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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.

FAQ



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Q: I would like to try Clover. Where do I start?

A: Start with reading this wiki.

Q: It doesn't work.

A: Don't be a fool.

PS: What else can be said here!?

Q: I installed Clover but I just get a black screen.

A: The loading of an OS is divided into 8 steps, see [Technical Background](#). Try to specify when exactly the process stops and which options were used for installation - then we can talk. Popular mistakes are:

- refit.conf points to the theme folder black-green, which however does not exist. A functional fallback theme will be used in this case.
- Some BIOS versions do not work with CsmVideoDxe. Try removing it.
- Sometimes `PatchVbios` results in a black screen. Try turning it off.

For a better analysis of what is happening, enable `DebugLog` in section `GUI` as follows.

```
<key>DebugLog</key>
<true/>
```

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Loading will be happening very slowly, because

No, Thank you

EFI/CLOVER/misc/debug.log

will be updated at each step, but later you'll get the final information of the hang and see exactly what happened.

Q: I got boot0:error or b1f:error

A: One of the possible reason is wrong partition File System. PBR sector boot1f32 requires namely FAT32 but not FAT16 or ExFAT. If you are not sure then it is recommended to reformat your partition with command

```
newfs_msdos -v EFI -F 32 /dev/rdisk0s1
```

Q: A 7_ appears on the screen and nothing happens.

A: This is the worst case of hardware incompatibility. Nowadays it does not appear anymore. Only a developer can help here by debugging the boot process in small steps. Normal users sadly cannot do anything, except trying to change BIOS settings or using the file *boot7* instead of *boot*.

Q: A BIOS-like interface with five options appears, with Continue as topmost one.

A: This means that the boot file was successfully loaded and is working but it cannot find the file CloverX64.efi. Either the according partition is not found or the whole device. Explore the options and try to figure out what is wrong.

Q: Clover was installed and started from a USB flash drive but my HDD is not seen.

A: With early versions of Intel's SATA drivers, HDD needed to be connected to the first SATA port(SATA 0). Furthermore, it is understandable that, even though already using a good well-working Chameleon, Chimera or XPC, you want to try Clover without removing them. It's possible to install both your old boot loader and Clover simultaneously and then the problem will be solved. And try to use the file boot7 if you have an uncommon SATA/SAS/RAID controller.

Q: I am booting with UEFI but do not see my Mac partition, just the legacy ones.

A: That's because you did not install the HFS+ driver `HFSP\lus.efi` or its legal alternative `VBoxHFS.efi`.

Q: I am booting with UEFI but Windows looks like legacy, even if it is EFI.

A: Same reason as above. You are missing the NTFS.efi driver in this case.

PS: Both of these drivers cannot be found in the repository due to software license issues. This problem will occur if you do not use the installer and try to do everything by yourself.

Q: When trying to start the OS it hangs after a blue line that starts with the heading rEFIt.

A: At this moment the DSDT patch with the desired mask is applied. Ideally it should not hang here. The problem is that the vendor does not follow specifications, cannot program correctly or does not want to adapt the DSDT to OSX requirements. This can be verified in a simple way: by decompiling and compiling the DSDT - if it does not work, then the DSDT is faulty. Clover wants to correct this but sadly there are simply too many possible errors and all of them cannot be covered. You will need to choose a DSDT mask that loads the OS and afterwards one that does not load the OS. Alternatively disable automatic patching with `0x0000` and fix the DSDT by yourself.

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Q: The kernel starts to load but panics after the tenth line.

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A: This indicated a missing or incorrect DSDT. If automatic patching fails, add your own, manually customised, DSDT.

Q: The system hangs at Error allocating ... pages.

A: Your UEFI variant does not work natively with Clover. Use one of the available [drivers](#) to fix your EFI memory map.

Q: The system starts loading but hangs at Still waiting for root device.

A: Apart from the standard tip to turn on AHCI mode in BIOS, if it does not exist, find a matching kext for your IDE controller. Or you can try booting with the key `NoCaches`. Loading will be slowed down because the controller needs more time to be initialised.

This issue arises only when Clover and the OS are on different devices.

Q: The system starts loading but hangs at Waiting for DSMOS.

A: Your FakeSMC is missing. If you use Chameleon, FakeSMC might be in the Extra folder. But Clover does not know such a folder. Instead, use the folder `EFI/Clover/kexts/10.x`.

Q: The system hangs after Waiting for DSMOS. It looks like my HDD keeps working.

A: This is a typical situation when the video card is not initialized. Try enabling or disabling `Inject` in `Graphics` of your config.plist.

AMD Radeon cards will be initialized natively when `Inject` in `Graphics` disabled, which will get you into the OS with some limitations, such as a non-working DVD Player app. For a fully working card, you will need to modify the framebuffer of your AMD Radeon card.

In other cases you can try booting in safe mode to use VESA mode and correct some things.

Q: The system did start, but System Profiler shows wrong information.

A: This is purely cosmetic and does not affect any functionality.

- PCI devices: If you want your devices to be listed here, modify the DSDT and add `Name (_SUN, 0x2A)` to them. *SUN* is the *Slot User Number*, can be chosen freely - `0x2A` in this case - and will be displayed in System Profiler.
- Memory Speed: Two speed values exist - the nominal and the actual one, which often do not match. Which one should be shown in the profiler? Using the first value will make some people complain that it is not correct. Choosing the second value will make the others complain. Just let it go. Recently one of Clover Dev team, *apianti*, has made many changes to the algorithm and I don't even know which speed is currently shown. Shortly: the more correct version.

[< Native Speedstep](#)

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Discussion



apianti - 2019-04-14



TODO: Q: I am booting with UEFI but Windows looks like legacy, even if it is EFI. A: is incorrect, the reason is because the partition has the legacy boot flag in the PBR, you can only not see UEFI Windows if there is no bootmgfw.efi on EFI system partition. Both an UEFI and legacy entry will appear otherwise, the legacy will not work. You can either hide legacy volumes, use a custom entry to hide just that specific legacy volume, or you can remove the legacy boot flag from the PBR by zeroing the last two bytes of the PBR sector.



apianti - 2019-04-14



TODO: Q: A 7_ appears on the screen and nothing happens. The user sees 6 not 7 unless they are already using boot 7, however 32-bit boot would show a 3. Question and answer need revised.

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No, Thank you



apianti - 2019-07-10



TODO: Q: I installed Clover but I just get a black screen. The answer is hugely out of date by like five or six years or more. There is no refit.conf anymore and the setting for the debug log is moved to a different location.

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[No, Thank you](#)