Kernel driver sbrmi

Supported hardware:

- Sideband Remote Management Interface (SB-RMI) compliant AMD SoC device connected to the BMC via the APML.

  Prefix: 'sbrmi'

  Addresses scanned: This driver doesn't support address scanning.

  To instantiate this driver on an AMD CPU with SB-RMI support, the i2c bus number would be the bus connected from the board management controller (BMC) to the CPU. The SMBus address is really 7 bits. Some vendors and the SMBus specification show the address as 8 bits, left justified with the R/W bit as a write (0) making bit 0. Some vendors use only the 7 bits to describe the address. As mentioned in AMD's APML specification, The SB-RMI address is normally 78h(0111 100W) or 3Ch(011 1100) for socket 0 and 70h(0111 000W) or 38h(011 1000) for socket 1, but it could vary based on hardware address select pins.

  Datasheet: The SB-RMI interface and protocol along with the Advanced

  Platform Management Link (APML) Specification is available as part of the open source SoC register reference at:

  https://www.amd.com/en/support/tech-docs?keyword=55898

Author: Akshay Gupta <akshay.gupta@amd.com>

Description

The APML provides a way to communicate with the SB Remote Management interface (SB-RMI) module from the external SMBus master that can be used to report socket power on AMD platforms using mailbox command and resembles a typical 8-pin remote power sensor's I2C interface to BMC.

This driver implements current power with power cap and power cap max.

sysfs-Interface

Power sensors can be queried and set via the standard `hwmon` interface on `sysfs`, under the directory `/sys/class/hwmon/hwmonX` for some value of `X` (search for the `X` such that `/sys/class/hwmon/hwmonX/name` has content `sbrmi`)

Name	Perm	Description
power1_input	RO	Current Power consumed
power1_cap	RW	Power limit can be set between 0 and power1_cap_max
power1_cap_max	RO	Maximum powerlimit calculated and reported by the SMU FW

The following example show how the 'Power' attribute from the i2c-addresses can be monitored using the userspace utilities like `sensors` binary:

```
# sensors
sbrmi-i2c-1-38
Adapter: bcm2835 I2C adapter
power1:       61.00 W (cap = 225.00 W)

sbrmi-i2c-1-3c
Adapter: bcm2835 I2C adapter
power1:       28.39 W (cap = 224.77 W)
#
```

Also, Below shows how get and set the values from sysfs entries individually::

cat /sys/class/hwmon/hwmon1/power1_cap_max 225000000

echo 180000000 > /sys/class/hwmon/hwmon1/power1_cap # cat /sys/class/hwmon/hwmon1/power1_cap 180000000