=core&module=attach§ion=attach&attach_id=143837)
CLOVERX64.efi-rev2749.zip (http://www.insanelymac.com/forum/index.php?app=core&module=attach§ion=attach&attach_id=143837) **249.45KB** 70 downloads


Slice

Posted 09 October 2014 - 09:24 PM

Multiple boot options.

Rev 2948+
Briefly, Clover writes Boot#### options for each entry in MainMenu and set BootCurrent to last booted entry if all correct.

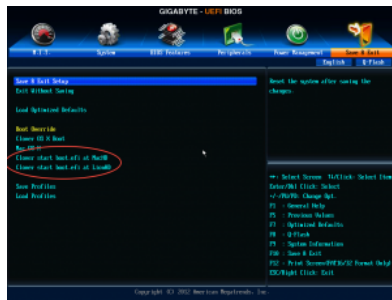
Requirements: UEFI boot with real NVRAM present.

Usage:
Enter CloverGUI, navigate to "Clover Boot Options" in the tools row of main menu and press "Add Clover boot options for all entries".
 (http://www.insanelymac.com/forum/uploads/monthly_10_2014/post-112217-0-42949000-1412857438.png)

If you once do this no need to repeat. It will be saved in NVRAM forever.
When you change the main menu by adding new volume, new partition, new OS then you should
first remove old options: "Remove all Clover boot options"
second add all options again.
Print them into boot.log to see what you have.

When you started an OS by some entry in the Menu then this entry will be saved as "BootCurrent" and next boot will happen with Clover knowing DefaultVolume and DefaultLoader as in last boot.

Advantages
1. It will remember last boot to Windows or even to legacy boot (not checked but I hope it is).
2. Bios menu will contain these entries.



112217-0-63696500-1412857458.png)

(http://www.insanelymac.com/forum/uploads/monthly_10_2014/post-

I tested with QEMU+Ovmf and have the follow debug.log after tuning:

Boot options:

```
48:487 0:051 BootOrder: 7: Boot0005, Boot0006, Boot0000, Boot0001, Boot0002, Boot0003, Boot0004
49:388 0:001 0) Boot0005: Clover start boot.efi at Macintosh, Attr: 0x1
49:442 0:053 HD(1,GPT,065C30D9-992D-4C4C-8965-A266108C7DoF,0x800,0x60000)\EFI\CLOVER\CLOVERX64.EFI
49:495 0:053 Size: 222 (Attr:4 + FPL:2 + Desc:70 + FP:102 + Opt:44 = 222 -> OK)
49:550 0:054 1) Boot0006: Clover start (null) at EFI, Attr: 0x1
49:604 0:054 HD(1,GPT,065C30D9-992D-4C4C-8965-A266108C7DoF,0x800,0x60000)\EFI\CLOVER\CLOVERX64.EFI
49:697 0:093 Size: 176 (Attr:4 + FPL:2 + Desc:54 + FP:102 + Opt:14 = 176 -> OK)
49:751 0:053 2) Boot0000: EFI Floppy, Attr: 0x1
49:805 0:053 PciRoot(0x0)\Pci(0x1,0x0)\Floppy(0x0)
```

Slice

Posted 05 November 2014 - 08:42 PM

How to install Windows in EFI mode on legacy BIOS based PC using legacy Clover

It is a way to go away from legacy systems even if you have old BIOS based computer.

First, you should realize that there are requirement for partition table:

1. OSX requires GPT. It can be installed into MBR with special patch.
2. Legacy Windows requires MBR and can't be installed into GPT.
3. UEFI Windows requires GPT and can't be installed into MBR. Moreover, check with fdisk, it must be as follow:

```
fdisk: 1> p
Disk: /dev/rdisk geometry: 19457/255/63 [312579695 sectors]
Offset: 0Signature: 0xAA55
Starting Ending
#: id cyl hd sec - cyl hd sec [ start - size]
-----
1: EE 0 0 2 - 1023 254 63 [ 1 - 34] <Unknown ID>
2: 00 0 0 0 - 0 0 0 [ 0 - 0] unused
3: 00 0 0 0 - 0 0 0 [ 0 - 0] unused
4: 00 0 0 0 - 0 0 0 [ 0 - 0] unused
fdisk: 1>
```

I mean there must be no Hybrid MBR! Attention! Only one partition and it is with EE sign. Check and zero all other entries if found.

Second.

Minimum Windows version is Windows 7-64bit. So your computer must have 64-bit CPU.

Installation order.

