Kernel driver k8temp

Supported chips:

- AMD Athlon64/FX or Opteron CPUs

  Prefix: 'k8temp'

  Addresses scanned: PCI space

  Datasheet: https://www.amd.com/system/files/TechDocs/32559.pdf

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Description

This driver permits reading temperature sensor(s) embedded inside AMD K8 family CPUs (Athlon64/FX, Opteron). Official documentation says that it works from revision F of K8 core, but in fact it seems to be implemented for all revisions of K8 except the first two revisions (SH-B0 and SH-B3).

Please note that you will need at least lm-sensors 2.10.1 for proper userspace support.

There can be up to four temperature sensors inside single CPU. The driver will auto-detect the sensors and will display only temperatures from implemented sensors.

Mapping of /sys files is as follows:

temp1_input	temperature of Core 0 and "place" 0
temp2_input	temperature of Core 0 and "place" 1
temp3_input	temperature of Core 1 and "place" 0
temp4_input	temperature of Core 1 and "place" 1

Temperatures are measured in degrees Celsius and measurement resolution is 1 degree C. It is expected that future CPU will have better resolution. The temperature is updated once a second. Valid temperatures are from -49 to 206 degrees C.

Temperature known as TCaseMax was specified for processors up to revision E. This temperature is defined as temperature between heat-spreader and CPU case, so the internal CPU temperature supplied by this driver can be higher. There is no easy way how to measure the temperature which will correlate with TCaseMax temperature.

For newer revisions of CPU (rev F, socket AM2) there is a mathematically computed temperature called TControl, which must be lower than TControlMax.

The relationship is following:

temp1_input - TjOffset*2 < TControlMax,

TjOffset is not yet exported by the driver, TControlMax is usually 70 degrees C. The rule of the thumb -> CPU temperature should not cross 60 degrees C too much.