Bei OpenCore 0.52 CPU Frequency und BusSpeed einstellen

Beitrag von „ralf." vom 1. Juli 2020, 19:46

Ich habe das gefunden

https://github.com/acidanthera/bugtracker/issues/448

> Zitat
>
> **vit9696 commented on 8 Aug 2019**

I see now the values, and they look crazy. Let me clarify things a little though, because there is a lot of confusion here in addition to code being somewhat wrong as well.

XNU kernel expects us pass up to two parameters `ARTFrequency` and `FSBFrequency`:

- `ARTFrequency` is a platform-dependent constant, which specifies ART timer frequency. By default XNU uses `BASE_ART_CLOCK_SOURCE`, 24 MHz, yet firmware can choose to specify it and override the calculation.
- `FSBFrequency` is bus frequency, that can be derived through the timers and is equivalent to your CPU frequency divided by maximum bus ratio (30 for your setup). This is what we must always specify to XNU.

Notes for OpenCore `OC_CPU_INFO` fields:

- `TSCFrequency` is your CPU frequency calculated from TSC. This probably needs to be renamed to `CPUFrequencyFromTSC`.
- `CPUFrequencyFromART` is missing, and the calculation you pointed out in `OcCpuLib.c` should assign its value to this field.
- `CPUFrequency` is unused, but what it is supposed to contain is resulting CPU frequency XNU will see after multiplying `FSBFrequency` with maximum busratio. The actual value without rounding and measurement errors. This wasoriginally passed for modified kernels (like AMD) to bypass XNU calculation.
- `FSBFrequency` is finally used, and it corresponds to `FSBFrequency` in XNU. The value is calculated from either `CPUFrequencyFromTSC` (legacy) or `CPUFrequencyFromART` (preferred for Skylake) depending on the model.
- `ARTFrequency` should correspond to XNU and contain ART timer frequency, normally `BASE_ART_CLOCK_SOURCE`, yet your CPU is an exception, see below.

So basically there should be an equation:

Code

1. CPUFrequencyFromART ≈ CPUFrequencyFromTSC ≈ CPUFrequency ≈ FSBFrequency * MaxBusRatio

After the refactoring the names and fixing `CPUFrequency` assignment, for your case it will still be broken, because the calculation uses the wrong values for your CPU. I checked Intel SDM and this is what it says about ART in 17-44 Vol. 3B and 18-128 Vol. 3B:

Code

1. 17.17.4 Invariant Time-Keeping
2.
3. The invariant TSC is based on the invariant timekeeping hardware (called
4. Always Running Timer or ART), that runs at the core crystal clock frequency.
5. The ratio defined by CPUID leaf 15H expresses the frequency relationship

6. between the ART hardware and TSC.
7.

> Alles anzeigen