The Role of SBS and SMBus in the future of PC Mobile Platforms

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Role of SBS

- Extending battery life will remain a key requirement for mobile platforms
  - SBS's chemistry independent specs are needed to facilitate adoption of improved battery chemistries
    - SBS specs incorporated in all Intel NB reference designs
  - Uniform data set defined by SBS is needed to improve power management software
    - Intel developing better power management algorithms based on SBS data

Role of SMBus

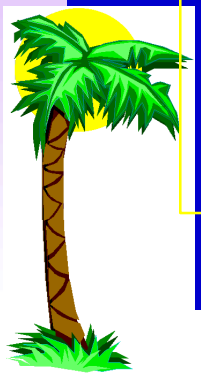
- Need for a low speed/ low cost control bus has been growing
  - PC industry momentum toward better system manageability, for TCO reduction
    - DMI/WMI
    - WfM
  - Expanded OS capabilities require more information
    - Push to get more information and control of platform
    - New interfaces defined: PnP -> ACPI
- SMBus answers the need
  - Low cost (2 pins)
  - Low power
  - Low gate count
  - Flexible, allows distribution of small components throughout system

Example of SMBus Components

- Used in PC platforms (Servers, DT and NB)

- Pointing device
- Backlight inverter
- GPIO
- Clock Generator
- DRAM SPD
- Cardbus Power controller
- Generic Temp Sensor

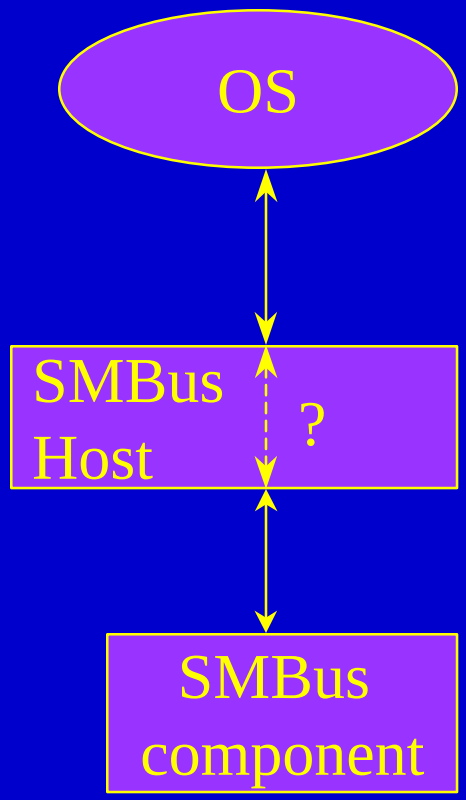
- CPU Thermal Sensor
- Security (E2)
- Monitor interface (DDC)
- Charger
- Selector
- Battery
- Docking controller
- Motion sensor (e.g. Fan)



SMBus Devices Categories From Applications Perspective

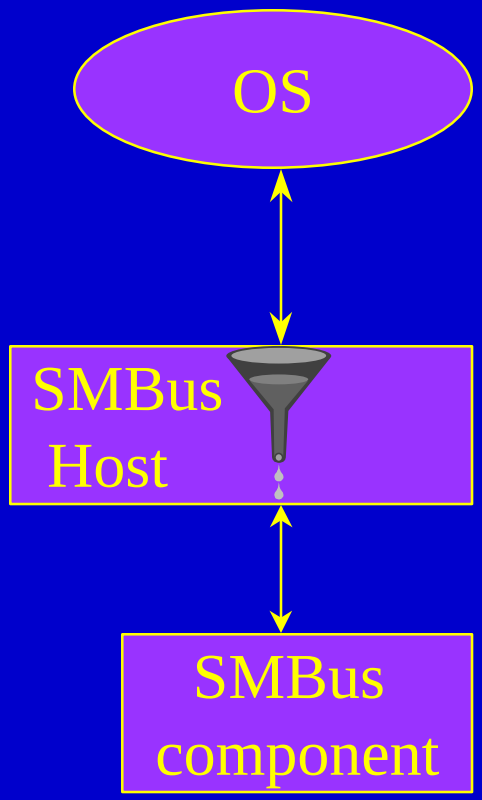
- Exposed/Not exposed to OS
- Protected/not protected from applications
- Alive/Powered-off in suspend mode
- Response time critical or not
- Accessed once/many times
- Private (part of subsystem)
- I2C or SMBus electrical specs

