

**NAME**

**imcsmb** - Intel integrated Memory Controller (iMC) SMBus controller driver

**SYNOPSIS**

**device pci**  
**device smbus**  
**device imcsmb**

Alternatively, to load the driver as a module at boot time, place the following line in loader.conf(5):

```
imcsmb_load="YES"
```

**DESCRIPTION**

The **imcsmb** driver provides smbus(4) support for the SMBus controller functionality in the integrated Memory Controllers (iMCs) embedded in Intel Sandybridge-Xeon, Ivybridge-Xeon, Haswell-Xeon, and Broadwell-Xeon CPUs. Each CPU implements one or more iMCs, depending on the number of cores; each iMC implements two SMBus controllers (iMC-SMBs). The iMC-SMBs are used by the iMCs to read configuration information from the DIMMs during POST. They may also be used, by motherboard firmware or a BMC, to monitor the temperature of the DIMMs.

The iMC-SMBs are **not** general-purpose SMBus controllers. By their nature, they are only ever attached to DIMMs, so they implement only the SMBus operations need for communicating with DIMMs.

Specifically:

- READB
- READW
- WRITEB
- WRITEW

A more detailed discussion of the hardware and driver architecture can be found at the top of *sys/dev/imcsmb/imcsmb\_pci.c*.

**WARNINGS**

As mentioned above, firmware might use the iMC-SMBs to read DIMM temperatures. The public iMC documentation does not describe any sort of coordination mechanism to prevent requests from different sources -- such as the motherboard firmware, a BMC, or the operating system -- from interfering with each other.

**Therefore, it is highly recommended that developers contact the motherboard vendor for any board-specific instructions on how to disable and re-enable DIMM temperature monitoring.**

DIMM temperature monitoring should be disabled before returning from **imcsmb\_pci\_request\_bus()**, and re-enabled before returning from **imcsmb\_pci\_release\_bus()**. The driver includes comments to that effect at the appropriate locations. The driver has been tested and shown to work, with only that type of modification, on certain motherboards from Intel. (Unfortunately, those modifications were based on material covered under a non-disclosure agreement, and therefore are not included in this driver.) The driver has also been tested and shown to work as-is on various motherboards from SuperMicro.

The smb(4) driver will connect to the smbus(4) instances created by **imcsmb**. However, since the IMC-SMBs are not general-purpose SMBus controllers, using **smbmsg(8)** with those smb(4) devices is not supported.

### SEE ALSO

`jedec_dimm(4)`, `smbus(4)`

### HISTORY

The **imcsmb** driver first appeared in FreeBSD 12.0.

### AUTHORS

The **imcsmb** driver was originally written for Panasas by Joe Kloss. It was substantially refactored, and this manual page was written, by  
Ravi Pokala <[rpokala@freebsd.org](mailto:rpokala@freebsd.org)>