OpenCore Install Guide

Why OpenCore over Clover and others

USB Creation

Creating the USB •

Making the installer in macOS

Making the installer in Windows

Making the installer in Linux

Adding The Base OpenCore Files

Gathering files

Getting started with ACPI ☐ config.plist Setup

Configs

Intel Desktop config.plist v

Penryn

Clarkdale

Sandy Bridge

Ivy Bridge

Haswell

Skylake

Kaby Lake

Starting Point

ACPI

Booter

DeviceProperties

Kernel

Misc NVRAM

PlatformInfo

UEFI

Cleaning up

Intel BIOS settings

Coffee Lake

Comet Lake

Intel Laptop config.plist

Intel HEDT config.plist

AMD Desktop config.plist >

Apple Secure Boot

Installation

Installation Process

Troubleshooting

General Troubleshooting

OpenCore Boot Issues

Kernel Issues

Userspace Issues

Post-Install Issues

Miscellaneous Issues

OpenCore Debugging

Understanding the macOS Boot Process

System Debugging: In-depth

Post Install

Post-Install ☐

Universal

Laptop Specifics

Cosmetics

Multiboot

Miscellaneous >

Extras

Fixing KASLR slide values

Disabling GPU

macOS 13: Ventura

Clover Conversion ☐

Choosing the right SMBIOS

Misc

Supporting the guides

Credits

Desktop Kaby Lake

Support	Version
Initial macOS Support	macOS 10.12, Sierra

Starting Point

So making a config.plist may seem hard, it's not. It just takes some time but this guide will tell you how to configure everything, you won't be left in the cold. This also means if you have issues, review your config settings to make sure they're correct. Main things to note with OpenCore:

• All properties must be defined, there are no default OpenCore will fall back on so do not delete sections unless told explicitly so. If the guide doesn't mention the option, leave it at default.

Dortania Guides 🔻

GitHub □

Switch theme

- The Sample.plist cannot be used As-Is, you must configure it to your system
- DO NOT USE CONFIGURATORS, these rarely respect OpenCore's configuration and even some like Mackie's will add Clover properties and corrupt plists!

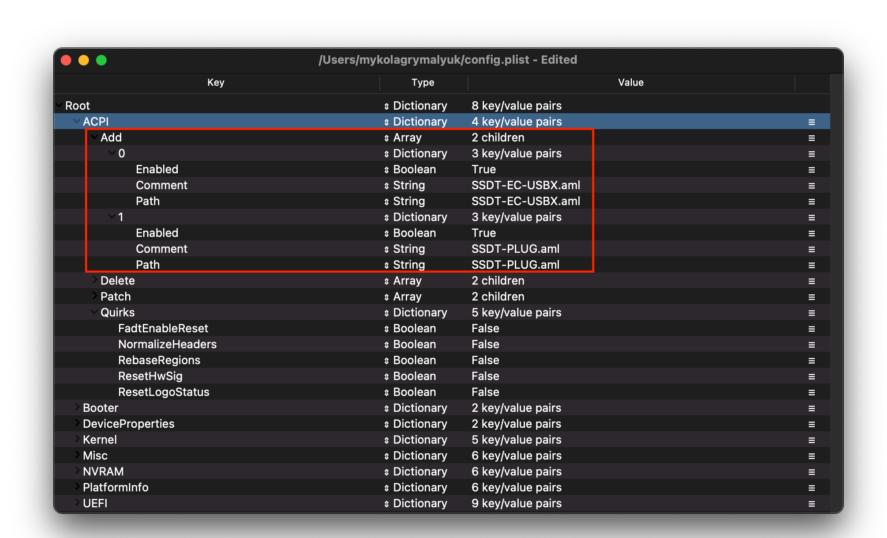
Now with all that, a quick reminder of the tools we need

- ProperTree ☐
- Universal plist editor
- GenSMBIOS☑
 - For generating our SMBIOS data
- Sample/config.plist ☐
 - See previous section on how to obtain: config.plist Setup

WARNING

Read this guide more than once before setting up OpenCore and make sure you have it set up correctly. Do note that images will not always be the most up-to-date so please read the text below them, if nothing's mentioned then leave as default.

ACPI



Add

Info

This is where you'll add SSDTs for your system, these are very important to **booting macOS** and have many uses like **USB maps** disabling unsupported GPUs and such. And with our system, it's even required to boot. Guide on making them found here: **Getting started with ACPI** disable.

For us we'll need a couple of SSDTs to bring back functionality that Clover provided:

Required SSDTs	Description
SSDT-PLUG ☑	Allows for native CPU power management on Haswell and newer, see Getting Started With ACPI Guide ☐ for more details.
SSDT-EC- USBX ☑	Fixes both the embedded controller and USB power, see Getting Started With ACPI Guide for more details.

Note that you **should not** add your generated DSDT.aml here, it is already in your firmware. So if present, remove the entry for it in your config.plist and under EFI/OC/ACPI.

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Why OpenCore over Clover and others

USB Creation

Creating the USB 🔻

Making the installer in macOS

Making the installer in Windows

Making the installer in Linux

Adding The Base OpenCore Files

Gathering files

Getting started with ACPI ☐

config.plist Setup

Configs

Intel Desktop config.plist

Penryn

Clarkdale

Sandy Bridge

Ivy Bridge

Haswell

Skylake

Kaby Lake

Starting Point

ACPI

Booter

DeviceProperties

Kernel

Misc

NVRAM

UEFI

Cleaning up

PlatformInfo

Intel BIOS settings

Coffee Lake

Comet Lake

Intel Laptop config.plist Intel HEDT config.plist

AMD Desktop config.plist

Apple Secure Boot

Installation

Installation Process

Troubleshooting

General Troubleshooting

OpenCore Boot Issues

Kernel Issues

Userspace Issues

Post-Install Issues
Miscellaneous Issues

OpenCore Debugging

Understanding the macOS Boot

Process

System Debugging: In-depth

Post Install

Post-Install ☐

Universal

Laptop Specifics >

Cosmetics

Multiboot >

Miscellaneous >

Extras

Fixing KASLR slide values

Disabling GPU

macOS 13: Ventura

Choosing the right SMBIOS

Misc

Supporting the guides

Credits

EFI/OC/ACPI folder and must be specified in your config under ACPI -> Add as well.

