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Clover EFI bootloader

Boot macOS, Windows, and Linux on Mac or PC with UEFI or BIOS firmware
Brought to you by: apianti, slice2009

This project can now be found here.

Graphics



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```
<key>Graphics</key>
<dict>
...
</dict>
```

This parameter group is made for injecting video card properties as done, for example, by *Natit.kext*. There are many different parameters that are injected, mostly constants, some of them calculated, some of them defined in the internal table and only a few parameters can be adjusted with the configuration file.

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Inject

```
<key>Inject</key>
<true/>
```

Enables graphics injection, which is necessary for a working system. It is only advised to disable it, if you do not know a better method. Some video cards, for instance Nvidia GTX 6xx or AMD Radeon HD 6xxx do not require injection and it will automatically be disabled without user interaction. At least it is enough to reach the desktop.

Enabled by default.

Inject / Intel

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```
<key>Inject</key>
<dict>
  <key>Intel</key>
  <true/>
</dict>
```

Inject / ATI

```
<key>Inject</key>
<dict>
  <key>ATI</key>
  <true/>
</dict>
```

Inject / NVidia

```
<key>Inject</key>
<dict>
  <key>NVidia</key>
  <true/>
</dict>
```

VRAM

```
<key>VRAM</key>
<integer>1024</integer>
```

Amount of video memory in MB. It is determined automatically but no one will be harmed if you write a correct value. However, changing it has not helped anyone yet.

LoadVBios

```
<key>LoadVBios</key>
<true/>
```

Loads a video bios from a file, which needs to be stored at the directory *EFI/CLOVER/OEM/[model]/ROM* or *EFI/CLOVER/ROM* with the name *[vendor].[device].rom*, for instance *1002_68d8.rom*. Sometimes it makes sense to load video bios manually, for example when you need a patched version or when the video card does not show it to the system - like mobile Radeon cards. In this case it is enough to set this parameter to `Yes` without providing any file. Clover will read the video bios from legacy memory at `0xC0000`, where it is present most of the times, and enable functionality. Apparently the video bios written to the card's ROM does not match the one stored at address `0xC0000` - the shadow ROM. In short:

- `<true/>` - Use for mobile Radeon cards without any external file.
Can also be used to supply a legacy video bios to cards, which only contain a UEFI video bios.
- `<false/>` - For all other variants

DualLink

```
<key>DualLink</key>
<integer>0</integer>
```

Default is `1`.

Some systems show a quartered screen. Use `0` to solve this problem, as showed in the example above.

PatchVBios

```
<key>PatchVBios</key>
<true/>
```

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Clover applies corrections to the shadow ROM at address `0xC0000` to allow support of the highest monitor resolution. For instance, a monitor's EDID

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contains the mode 1920x1080 but the video bios does not. Clover will apply it as the first mode to be used. In case the monitor does not produce an EDID, it can be injected manually.

In case `ScreenResolution` in section `GUI` is set, it will be used for this patch.

Should the automatic patch fail, then you can specify a manual one.

PatchVBiosBytes

```
<key>PatchVBiosBytes</key>
<array>
  <dict>
    <key>Find</key>
    <data>gAeoAqAF</data>
    <key>Replace</key>
    <data>gAeoAjqE</data>
  </dict>
</array>
```

This example applied to an AMD Radeon HD 6670 video bios, resulting in a replacement of mode 1920x1440 with mode 1920x1080. It is advised to choose a mode with the same horizontal resolution.

It is possible to apply multiple patches. An Nvidia video bios, for instance, was successfully modified with four patches.

EDID

```
<key>EDID</key>
<dict>
  <key>Inject</key>
  <true/>
  <key>Custom</key>
  <data>AP////////wAyDADfAAAAAAAAAQOAIRV4CunVmV1TjigmUFQAAAABAQEBAQEBAQEBAQEBAQEBAQEBA3iGgcFCEHzAgIFYAS88QAAAY3iGgcFCEHzAgIFYAS88
  <key>VendorID</key>
  <string>0x1006</string>
  <key>ProductID</key>
  <string>0x9221</string>
</dict>
```

Old keys InjectEDID and CustomEDID were moved here.