Exposed/Not exposed



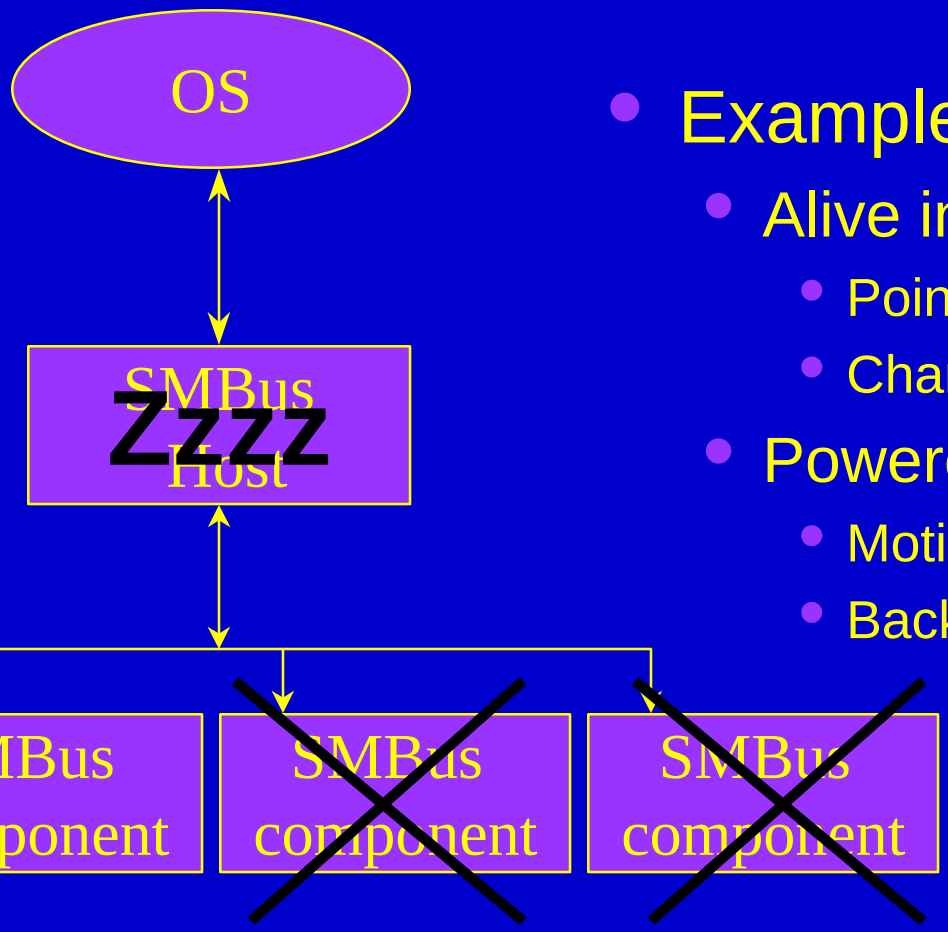
- Example:
  - Exposed:
    - Backlight inverter
    - Battery
  - Not exposed:
    - Clock Generator
    - GPIO