Delete

This blocks certain ACPI tables from loading, for us we can ignore this.

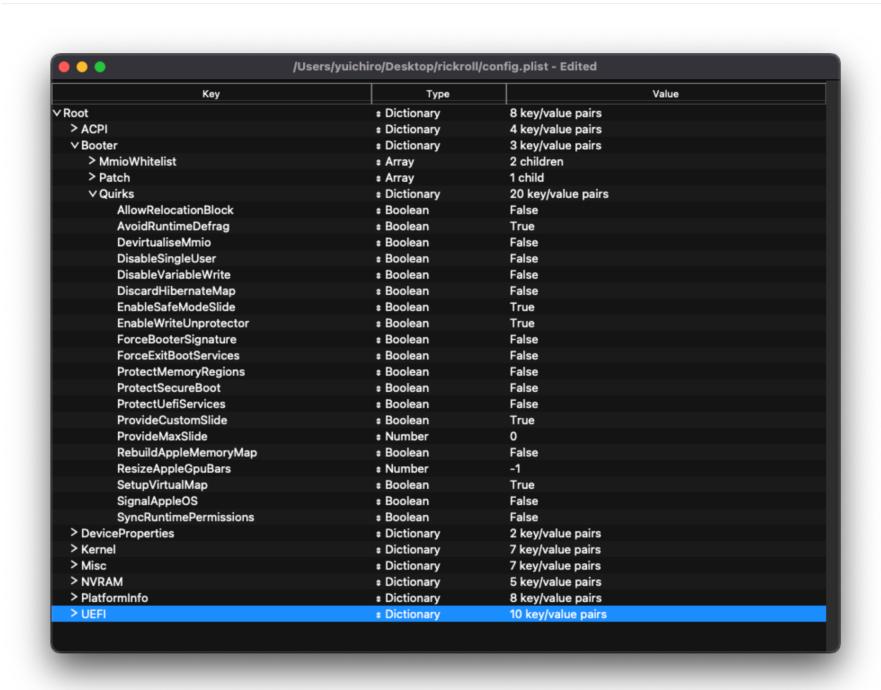
Patch

This section allows us to dynamically modify parts of the ACPI (DSDT, SSDT, etc.) via OpenCore. For us, our patches are handled by our SSDTs. This is a much cleaner solution as this will allow us to boot Windows and other OSes with OpenCore

Quirks

Settings relating to ACPI, leave everything here as default as we have no use for these quirks.

Booter



This section is dedicated to quirks relating to boot.efi patching with OpenRuntime, the replacement for AptioMemoryFix.efi

MmioWhitelist

This section is allowing spaces to be passthrough to macOS that are generally ignored, useful when paired with DevirtualiseMmio

Quirks

Info

Settings relating to boot.efi patching and firmware fixes, for us, we leave it as default

► More in-depth Info

DeviceProperties

OpenCore Install Guide Switch theme GitHub ☑

Why OpenCore over Clover and others

USB Creation

Creating the USB

Making the installer in macOS

Making the installer in Windows

Making the installer in Linux

Adding The Base OpenCore Files

Gathering files

Getting started with ACPI ☐

config.plist Setup

Configs

Intel Desktop config.plist v

Penryn

Clarkdale

Sandy Bridge

Ivy Bridge

Haswell

Skylake

Kaby Lake

Starting Point

ACPI

Booter

DeviceProperties

Kernel

Misc

NVRAM

UEFI

PlatformInfo

Cleaning up

Intel BIOS settings

Coffee Lake

Comet Lake

Intel Laptop config.plist

Intel HEDT config.plist

AMD Desktop config.plist

Apple Secure Boot

Installation

Installation Process

Troubleshooting

General Troubleshooting

OpenCore Boot Issues

Kernel Issues

Userspace Issues

Post-Install Issues

Miscellaneous Issues

OpenCore Debugging

Understanding the macOS Boot

Process

System Debugging: In-depth

Post Install

Post-Install ⊡

Universal

Laptop Specifics >

Cosmetics

Multiboot

Miscellaneous >

Extras

Fixing KASLR slide values

Disabling GPU

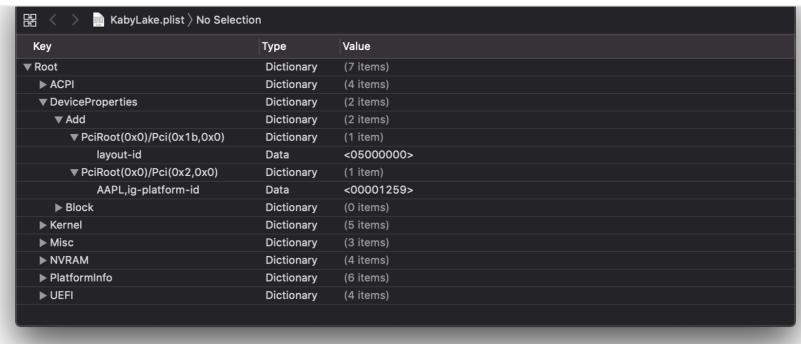
macOS 13: Ventura

Choosing the right SMBIOS

Misc

Supporting the guides

Credits



Add

Sets device properties from a map.

PciRoot(0x0)/Pci(0x2,0x0)

This section is set up via WhateverGreen's **Framebuffer Patching Guide** ☐ and is used for setting important iGPU properties.