1. Install Mac OSX first. In the installer format your drive to GPT and reserve a space for Windows at least 20Gb.
2. Install Clover into EFI partition created during the formatting.
3. Insert DVD with Windows-7-64bit. It must be ISO9660+Joliet format. Not UDF because Clover is not ready for this.
4. Start the windows EFI-install from this DVD by Clover



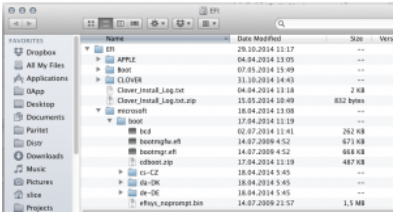
(http://www.insanelymac.com/forum/uploads/monthly_11_2014/post-

112217-0-44854400-1415187259.jpg)

5. This installation kill the Clover so you have to restart during installation to Clover on USB stick and choose boot Windows from HDD to continue installation.
6. After complete Windows installation you have to start from the USB stick into OSX and then reinstall Clover.

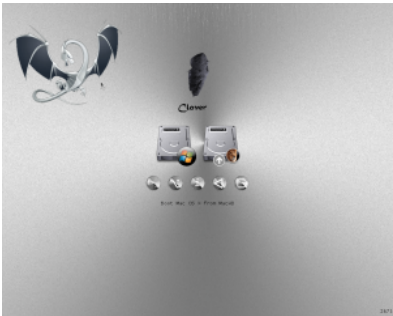
Final result.

| | | | | |
|------------|-----------------------|---------|-----------|------------|
| /dev/disk0 | | | | |
| #: | TYPE | NAME | SIZE | IDENTIFIER |
| 0: | GUID_partition_scheme | | *160.0 GB | disk0 |
| 1: | EFI | | 209.7 MB | diskos1 |
| 2: | Microsoft Basic Data | Windows | 46.0 GB | diskos2 |
| 3: | Apple_HFS | MacHD | 113.7 GB | diskos3 |
| 4: | Microsoft Reserved | | 133.2 MB | diskos4 |



(http://www.insanelymac.com/forum/uploads/monthly_11_2014/post-

112217-0-62219000-1415187750.png)



(http://www.insanelymac.com/forum/uploads/monthly_11_2014/post-

112217-0-39916900-1415187613.png)

Slice

Posted 19 December 2014 - 08:14 PM

How to speedup Clover boot

There is usual claim from novices that Clover is too slow (or hang). Let us consider this question carefully.
If you try Clover first time then it is logically that you install it onto USB stick and set debug-log to be created. This is **the reason of slowness #1**.

```
<key>Boot</key>  
<dict>  
  <key>Log</key>  
  <false/>
```

This is wrong key name, I will change the key to "Debug" (since rev3064) that will reflect its appointment. Boot.log will be created even with "False", it just be in memory and accessible in system if booted.
When "true" the "debug.log" will be Open-Write-Close on every line guarantying you will found the file even after hard-reset.
The file will be saved in /clover-partition/EFI/CLOVER/misc/ folder is the partition is FAT32 to help you understand what is the reason of hang is any. The process ve-e-ery slo-o-ow. With my USB stick I have to wait about 10 minutes to enter GUI.
Set "false" here!

I also will kindly recommend to install Clover on HDD that times faster then USB. Why not? You want to keep Chameleon here? Yes, it is possible. Clover and Chameleon can live on the same partition with the same boot sectors. Boot sectors from Clover distribution are able to boot Chameleon as they are comes from them. But not vice versa. Chameleon's boot1h is not able to boot Clover because of its restriction. OK. The partition will looked like this

```
total 22487
drwxrwxrwx 1 slice staff 2560 18 дек 17:17 .
drwxrwxrwt@ 8 root admin 272 19 дек 10:54 ..
drwxrwxrwx 1 slice staff 1024 29 окт 11:17 EFI
drwxrwxrwx 1 slice staff 2048 4 апр 2014 Extra
-rwxrwxrwx 1 slice staff 482816 3 дек 15:54 boot
-rwxrwxrwx 1 slice staff 268256 6 авг 2011 boot2
-rwxrwxrwx 1 slice staff 367589 4 апр 2014 boot3
-rwxrwxrwx 1 slice staff 383562 14 июл 2009 boot4
-rwxrwxrwx 1 slice staff 450048 17 дек 17:37 boot5
-rwxrwxrwx 1 slice staff 482816 28 окт 13:34 boot6
```

Where

EFI/ - a folder for Clover's files

Extra/ - a folder for Chameleon files

boot is current bootloader. For my case it is Clover BiosBlockIO, renamed from boot7.

boot2 is Chameleon

boot3 is Clover-32bits

boot5 is Clover with low-ebda (rev3061+)

At the computer start when I see "Booting from hard drive..." I can press a digit 2,3,5 to choose a bootloader.

I just want to say you can install Clover on HDD even if there is Chameleon presents here.