`Inject` parameter is useful when an EDID exists but is not seen by Apple's drivers. In this case it is enough to set this option to `<true/>`. Clover will automatically extract the EDID and provide it to the drivers. See *Mobile Radeons* for more info. For monitors without DDC and for UEFI-only computers a custom EDID is needed.

`Custom` parameter is for providing custom EDID when it's missing. The main requirement is to have a correct maximal resolution.

Another possibility is to use *ViewSonic EDID Editor v3.1.5* that can easily be ported to Mac, if needed.

An EDID from a Dell Inspiron will be used in the sample configuration file with a matrix of 1440x900.

A custom EDID will also be used for automatic video bios patching. Look above.

You can override VendorID and ProductID in EDID.

Rev 4351, 4355

Additional patches for EDID.

Now config.plist may contain follow EDID section:

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```
<key>FBName</key>
<string>Macaque</string>
```

This parameter is specific to AMD Radeon cards, which have a bunch of different framebuffer names without any specific pattern. For a wide range of common video cards Clover will automatically choose a suitable framebuffer name. Feel free to set your own if you want. If you do not know what to write here, delete this parameter completely.

Do not use Macaque! It is solely used for absurdity. But no - people still use it in their configurations!

Small guidance table:

Series v / Type >|Mobile|Desktop|:---|:---|:--- HD 5000|Alouatta|Baboon HD 6000|Cttail|Ipomoea HD 7000|Pondweed|Futomaki

NVCAP

```
<key>NVCAP</key>
<string>04000000000003000C00000000000A00000000</string>
```

This parameter is only useful for Nvidia video cards and configures types and usage of video ports. The example line contains 40 capitalised hexadecimal digits. Theory is missing in this case and praxis shows controversial results.

Following table exists (found somewhere on insanelymac) but its correctness is debatable:

img

You can also find other methods on calculating a correct value for this line.

Clover will try to generate one according to the video bios.

display-cfg

```
<key>display-cfg</key>
<string>03010300FFFF0001</string>
```

This parameter is also just for Nvidia cards. For details see the [topic on projectosx](#). However the listed examples are controversial. You can see real configurations in [this topic](#). Apparently it is best to just let Clover handle this value. Leave it out completely and let Clover do the calculation.

ig-platform-id

```
<key>ig-platform-id</key>
<string>0x01620005</string>
```

This parameter is used to enable the internal Intel HD 4000 video card. Until now no common rule for selecting a value was found, so either let Clover handle this parameter or use another one if it does not work.

Here is a table with possible values:

Value	Type	Ports
0x01660000	Mobile	4 ports: 1 LVDS, 3 DP
0x01660001	Mobile	4 ports: 1 LVDS, 1 HDMI, 2 DP
0x01660002	Mobile	1 port: LVDS
0x01660003	Mobile	4 ports: 1 LVDS, 1 HDMI e 2 DP
0x01620005	Desktop	3 ports: DP
0x01620006	Desktop	0 ports
0x01620007	Desktop	0 ports
0x01660008	Mobile	3 ports: 1 LVDS, 2 DP
0x01660009	Mobile	3 ports: 1 LVDS, 2 DP
0x0166000a	Mobile	3 ports: 2 DP, 1 HDMI
0x0166000b	Mobile	3 ports: 2 DP, 1 HDMI

RadeonDeInit

Rev 4296

A possibility to de-init Radeon cards.

It was very old problem since ElCapitan that AMD Radeon HD6xxx and up will not wake after sleep if used as first card

If the card is secondary and CSM enabled then the card works fine. So the differences is initialisation.

The solution was found by vit9696 and used in private WhateverGreen.kext. Then Mieze proposed the solution as ACPI patch.

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