The config.plist doesn't already have a section for this so you will have to create it manually.

AAPL, ig-platform-id is what macOS uses to determine how the iGPU drivers interact with our system, and the two values choose between are as follows:

AAPL,ig-platform- id	Comment
00001259	Used when the Desktop iGPU is used to drive a display
03001259	Used when the Desktop iGPU is only used for computing tasks and doesn't drive a display

We also add 2 more properties, framebuffer-patch-enable and framebuffer-stolenmem. The first enables patching via WhateverGreen.kext, and the second sets the min stolen memory to 19MB. This is usually unnecessary, as this can be configured in BIOS(64MB recommended) but required when not available.

• Note: Headless framebuffers(where the dGPU is the display out) do not need framebuffer-patch-enable and framebuffer-stolenmem

Key	Туре	Value
AAPL,ig-platform-id	Data	00001259
framebuffer-patch-enable	Data	01000000
framebuffer-stolenmem	Data	00003001

(This is an example for a desktop HD 630 without a dGPU and no BIOS options for iGPU memory)

PciRoot(0x0)/Pci(0x1b,0x0)

layout-id

- Applies AppleALC audio injection, you'll need to do your own research on which codec your motherboard has and match it with AppleALC's layout. AppleALC Supported Codecs .
- You can delete this property outright as it's unused for us at this time

For us, we'll be using the boot-arg alcid=xxx instead to accomplish this. alcid will override all other layout-IDs present. More info on this is covered in the Post-Install Page

Delete

Removes device properties from the map, for us we can ignore this

Fun Fact: The reason the byte order is swapped is because most modern processors are Little Endian ☐

Kernel

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Why OpenCore over Clover and others

USB Creation

Creating the USB v

Making the installer in macOS

Making the installer in Windows

Making the installer in Linux

Adding The Base OpenCore Files

Gathering files

config.plist Setup

Configs

Intel Desktop config.plist ▼

Penryn

Clarkdale

Sandy Bridge

Ivy Bridge

Haswell

Skylake

Kaby Lake

Starting Point

ACPI

Booter

DeviceProperties

Kernel

Misc NVRAM

PlatformInfo

UEFI

Cleaning up

Intel BIOS settings

Coffee Lake

Comet Lake

Intel Laptop config.plist

Intel HEDT config.plist >

AMD Desktop config.plist ▶

Apple Secure Boot

Installation

Installation Process

Troubleshooting

General Troubleshooting

OpenCore Boot Issues

Kernel Issues

Userspace Issues

Post-Install Issues

Miscellaneous Issues

OpenCore Debugging

Understanding the macOS Boot Process

System Debugging: In-depth

Post Install

Post-Install ⊡

Universal

Laptop Specifics >

Cosmetics

Multiboot

Miscellaneous >

Extras

Fixing KASLR slide values

Disabling GPU

macOS 13: Ventura

Choosing the right SMBIOS

Misc

Supporting the guides

Credits

		,	
Key	Туре	Value	
∨ Root		8 key/value pairs	
ACPI	Dictionary	4 key/value pairs	=
Booter	Dictionary	2 key/value pairs	=
DeviceProperties	Dictionary	2 key/value pairs	≡
∨ Kernel	Dictionary	7 key/value pairs	=
∨ Add	\$ Array	7 children	≡
∨ 0	Dictionary	8 key/value pairs	=
Arch	postering postering postering	x86_64	≡
BundlePath	String	Lilu.kext	=
Comment	String	Patch engine	≡
Enabled		True	=
ExecutablePath	String	Contents/MacOS/Lilu	=
MaxKernel	String		=
MinKernel	string	12.0.0	=
PlistPath	\$ String	Contents/Info.plist	=
>1	Dictionary	8 key/value pairs	=
> 2	Dictionary	8 key/value pairs	=
>3	Dictionary	8 key/value pairs	=
> 4	Dictionary ■	8 key/value pairs	=
>5	Dictionary ■	8 key/value pairs	=
6	Dictionary	8 key/value pairs	=
Block		1 child	=
Emulate	Dictionary	5 key/value pairs	=
Force		1 child	=
Patch	Array	6 children	=
Quirks	Dictionary	17 key/value pairs	=
AppleCpuPmCfgLock	Boolean Boolean	False	=
AppleXcpmCfgLock AppleXcpmExtraMsrs	Boolean Boolean	True False	=
AppleXcpmForceBoost	Boolean Boolean	False	=
CustomSMBIOSGuid	Boolean		
DisableloMapper	Boolean	False <- Enable for Dell or VIAO system True	
DisableLinkeditJettison	Boolean	True	=
DisableRtcChecksum	Boolean	False	=
ExtendBTFeatureFlags	Boolean	False	-
External Diskloons	Boolean	False	=
IncreasePciBarSize	Boolean	False	-
LapicKernelPanic	Boolean	False <- Enable for HP systems	=
LegacyCommpage	Boolean	False	=
PanicNoKextDump		True	ī
PowerTimeoutKernelPanic		True	
ThirdPartyDrives		False	
XhciPortLimit		True	=
Scheme	Dictionary	3 key/value pairs	=
> Misc	Dictionary	6 key/value pairs	=
> NVRAM	Dictionary	6 key/value pairs	=
> PlatformInfo	Dictionary	7 key/value pairs	=
> UEFI	Dictionary	9 key/value pairs	■ _

Add

Here's where we specify which kexts to load, in what specific order to load, and what architectures each kext is meant for. By default we recommend leaving what ProperTree has done, however for 32-bit CPUs please see below:

► More in-depth Info

Emulate

Needed for spoofing unsupported CPUs like Pentiums and Celerons

- Cpuid1Mask: Leave this blank
- Cpuid1Data: Leave this blank

Force

Used for loading kexts off system volume, only relevant for older operating systems where certain kexts are not present in the cache (ie. IONetworkingFamily in 10.6).

