

BigSurBaseSystemfix

Let to install or upgrade BigSur on any unsupported BigSur capable Mac with minimum requirement a Penryn Core2Duo cpu (also non-APFS Mac and Legacy USB).

(Arrandale, Lynnfield, Nehalem, Clarksdale and Westmere Intel architecture cpus are now supported but require OpenCore with khronokernel patch also included on BaseSystemfix).

Before start, to build this patcher, you need an “Install macOS Big Sur Beta.app” (can retrieve it from an InstallAssistant.pkg), then make with createinstallmedia a stock BigSur Installer:

```
sudo /Applications/Install\ macOS\ Big\ Sur\ Beta.app/Contents/Resources/createinstallmedia --volume /Volumes/“YourUSBLabel”
```

For a non Beta “Install macOS Big Sur.app” make with createinstallmedia a stock BigSur Installer:

```
sudo /Applications/Install\ macOS\ Big\ Sur.app/Contents/Resources/createinstallmedia --volume /Volumes/“YourUSBLabel”
```

Instead of an USB drive, you can use also a faster HFS+ 20 GB partition (external to the APFS container) on an hard disk

(When applying this fix is advisable to set csrutil disable)

Once the stock Installer is made, apply first the “BigSurBaseSystem fix”, then unplug and plug again your USB drive and apply “BigSurBaseSystem fix2” command, after done you can boot holding alt-option key from apple startup manager, from opencore or any bootloader.

This minimalist patcher allows to build a BigSur Installer Recovery environment with Sound and Wifi (using Safari from recovery, currently only Broadcom cards), adding to it some my customised setup apps:

Share Disk: this is an apple ARM only feature but whitelisted seems to work also on Intel

VoiceOver: to enable speaking sound on BigSur recovery

Fans speed for CPU cooling: based on my modified version of smcFanControl allows to set Fans RPM speed for CPU cooling (for Ivy Bridge Mac use the specified function)

Hax3 fix Installer: this is based on ASentientBot HaxLib.dylib that patches the InstallAssistant exec to allow the BigSur installation on any firmware, any disk and without sealing the System (so can be modified from another macOS with APFS support), use the upper right Hax3 icon to apply it

Hax3 Installer quick fix: similar to previous one from Utilities menu allows to directly apply the ASentientBot fix and automatically launch the patched InstallAssistant

BigSurFixes Boot plist: This fix will move the telemetry.plugin responsible of Penryn kp, whitelist the Platform plist (equivalent to -no_compat_check in nvram), keeping stock BigSur Wifi

BigSurFixes snapshot booting: This fix will move the telemetry.plugin responsible of Penryn kp, whitelist the Platform plist (equivalent to -no_compat_check in nvram), apply the Sound and Wifi fixes making a new bootable snapshot

BigSurFixes disable snapshot: similar to the previous one should allow to disable snapshot booting and use mount -uw / from CMD+S or sudo mount -uw / from normal booting to make any system modification

BigSurFixes opencore preboot: this fix should allow to boot a patched BootKernelExtensions.kc from any opencore setup without the issue of “exiting efiboot” (or with CMD+S and exit a non-APFS or Legacy USB Mac from opencore menu), if you use opencore reboot the BaseSystem Utilities and apply this opencore preboot fix

BigSurFixes Legacy USB: this fix through snapshot booting should allow to boot without USBopencore kext injection and without using CMD+S and exit from apple startup manager to get any responsive USB devices included an external USB BigSur installation

BigSurFixes delete snapshots: this fix deletes any BigSur snapshot to allow sudo mount -uw / (use this if disable snapshot is not sufficient)

BigSurFixes graphics framebuffer: this fix add IntelHDC and Nvidia non Metal bundles to get brightness control and mainly for dual GPUs Mac to detect both correctly

BigSurFixes iSight camera fix: this fix iSight camera with Nvidia non Metal framebuffer

BigSurFixes Frameworks patch: enables Night Shift on any unsupported Big Sur Mac (graphics framebuffer is required)

BigSur stage2 installer fix: this allows to continue a stage2 installer on non-APFS Mac when targeting an external USB hard disk (when target is an internal SATA disk this fix is not required but also if target is external disk with recent IOUSB internal devices)

BigSur stage3 installer fix: this allows to skip and adjust BigSur Preboot on non-APFS Mac when targeting an external USB hard disk (when target is an internal SATA disk this fix is not required but also if target is external disk with recent IOUSB internal devices), also fixes BigSur Preboot volume if encountered issues in applying any BigSurFixes

Install OpencoreAPFSloader4: allow to install my customized opencore 4b setup (without spoofing) on an internal disk, it also includes two buttons to restart and power-off keeping -no_compat_check and SIP disabled with any DMG support.