Protected /not protected



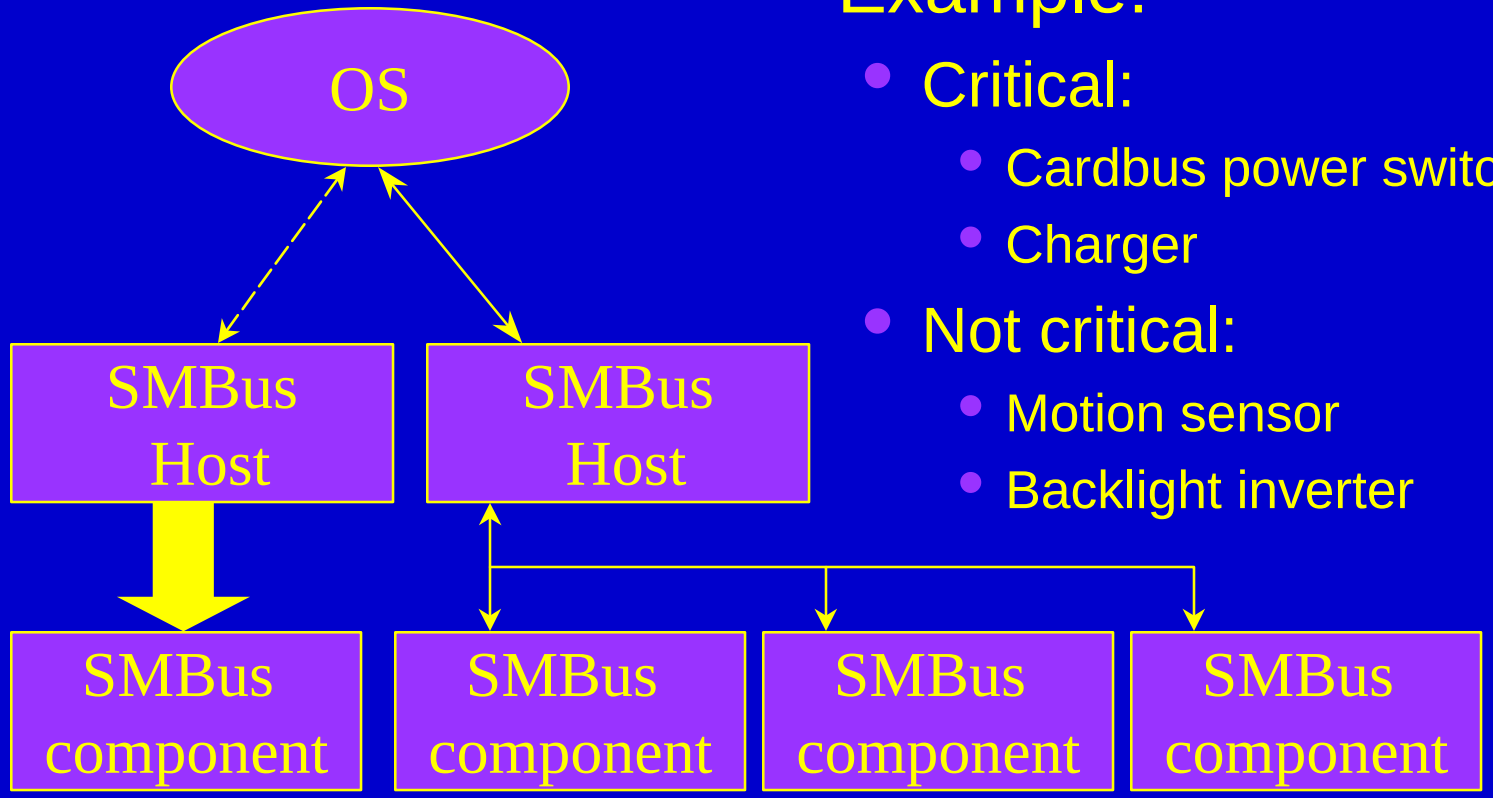
- Example:
  - Protected:
    - Charger
    - Security
  - Not protected:
    - Selector
    - Temperature sensor

Alive / Powered off in suspend



- Example:
  - Alive in suspend:
    - Pointing device
    - Charger
  - Powered-off in suspend:
    - Motion sensor
    - Backlight inverter

Response Time Critical or Not



- Example:
  - Critical:
    - Cardbus power switch
    - Charger
  - Not critical:
    - Motion sensor
    - Backlight inverter

Device / Category Matrix

	Exposed	Protected	Private	High Bandwidth	Alive in Suspend	Critical Response time
Pointing device	x		x	x	x	x
Backlight inverter	x					
GPIO		x				
Clock Generator		x				
DRAM SPD	x				x	
Cardbus Power controller			x			
Generic Temperature Sensor	x					x
CPU Thermal Sensor	x					x
Security		x				
Monitor interface (DDC)			x			
Charger	x	x			x	x
Selector	x				x	x
Battery	x				x	
Motion sensor (e.g. Fan)	x					(x)

Considerations for SMBus device developers

- Power modes to support
- Shared bus or not:
  - Latency issues
  - Bus utilization
- Need for unique address
  - Potential for conflict
- I2C or SMBus
  - Noise tolerance

Summary

- SBS enables new technologies, for longer battery life:
  - New/improved chemistries
  - Better power management software
- SMBus serves the increasing need for better device control in PC platforms and other managed systems
  - Low pincount, low power, flexible, distributed control