For us, we can ignore.

Block

Blocks certain kexts from loading. Not relevant for us.

Patch

Patches both the kernel and kexts.

Quirks

Info

Settings relating to the kernel, for us we'll be enabling the following:

Quirk	Enabled	Comment
AppleXcpmCfgLock	YES	Not needed if CFG-Lock is disabled in the BIOS
DisableloMapper	YES	Not needed if VT-D is disabled in the BIOS

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Why OpenCore over Clover and others

USB Creation

Creating the USB ▼

Making the installer in macOS

Making the installer in Windows

Making the installer in Linux

Adding The Base OpenCore Files

Gathering files

Getting started with ACPI ☐

config.plist Setup

Configs

Intel Desktop config.plist 🔻

Penryn

Clarkdale

Sandy Bridge

Ivy Bridge

Haswell

Skylake

Kaby Lake

Starting Point

ACPI

Booter

DeviceProperties

Kernel Misc

NVRAM

PlatformInfo

UEFI

Cleaning up

Intel BIOS settings

Coffee Lake

Comet Lake

Intel Laptop config.plist 🕨

Intel HEDT config.plist

AMD Desktop config.plist ▶

Apple Secure Boot

Installation

Installation Process

Troubleshooting

General Troubleshooting

OpenCore Boot Issues

Kernel Issues

Userspace Issues

Post-Install Issues
Miscellaneous Issues

OpenCore Debugging

Understanding the macOS Boot

Process

System Debugging: In-depth

Post Install

Post-Install ⊡

Universal

Laptop Specifics >

Cosmetics

Multiboot

Miscellaneous >

Extras

Fixing KASLR slide values

Disabling GPU

macOS 13: Ventura

Choosing the right SMBIOS

Misc

Supporting the guides

Credits

LapicKernelPanic	NO	HP Machines will require this quirk
PanicNoKextDump	YES	
PowerTimeoutKernelPanic	YES	
XhciPortLimit	YES	Disable if running macOS 11.3+

► More in-depth Info

Scheme

Settings related to legacy booting (ie. 10.4-10.6), for majority you can skip however for those planning to boot legacy OSes you can see below:

► More in-depth Info

Misc

• •	/Volumes/INSTALL MAC/EFI/OC/	/config.plist - Edited
Key	Туре	Value
Root	Dictionary	8 key/value pairs
> ACPI	Dictionary	4 key/value pairs
> Booter	Dictionary	3 key/value pairs
> DeviceProperties	Dictionary	2 key/value pairs
> Kernel	Dictionary	7 key/value pairs
∨ Misc	Dictionary	7 key/value pairs
BlessOverride	Array	0 children
∨ Boot	Dictionary	13 key/value pairs
ConsoleAttributes	* Number	0
HibernateMode	String	None
HideAuxiliary	* Boolean	True
LauncherOption	* String	Disabled
LauncherPath	* String	Default
PickerAttributes	* Number	17
PickerAudioAssist	* Boolean	False
PickerMode	String	Builtin
PickerVariant	* String	Auto
	* String * Boolean	False
PollAppleHotKeys ShowPicker	s Boolean	
		True
TakeoffDelay	* Number	0
Timeout	* Number	5
∨ Debug	Dictionary	8 key/value pairs
AppleDebug	Boolean	True
ApplePanic	Boolean	True
DisableWatchDog	Boolean	False
DisplayDelay	* Number	0
DisplayLevel	Number	2147483650
LogModules	String	•
SvsReport	≇ Boolean	False
Target	Number	67
∨ Entries	a Array	1 child
v 0	Dictionary	8 key/value pairs
Arguments	String	
Auxiliary	≉ Boolean	False
Comment	String	Not signed for security reasons
Enabled	Boolean	False
Flavour	String	Auto
Name	String	CustomOS
Path	String	PciRoot(0x0)/Pci(0x1,0x1)/Pci(0x0,0x0)/NVMe(0x1,11-22
TextMode	≇ Boolean	False
∨ Security	Dictionary	13 key/value pairs
AllowSetDefault		True
ApECID	Number	0
AuthRestart	≇ Boolean	False
BlacklistAppleUpdate	≇ Boolean	True
DmgLoading	String	Signed
EnablePassword	Boolean	False
ExposeSensitiveData	* Number	6
HaltLevel	* Number	2147483648
PasswordHash	Data	◆
PasswordSalt	* Data	*
ScanPolicy	* Number	^
SecureBootModel	* String	Set SecureBootModel to Disabled if
Vault	* String	Optional you require NVIDIA's web Driver

Boot

Info

Quirk	Enabled	Comment
HideAuxiliary	YES	Press space to show macOS recovery and other auxiliary entries

► More in-depth Info

Debug

Info

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OpenCore Install Guide
 Switch theme GitHub □

Why OpenCore over Clover and others

USB Creation

Creating the USB ▼

Making the installer in macOS

Making the installer in Windows

Making the installer in Linux

Adding The Base OpenCore Files

Gathering files

Getting started with ACPI

config.plist Setup

Configs

Penryn

Clarkdale

Sandy Bridge

Ivy Bridge

Haswell

Skylake

Kaby Lake

Starting Point

ACPI

Booter

DeviceProperties

Kernel Misc

NVRAM

PlatformInfo

UEFI

Cleaning up
Intel BIOS settings

Coffee Lake

Comet Lake

Intel Laptop config.plist

Intel HEDT config.plist

AMD Desktop config.plist >

Apple Secure Boot

Installation

Installation Process

Troubleshooting

General Troubleshooting

OpenCore Boot Issues

Kernel Issues

Userspace Issues

Post-Install Issues

Miscellaneous Issues

OpenCore Debugging

Understanding the macOS Boot

Process

System Debugging: In-depth

Post Install

Post-Install ⊡

Universal >

Laptop Specifics >

Cosmetics >

Multiboot

Miscellaneous >

Extras

Fixing KASLR slide values

Disabling GPU

macOS 13: Ventura

Choosing the right SMBIOS

Misc

Credits

Supporting the guides

AppleDebug	YES
ApplePanic	YES
DisableWatchDog	YES
Target	67

► More in-depth Info

Security

Info

Security is pretty self-explanatory, do not skip. We'll be changing the following:

Quirk	Enabled	Comment
AllowSetDefault	YES	
BlacklistAppleUpdate	YES	
ScanPolicy	0	
SecureBootModel	Default	Leave this as Default for OpenCore to automatically set the correct value corresponding to your SMBIOS. The next page goes into more detail about this setting.
Vault	Optional	This is a word, it is not optional to omit this setting. You will regret it if you don't set it to Optional, note that it is case-sensitive

► More in-depth Info

Serial

Used for serial debugging (Leave everything as default).

Tools

Used for running OC debugging tools like the shell, ProperTree's snapshot function will add these for you.

Entries

Used for specifying irregular boot paths that can't be found naturally with OpenCore.

Won't be covered here, see 8.6 of Configuration.pdf ☐ for more info

NVRAM

Key	Туре	Value
Root	Dictionary	8 key/value pairs
> ACPI	Dictionary	4 key/value pairs
> Booter	Dictionary	3 key/value pairs
> DeviceProperties	Dictionary	2 key/value pairs
> Kernel	Dictionary	7 key/value pairs
> Misc	Dictionary	7 key/value pairs
∨ NVRAM	Dictionary	5 key/value pairs
∨ Add	Dictionary	3 key/value pairs
√4D1EDE05-38C7-4A6A-9CC6-4BCCA8B38C	: Dictionary	1 key/value pair
DefaultBackgroundColor	₽ Data	<00000000>
√4D1FDA02-38C7-4A6A-9CC6-4BCCA8B3010	(a Dictionary	1 key/value pair
rtc-blacklist	₽ Data	<
√7C436110-AB2A-4BBB-A880-FE41995C9F82	2 a Dictionary	7 key/value pairs
#INFO (prev-lang:kbd)	String	en:252 (ABC), set 656e3a323532
ForceDisplayRotationInEFI	Number	0
SvstemAudioVolume	₽ Data	<46>
boot-args	String	-v keepsyms=1 debug=0x100 alcid=1
csr-active-config	≎ Data	<00000000>
prev-lang:kbd	₽ Data	<
run-eti-upaater	* String	NO
∨ Delete	Dictionary	3 key/value pairs
√4D1EDE05-38C7-4A6A-9CC6-4BCCA8B38C	: a Array	1 child
0	String	DefaultBackgroundColor
∨4D1FDA02-38C7-4A6A-9CC6-4BCCA8B301		1 child
0	String	rtc-blacklist
√7C436110-AB2A-4BBB-A880-FE41995C9F82		2 children
0	String	boot-args
1	String	ForceDisplayRotationInEFI
LegacyOverwrite	Boolean	False
> LegacySchema	Dictionary	2 key/value pairs
WriteFlash	≇ Boolean	True
> PlatformInfo	Dictionary	8 key/value pairs

Why OpenCore over Clover and others

USB Creation

Creating the USB 🔻

Making the installer in macOS

Making the installer in Windows

Making the installer in Linux

Adding The Base OpenCore Files

Gathering files

Getting started with ACPI ☐

config.plist Setup

Configs

Penryn

Clarkdale

Sandy Bridge

Ivy Bridge

Haswell

Skylake

Kaby Lake

Starting Point

ACPI

Booter

DeviceProperties

Kernel

Misc NVRAM

PlatformInfo

UEFI

Cleaning up

Intel BIOS settings

Coffee Lake

Comet Lake

Intel Laptop config.plist 🕨

Intel HEDT config.plist

AMD Desktop config.plist >

Apple Secure Boot

Installation

Installation Process

Troubleshooting

General Troubleshooting

OpenCore Boot Issues

Kernel Issues
Userspace Issues

Post-Install Issues

Post-Install Issues

Miscellaneous Issues

OpenCore Debugging

Understanding the macOS Boot Process

System Debugging: In-depth

Post Install

Post-Install ☑

Universal

Laptop Specifics >

Cosmetics

Multiboot >

Miscellaneous >

Extras

Fixing KASLR slide values

Disabling GPU

macOS 13: Ventura

Choosing the right SMBIOS

Misc

Supporting the guides

Credits

Used for OpenCore's UI scaling, default will work for us. See in-depth section for more info

GitHub □

4D1FDA02-38C7-4A6A-9CC6-4BCCA8B30102

OpenCore's NVRAM GUID, mainly relevant for RTCMemoryFixup users

► More in-depth Info

► More in-depth Info

7C436110-AB2A-4BBB-A880-FE41995C9F82

System Integrity Protection bitmask

• General Purpose boot-args:

boot-args	Description
-v	This enables verbose mode, which shows all the behind-the-scenes text that scrolls by as you're booting instead of the Apple logo and progress bar. It's invaluable to any Hackintosher, as it gives you an inside look at the boot process, and can help you identify issues, problem kexts, etc.
debug=0x100	This disables macOS's watchdog which helps prevents a reboot on a kernel panic. That way you can <i>hopefully</i> glean some useful info and follow the breadcrumbs to get past the issues.
keepsyms=1	This is a companion setting to debug=0x100 that tells the OS to also print the symbols on a kernel panic. That can give some more helpful insight as to what's causing the panic itself.
alcid=1	Used for setting layout-id for AppleALC, see supported codecs ☐ to figure out which layout to use for your specific system. More info on this is covered in the Post-Install Page ☐