Update Opencore config ACPI fix: allow to install my customized opencore 4b1 setup with khronokernel patch on an internal disk to boot Arrandale, Clarksdale and other Intel architectures

Install OpencoreAPFSloader3: allow to install my previous version (text mode) customized opencore 3b setup (without spoofing) on an internal disk, it also includes Arrandale patch and functions to restart and power-off keeping -no_compat_check and SIP disabled with any DMG support.

BigSurFixes Menu: contains a basic shell menu to select through interactive number typing some previous BigSurFixes

BigSurFixes also copies some Icons, labels and my simple script to rebuild kernelcollections:

/kc.sh (from single user mode)

sudo -s ; /kc.sh (from normal booting)

To install or upgrade BigSur, once booted from USB Installer, click the Utilities menu and launch the ASentientBot Hax3 Installer fix , then you can install on eligible volumes (for a clean install is advisable to erase first the container as APFS from DiskUtility), BigSur installation requires at least 60 GB to complete the stages properly, while to upgrade a previous installation are required at least 30 GB of free available disk space.

The BigSur installation is made of three phases (I'd say the third phase is skippable so resulting without snapshot booting):

Stage1 installer : directly from USB Installer (or from a macOS desktop) takes about 20 minutes, macOS Install Data folder making on target disk (Data Volume if is upgrading a previous macOS Installation)

Stage2 installer : after stage1 reboot showing apple logo loading bar, takes up to 60 minutes, automatically loads a BaseSystem ramdisk and start copying system files to the target APFS disk System Volume and some Data Volume preparation (the phase with "Less than a minute remaining" can take additional 15 minutes to complete)

Stage3 installer : after stage2 reboot, takes about 10 minutes, loads x86_64SURamDisk.dmg with BootKernelExtensions.kc , System volume sealing making the snapshot booting and APFS Preboot preparation

On a non-APFS or legacy USB Mac, If you install or upgrade on internal SATA disk, all these staged steps will proceed enough smoothly with few efforts

if instead the chosen target disk is an external USB hard disk, then you should apply the stage2 installer fix while for an eventual stage3 installer fix skipped you could use any BigSurFixes from patched recovery menu, otherwise if it's a non-APFS Mac, then try stage3 installer fix.

If you use a recent IOUSB Mac (MCP89, Sandy Bridge, Ivy Bridge), then also installing on external USB hard disk will proceed smoothly without efforts.

Patching BigSur through BigSurFixes to boot on an unsupported Mac explained in more detail:

Booting from the BigSurBaseSystemfix contains a patched recovery utilities environment, since the fixes are mainly bash apps, they requires a minimal keyboard interaction, that is simply typing your BigSur APFS Preboot disk (showed in list) and your BigSur System Label (without quotes also works if contains blank spaces).

The APFS BigSur container disk structure is:

diskX APFS Container

| | |
|-----------|--|
| diskXs1 | APFS Data Volume (used also as Preboot UUID) |
| diskXs2 | APFS Preboot Volume |
| diskXs3 | APFS Recovery |
| diskXs4 | APFS VM volume |
| diskXs5 | APFS System Volume |
| diskXs5s1 | APFS Snapshot System Volume (this is showed only with snapshot normal booting) |
| diskXs6 | APFS Update Volume |

So for any BigSurfixes it's asked to type your diskXs2 , if you have multiple APFS containers (surely you have because also the BaseSystem uses it's own APFS Preboot and probably you have also Mojave or Catalina installed) typically type the largest MegaBytes Preboot Volume or you can easily compare in list which belongs to it's diskXs5 System Volume (often if you have only an internal APFS disk container the external BigSur APFS Preboot is disk4s2 or disk5s2).

After the Preboot is asked to type your BigSur System label, it's case sensitive so should be typed correctly also including blank spaces (typing "quotes" is not required).

So for any fixes there are very minimal safe modification to APFS BigSur Preboot, kernelcollections and snapshots.

Rebuild Boot and System KernelCollections can take up to 5 minutes, so wait that is completed before reboot.

My BigSurFixes bash apps include a wrapper where some minimal logs are showed (related to csr-active-config, keyboard language, Quartz.framework and SideCarUI.framework), you can ignore that window and click directly the other window, anyway that wrapper window can be closed only after the fix is completed.

During the stage1 installer environment you can use CMD+L to show the installer log and progress loading bar.

For non-APFS Mac or Arrandale Mac that require OpenCore also during the staged installer, OpenCoreAPFSloader4b1 should work, but you could use a previous version OpenCoreAPFSloader3 with a simpler text menu, this previous version also allow to boot opencore menu on Mac with DDR2 RAM.