Reason #2.

Less feature - faster boot, more features - slower boot. What do you want, powerful bootloader or fast bootloader?

The compromise should be found when you study all Clover's features.

For the first time I may propose minimal setting to boot into system.

Do you want to see all possible systems and entries in main menu? And you have four drives with tens partitions each.

Scanning all partitions will take a time. I even saw 80 seconds in real life.

```
<key>GUI</key>
<dict>
  <key>Scan</key>
  <dict>
    <key>Entries</key>
    <false/>
    <key>Legacy</key>
    <false/>
    <key>Tool</key>
    <false/>
  </dict>
```

Use custom entry to set only that entry that you want to see

```
<key>GUI</key>
<dict>
  <key>Custom</key>
  <dict>
    <key>Entries</key>
    <array>
      <dict>
```

See more instructions elsewhere.

If you have Windows with a couple of files then scanning it will be very slow. Disable NTFS.efi driver to prevent it!

Reason #3.

Too many drivers in /EFI/CLOVER/drivers64*/ folder. Some third party driver may hang or slow respond. Test it separately when needed.

Reason #4.

Big theme chosen. More graphics, more animations - slow boot. But very nice looking!

For first start you may choose Theme=embedded. This is fastest theme.

Reason #5.

Mouse slow response. Clover GUI can be controlled by a mouse. But the driver can understand only part of market. Good mice: Logitech, KYE systems, Microsoft. Bad mice: noname.

Disable mouse in config.plist

```
<key>Mouse</key>
<dict>
```

```
<key>Enabled</key>
<false/>
<key>Speed</key>
<integer>0</integer>
</dict>
```

Reason #6. Slow HFS+ driver.

Official release of Clover contains VBoxHFS.efi driver. It is very good, it understand links soft and hard, it understand aliases, but slow.

Apple's driver HFSplus.efi is much faster but we have no license to distribute it. Take it somewhere (here [#3 \(http://www.insanelymac.com/forum/topic/282787-clover-v2-instructions/#entry1852894\)](http://www.insanelymac.com/forum/topic/282787-clover-v2-instructions/#entry1852894)) and place it into /EFI/CLOVER/drivers64*/ folder. And it will work instead of embedded driver. (since rev 3043).

Since Clover revision 3063 you may see boot process on the screen to understand why it is so slow.



112217-0-21069700-1418987648.png

(http://www.insanelymac.com/forum/uploads/monthly_12_2014/post-

Slice

Posted 02 February 2015 - 11:27 PM

InfoPlist Patching

There is interesting Clover ability to perform an Info.plist patching on the fly.

Since rev.3154 I should set more strict rules to have a success.

Write into config.plist the follow as example

```
<key>KernelAndKextPatches</key>
<dict>
  <key>KextsToPatch</key>
  <array>
    <dict>
      <key>Comment</key>
      <string>Power state 1 - 0</string>
      <key>Name</key>
      <string>AppleIntelHDGraphicsFB</string>
      <key>InfoPlistPatch</key>
      <true/>
    
```

It corresponds to replace in kext AppleIntelHDGraphicsFB.kext, in its Info.plist the lines

```
<key>PowerStates</key>
<integer>1</integer>
```

by lines

```
<key>PowerStates</key>
<integer>0</integer>
```

but original pattern contains symbols "<", ">", "/", LF, TAB, SPACES that impossible to correctly write into config.plist.

So

1. You have to erase all invisible characters from pattern search.
2. Convert <string> to <data>.

The result looks like

```
112217-0-86576700-1422886828.png
```

(http://www.insanelymac.com/forum/uploads/monthly_02_2015/post-

This is only way to do search and replace will be success.


Next problem.

If you want to replace DeviceID into IOPCIMatch the you can use this InfoPlistPatch

For example inject unsupported ATI Radeon ID into AMDRadeonX3000.kext. But the kext is not present in kernelcache and the patch will not occur.

In this case you have to boot without caches and Clover will Force load this kext for patching.

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| <div>● OSx86 Project → Post-Installation → OSx86 10.10 (Yosemite) → <u>Sleep: Display turns off, but hard drive makes noise every 5 min</u> Started by kerouac1984, Yesterday, 12:48 PM sleep, yosemite, dell, clover</div> | 8 replies 126 views | microsoftFTW Today, 06:28 AM |
| <div>● OSx86 Project → Post-Installation → OSx86 10.10 (Yosemite) → <u>Sleep Issue with Clover UEFI hackintosh...</u> Started by UnDeaDAmP, 21 Feb 2015 sleep, hackintosh, mac pro and 7 more...</div> | 8 replies 255 views | UnDeaDAmP 22 Feb 2015 |
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