• GPU-Specific boot-args:

boot-args	Description
agdpmod=pikera	Used for disabling board ID checks on some Navi GPUs (RX 5000 & 6000 series), without this you'll get a black screen. Don't use if you don't have Navi (ie. Polaris and Vega cards shouldn't use this)
-radcodec	Used for allowing officially unsupported AMD GPUs (spoofed) to use the Hardware Video Encoder
radpg=15	Used for disabling some power-gating modes, helpful for properly initializing AMD Cape Verde based GPUs
unfairgva=1	Used for fixing hardware DRM support on supported AMD GPUs
nvda_drv_vrl=1	Used for enabling NVIDIA's Web Drivers on Maxwell and Pascal cards in macOS Sierra and High Sierra
-wegnoegpu	Used for disabling all other GPUs than the integrated Intel iGPU, useful for those wanting to run newer versions of macOS where their dGPU isn't supported

• csr-active-config: 00000000

- Settings for 'System Integrity Protection' (SIP). It is generally recommended to change this with csrutil via the recovery partition.
- csr-active-config by default is set to 00000000 which enables System Integrity Protection. You can choose a
 number of different values but overall we recommend keeping this enabled for best security practices. More
 info can be found in our troubleshooting page: Disabling SIP
- run-efi-updater: No
 - This is used to prevent Apple's firmware update packages from installing and breaking boot order; this is important as these firmware updates (meant for Macs) will not work.
- prev-lang:kbd: <>
 - Needed for non-latin keyboards in the format of lang-COUNTRY: keyboard, recommended to keep blank though you can specify it(**Default in Sample config is Russian**):
 - American: en-US:0 (656e2d55533a30 in HEX)
 - ∘ Full list can be found in AppleKeyboardLayouts.txt ☐
 - Hint: prev-lang:kbd can be changed into a String so you can input en-US:0 directly instead of converting to HEX
 - Hint 2: prev-lang:kbd can be set to a blank variable (eg. <>) which will force the Language Picker to appear instead at first boot up.

Key	Туре	Value
prev-lang:kbd	String	en-US:0

Switch theme GitHub

Why OpenCore over Clover and others

USB Creation

Creating the USB 🔻

Making the installer in macOS

Making the installer in Windows

Making the installer in Linux

Adding The Base OpenCore Files

Gathering files

Getting started with ACPI ☐

config.plist Setup

Configs

Intel Desktop config.plist

Penryn

Clarkdale

Sandy Bridge

Ivy Bridge

Haswell

Skylake

Kaby Lake

Starting Point

ACPI

Booter

DeviceProperties

Kernel

Misc

NVRAM

UEFI

Cleaning up

PlatformInfo

Intel BIOS settings

Coffee Lake

Comet Lake

Intel Laptop config.plist

Intel HEDT config.plist

AMD Desktop config.plist

Apple Secure Boot

Installation

Installation Process

Troubleshooting

General Troubleshooting

OpenCore Boot Issues

Userspace Issues

Kernel Issues

Post-Install Issues

Miscellaneous Issues

OpenCore Debugging

Understanding the macOS Boot

Process

System Debugging: In-depth

Post Install

Post-Install ⊡

Universal

Laptop Specifics >

Cosmetics

Multiboot >

Miscellaneous >

Extras

Fixing KASLR slide values

Disabling GPU

macOS 13: Ventura

Choosing the right SMBIOS

Misc

Supporting the guides

Credits

Delete

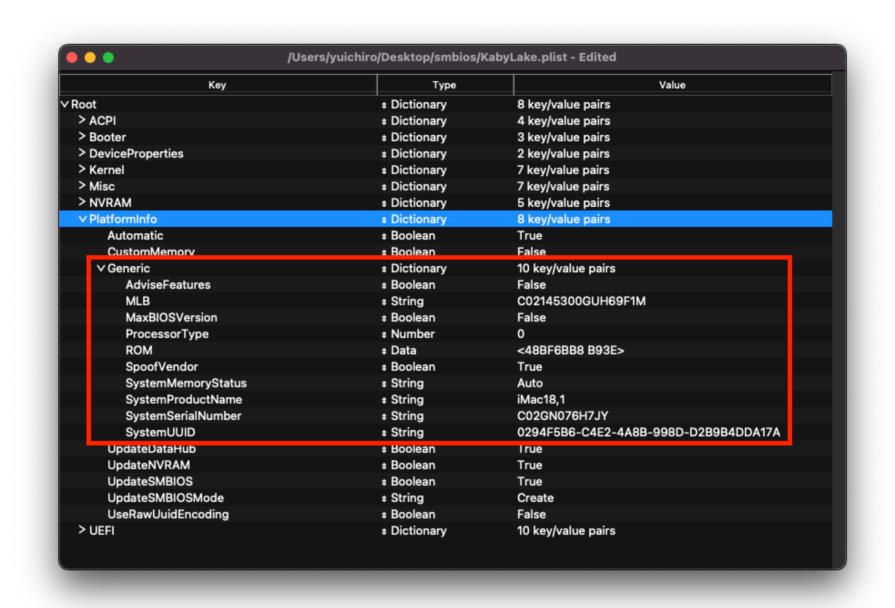
Info

Forcibly rewrites NVRAM variables, do note that Add will not overwrite values already present in NVRAM so values like boot-args should be left alone. For us, we'll be changing the following:

Quirk	Enabled
WriteFlash	YES

► More in-depth Info

PlatformInfo



Info

For setting up the SMBIOS info, we'll use CorpNewt's GenSMBIOS ☐ application.

