OpenCore

Reference Manual (~~0.7.9~~0.8.0)

[2022.03.10]

Requirement: 10.13 (not required for older)
Description: Prevent kernel from printing kext dump in the panic log preventing from observing panic details. Affects 10.13 and above.

16. `PowerTimeoutKernelPanic`
    Type: `plist boolean`
    Failsafe: `false`
    Requirement: 10.15 (not required for older)
    Description: Disables kernel panic on setPowerState timeout.

    An additional security measure was added to macOS Catalina (10.15) causing kernel panic on power change timeout for Apple drivers. Sometimes it may cause issues on misconfigured hardware, notably digital audio, which sometimes fails to wake up. For debug kernels `setpowerstate_panic=0` boot argument should be used, which is otherwise equivalent to this quirk.

17. `ProvideCurrentCpuInfo`
    Type: `plist boolean`
    Failsafe: `false`
    Requirement: 10.8 (10.14)
    Description: Provides current CPU info to the kernel.

    This quirk works differently depending on the CPU:

    - For Microsoft Hyper-V it provides the correct TSC and FSB values to the kernel, as well as disables CPU topology validation (10.8+).
    - For KVM and other hypervisors it provides precomputed MSR 35h values solving kernel panic with `-cpu host`.
    - For Intel CPUs it adds support for asymmetrical SMP systems (e.g. Intel Alder Lake) by patching core count to thread count along with the supplemental required changes (10.14+).

18. `SetApfsTrimTimeout`
    Type: `plist integer`
    Failsafe: `-1`
    Requirement: 10.14 (not required for older)
    Description: Set trim timeout in microseconds for APFS filesystems on SSDs.

    The APFS filesystem is designed in a way that the space controlled via the spaceman structure is either used or free. This may be different in other filesystems where the areas can be marked as used, free, and *unmapped*. All free space is trimmed (unmapped/deallocated) at macOS startup. The trimming procedure for NVMe drives happens in LBA ranges due to the nature of the `DSM` command with up to 256 ranges per command. The more fragmented the memory on the drive is, the more commands are necessary to trim all the free space.

    Depending on the SSD controller and the level of drive fragmenation, the trim procedure may take a considerable amount of time, causing noticeable boot slowdown. The APFS driver explicitly ignores previously unmapped areas and repeatedly trims them on boot. To mitigate against such boot slowdowns, the macOS driver introduced a timeout (`9.999999` seconds) that stops the trim operation when not finished in time.

    On several controllers, such as Samsung, where the deallocation process is relatively slow, this timeout can be reached very quickly. Essentially, it means that the level of fragmentation is high, thus macOS will attempt to trim the same lower blocks that have previously been deallocated, but never have enough time to deallocate higher blocks. The outcome is that trimming on such SSDs will be non-functional soon after installation, resulting in additional wear on the flash.

    One way to workaround the problem is to increase the timeout to an extremely high value, which at the cost of slow boot times (extra minutes) will ensure that all the blocks are trimmed. Set this option to a high value, such as `4294967295`, to ensure that all blocks are trimmed. Alternatively, use over-provisioning, if supported, or create a dedicated unmapped partition where the reserve blocks can be found by the controller. Conversely, the trim operation can be disabled by setting a very low timeout value. e.g. `999`. Refer to this article for details.

    On macOS 12+, it is no longer possible to set trim timeout for APFS filesystems. However, trim can be disabled when the timeout value is set to `0`.

Older boards like ICH6 may not always have HPET setting in the firmware preferences, this option tries to force enable it.

2. `EnableVectorAcceleration`
   Type: `plist boolean`
   Failsafe: `false`
   Description: Enable AVX vector acceleration of SHA-512 and SHA-384 hashing algorithms.

   Note: This option may cause issues on certain laptop firmwares, including Lenovo.

3. `EnableVmx`
   Type: `plist boolean`
   Failsafe: `false`
   Description: Enable Intel virtual machine extensions.

   Note: Required to allow virtualization in Windows on some Mac hardware. VMX is enabled or disabled and locked by BIOS before OpenCore starts on most firmware. Use BIOS to enable virtualization where possible.

4. `DisableSecurityPolicy`
   Type: `plist boolean`
   Failsafe: `false`
   Description: Disable platform security policy.

   Note: This setting disables various security features of the firmware, defeating the purpose of any kind of Secure Boot. Do NOT enable if using UEFI Secure Boot.

5. `ExitBootServicesDelay`
   Type: `plist integer`
   Failsafe: `0`
   Description: Adds delay in microseconds after `EXIT_BOOT_SERVICES` event.

   This is a very rough workaround to circumvent the `Still waiting for root device` message on some APTIO IV firmware (ASUS Z87-Pro) particularly when using FileVault 2. It appears that for some reason, they execute code in parallel to `EXIT_BOOT_SERVICES`, which results in the SATA controller being inaccessible from macOS. A better approach is required and Acidanthera is open to suggestions. Expect 3 to 5 seconds to be adequate when this quirk is needed.

6. `ForceOcWriteFlash`
   Type: `plist boolean`
   Failsafe: `false`
   Description: Enables writing to flash memory for all OpenCore-managed NVRAM system variables.

   Note: This value should be disabled on most types of firmware but is left configurable to account for firmware that may have issues with volatile variable storage overflows or similar. Boot issues across multiple OSes can be observed on e.g. Lenovo Thinkpad T430 and T530 without this quirk. Apple variables related to Secure Boot and hibernation are exempt from this for security reasons. Furthermore, some OpenCore variables are exempt for different reasons, such as the boot log due to an available user option, and the TSC frequency due to timing issues. When toggling this option, a NVRAM reset may be required to ensure full functionality.

7. `ForgeUefiSupport`
   Type: `plist boolean`
   Failsafe: `false`
   Description: Implement partial UEFI 2.x support on EFI 1.x firmware.

   This setting allows running some software written for UEFI 2.x firmware like NVIDIA GOP Option ROMs on hardware with older EFI 1.x firmware like `MacPro5,1`.

8. `IgnoreInvalidFlexRatio`
   Type: `plist boolean`
   Failsafe: `false`
   Description: Some types of firmware (such as APTIO IV) may contain invalid values in the `MSR_FLEX_RATIO` (`0x194`) MSR register. These values may cause macOS boot failures on Intel platforms.