For this Kaby Lake example, we'll chose the iMac18,1 SMBIOS - this is done intentionally for compatibility's sake. There are two main SMBIOS used for Kaby Lake:

SMBIOS	Hardware
iMac18,1	Used for computers utilizing the iGPU for displaying
iMac18,3	Used for computers using a dGPU for displaying, and an iGPU for computing tasks only

Run GenSMBIOS, pick option 1 for downloading MacSerial and Option 3 for selecting out SMBIOS. This will give us an output similar to the following:

###########	#############	#######	#########	+######################################
#	iMac18,1	SMBI0S	Info	#
#############	##############	#######	#########	+######################################
Type:	iMac18,1			
Serial:	C02Z2CZ5H7J\	(
Board Serial:	C02928701GUH	169FFB		

AA043F8D-33B6-4A1A-94F7-46972AAD0607

The Type part gets copied to Generic -> SystemProductName.

The Serial part gets copied to Generic -> SystemSerialNumber.

The Board Serial part gets copied to Generic -> MLB.

The SmuuID part gets copied to Generic -> SystemUUID.

We set Generic -> ROM to either an Apple ROM (dumped from a real Mac), your NIC MAC address, or any random MAC address (could be just 6 random bytes, for this guide we'll use 11223300 0000. After install follow the Fixing iServices page on how to find your real MAC Address)

Reminder that you need an invalid serial! When inputting your serial number in Apple's Check Coverage Page , you should get a message such as "Unable to check coverage for this serial number."

Automatic: YES

SmUUID:

• Generates PlatformInfo based on Generic section instead of DataHub, NVRAM, and SMBIOS sections

OpenCore Install Guide
Switch theme

Why OpenCore over Clover and others

USB Creation

Creating the USB 🔻

Making the installer in macOS

Making the installer in Windows

Making the installer in Linux

Adding The Base OpenCore Files

Gathering files

config.plist Setup

Configs

Intel Desktop config.plist

Penryn

Clarkdale

Sandy Bridge

Ivy Bridge

Haswell

Skylake

Kaby Lake

Starting Point

ACPI

Booter

DeviceProperties

Kernel Misc

NVRAM

PlatformInfo

UEFI

Cleaning up

Intel BIOS settings

Coffee Lake

Comet Lake

Intel Laptop config.plist

Intel HEDT config.plist

AMD Desktop config.plist

Apple Secure Boot

Installation

Installation Process

Troubleshooting

General Troubleshooting

OpenCore Boot Issues

Kernel Issues

Userspace Issues

Post-Install Issues

Miscellaneous Issues

OpenCore Debugging

Understanding the macOS Boot Process

System Debugging: In-depth

Post Install

Post-Install ⊡

Universal

Laptop Specifics >

Cosmetics Multiboot

Miscellaneous >

Extras

Fixing KASLR slide values

Disabling GPU

macOS 13: Ventura

Choosing the right SMBIOS

Misc

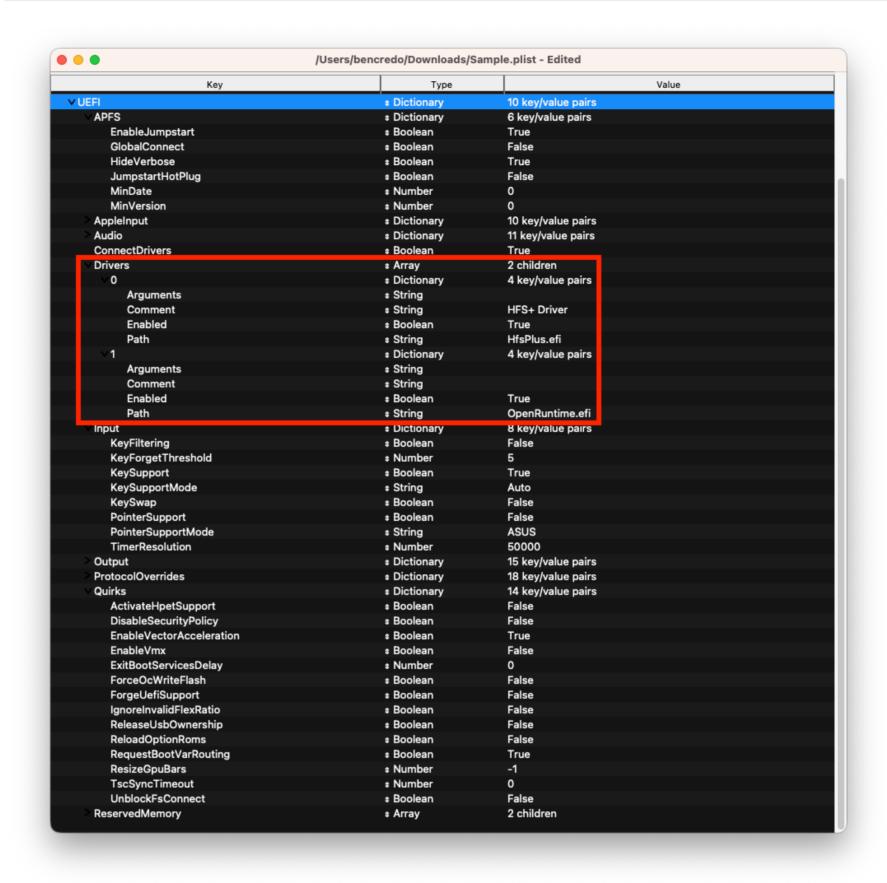
Supporting the guides

Credits

Generic

► More in-depth Info

UEFI



GitHub □

ConnectDrivers: YES

• Forces .efi drivers, change to NO will automatically connect added UEFI drivers. This can make booting slightly faster, but not all drivers connect themselves. E.g. certain file system drivers may not load.

Drivers

Add your .efi drivers here.

Only drivers present here should be:

- HfsPlus.efi
- OpenRuntime.efi
 - ► More in-depth Info

APFS

By default, OpenCore only loads APFS drivers from macOS Big Sur and newer. If you are booting macOS Catalina or earlier, you may need to set a new minimum version/date. Not setting this can result in OpenCore not finding your macOS partition!

macOS Sierra and earlier use HFS instead of APFS. You can skip this section if booting older versions of macOS.

APFS Versions

Both MinVersion and MinDate need to be set if changing the minimum version.

macOS Version	Min Version	Min Date
High Sierra (10.13.6)	748077008000000	20180621
Mojave (10.14.6)	945275007000000	20190820
Catalina (10.15.4)	1412101001000000	20200306
No restriction	-1	-1

OpenCore Install Guide
 Switch theme GitHub ☑

Why OpenCore over Clover and others

USB Creation

Making the installer in macOS

Making the installer in Windows

Making the installer in Linux

Adding The Base OpenCore Files

Gathering files

Getting started with ACPI ☐

config.plist Setup

Configs

Intel Desktop config.plist V

Penryn

Clarkdale

Sandy Bridge

Ivy Bridge

Haswell

Skylake

Kaby Lake

Starting Point

ACPI

Booter

DeviceProperties

Kernel

Misc

NVRAM

PlatformInfo UEFI

Cleaning up

Intel BIOS settings

Coffee Lake

Comet Lake

Intel Laptop config.plist Intel HEDT config.plist

AMD Desktop config.plist

Apple Secure Boot

Installation

Installation Process

Troubleshooting

General Troubleshooting

OpenCore Boot Issues

Kernel Issues
Userspace Issues

Post-Install Issues

Post-Install Issues

Miscellaneous Issues

OpenCore Debugging

Lie de cate a die a tie e cae e O

Understanding the macOS Boot Process

System Debugging: In-depth

Post Install

Post-Install ⊡

Universal

Laptop Specifics >

Cosmetics

Multiboot

Miscellaneous >

Extras

Fixing KASLR slide values

Disabling GPU

macOS 13: Ventura

Clover Conversion ☐

Choosing the right SMBIOS

Misc

Supporting the guides

Credits

Tarther use of Addioble and the Addio section, please see the Fost motali page. Add oor and boot chime

Input

Related to boot.efi keyboard passthrough used for FileVault and Hotkey support, leave everything here as default as we have no use for these quirks. See here for more details: Security and FileVault

Output

Relating to OpenCore's visual output, leave everything here as default as we have no use for these quirks.

► More in-depth Info

ProtocolOverrides

Mainly relevant for Virtual machines, legacy macs and FileVault users. See here for more details: Security and FileVault

Quirks

Info

Relating to quirks with the UEFI environment, for us we'll be changing the following:

Quirk	Enabled	Comment
UnblockFsConnect	NO	Needed mainly by HP motherboards

► More in-depth Info

ReservedMemory

Used for exempting certain memory regions from OSes to use, mainly relevant for Sandy Bridge iGPUs or systems with faulty memory. Use of this quirk is not covered in this guide

Cleaning up

And now you're ready to save and place it into your EFI under EFI/OC.

For those having booting issues, please make sure to read the **Troubleshooting section** first and if your questions are still unanswered we have plenty of resources at your disposal:

- r/Hackintosh Subreddit

Intel BIOS settings

• Note: Most of these options may not be present in your firmware, we recommend matching up as closely as possible but don't be too concerned if many of these options are not available in your BIOS

Disable

- Fast Boot
- Secure Boot
- Serial/COM PortParallel Port
- VT-d (can be enabled if you set DisableIoMapper to YES)
- Compatibility Support Module (CSM) (Must be off in most cases, GPU errors/stalls like gIO are common when this option is enabled)
- Thunderbolt (For initial install, as Thunderbolt can cause issues if not setup correctly)
- Intel SGX
- Intel Platform Trust
- CFG Lock (MSR 0xE2 write protection)(This must be off, if you can't find the option then enable AppleXcpmCfgLock under Kernel -> Quirks. Your hack will not boot with CFG-Lock enabled)

Enable

- VT-x
- Above 4G Decoding
- Hyper-Threading
- Execute Disable BitEHCI/XHCI Hand-off
- OS type: Windows 8.1/10 UEFI Mode (some motherboards may require "Other OS" instead)
- DVMT Pre-Allocated(iGPU Memory): 64MB or higher
- SATA Mode: AHCI

♦ OpenCore Install GuideSwitch theme GitHub ☑

Why OpenCore over Clover and others

USB Creation

Creating the USB ▼

Making the installer in macOS

Making the installer in Windows

Making the installer in Linux

Adding The Base OpenCore Files

Gathering files

Getting started with ACPI☐

config.plist Setup

Configs

Intel Desktop config.plist 🔻

Penryn

Clarkdale

Sandy Bridge

Ivy Bridge

Haswell

Skylake

Kaby Lake

Starting Point

ACPI

Booter

DeviceProperties Kernel

Misc

NVRAM

PlatformInfo

UEFI

Intel BIOS settings

Cleaning up

Coffee Lake

Comet Lake

Intel Laptop config.plist

Intel HEDT config.plist

AMD Desktop config.plist >

Apple Secure Boot

Installation

Installation Process

Troubleshooting

General Troubleshooting

OpenCore Boot Issues

Kernel Issues

Userspace Issues

Post-Install Issues

Miscellaneous Issues
OpenCore Debugging

Understanding the macOS Boot

Understanding the Process

System Debugging: In-depth

Post Install

Post-Install ⊡

Universal >

Laptop Specifics >

Cosmetics

Multiboot

Miscellaneous >

Extras

Fixing KASLR slide values

Disabling GPU

macOS 13: Ventura

Choosing the right SMBIOS

Misc

Supporting the guides

Credits

Once done here, we need to edit a couple extra values. Head to the Apple Secure Boot Page

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— Skylake Coffee Lake →