



BIOS Data for OS Booting

■ Outline

- Necessary Data for OS Booting
- System Information
- APM OS
- ACPI OS
- DOS Service Routines
- Conclusions



Necessary Data for OS Booting

- System Information for OS
 - DMI data
 - ESCD data
 - PnP data
- Specifications for OS
 - MP spec
 - SMBIOS spec



Necessary Data for OS Booting

- Power Management
 - APM
 - ACPI
- BIOS Service Routines
 - Interrupt Services
 - SMI Services



System Information

- DMI Data

- SMBIOS spec 2.3

- Define system devices.
 - Store in Flash ROM.
 - Move into memory after system configuration was finished.



System Information

■ ESCD

- Extended System Configuration Data
 - Support non-PnP devices configuration.
 - Store in non-volatile storage.
 - ESCD data could be accessed through PnP functions.



System Information

- Plug-and-Play
 - Distributing System Resources
 - DMA
 - IO
 - IRQ
 - Memory
 - Recording System Resources
 - Extended ISA Support



System Information

- Plug-and-Play
 - ISA Support
 - Assign CSN (Card Select Number).
 - Initialize PnP ISA cards.
 - POST PCI ROM initialization
 - System Resource Management
 - Transferring Control to OS



System Information

- Miscellaneous Specifications
 - MP Specification 1.4
 - Build up MP table in memory.
 - System Management BIOS Specification 2.3.1
 - Construct DMI data.

APM OS

- APM – Advanced Power Management
 - APM BIOS – Software Interface to M/B, Devices and Component
 - APM BIOS – APM Driver
- APM System Power State
 - Full on
 - APM Standby
 - APM Suspend
 - Off

APM OS

- APM Device Control
 - Device On
 - Device Power Managed
 - Device Low Power
 - Device Off
- APM CPU Control
 - Full On
 - Slow Clock
 - Stop

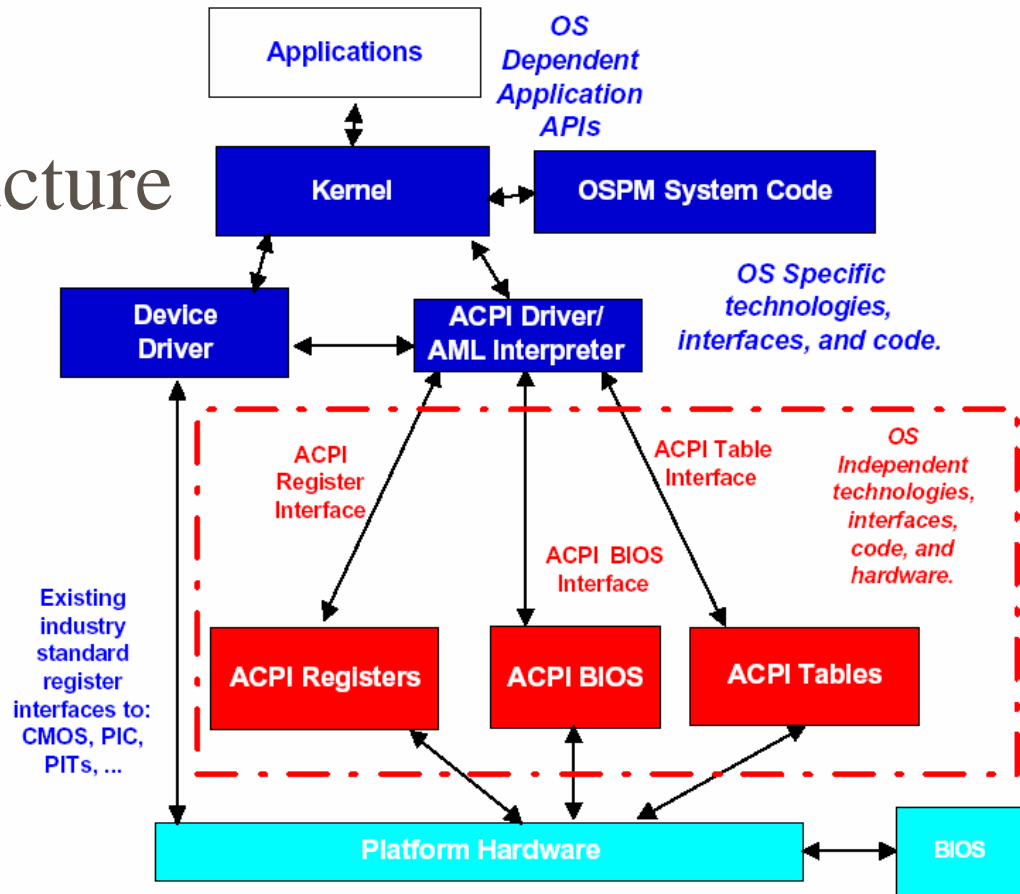


ACPI OS

- ACPI – Advanced Configuration Power Interface
 - Integrating APM, PnP, and MPS
 - Operation-System directed configuration and Power Management
 - Decreasing the Complexity of BIOS
 - AML codes of System Information

ACPI OS

■ ACPI Structure



- - ACPI Spec Covers this area.
- - OS specific technology, not part of ACPI.
- - Hardware/Platform specific technology, not part of ACPI.

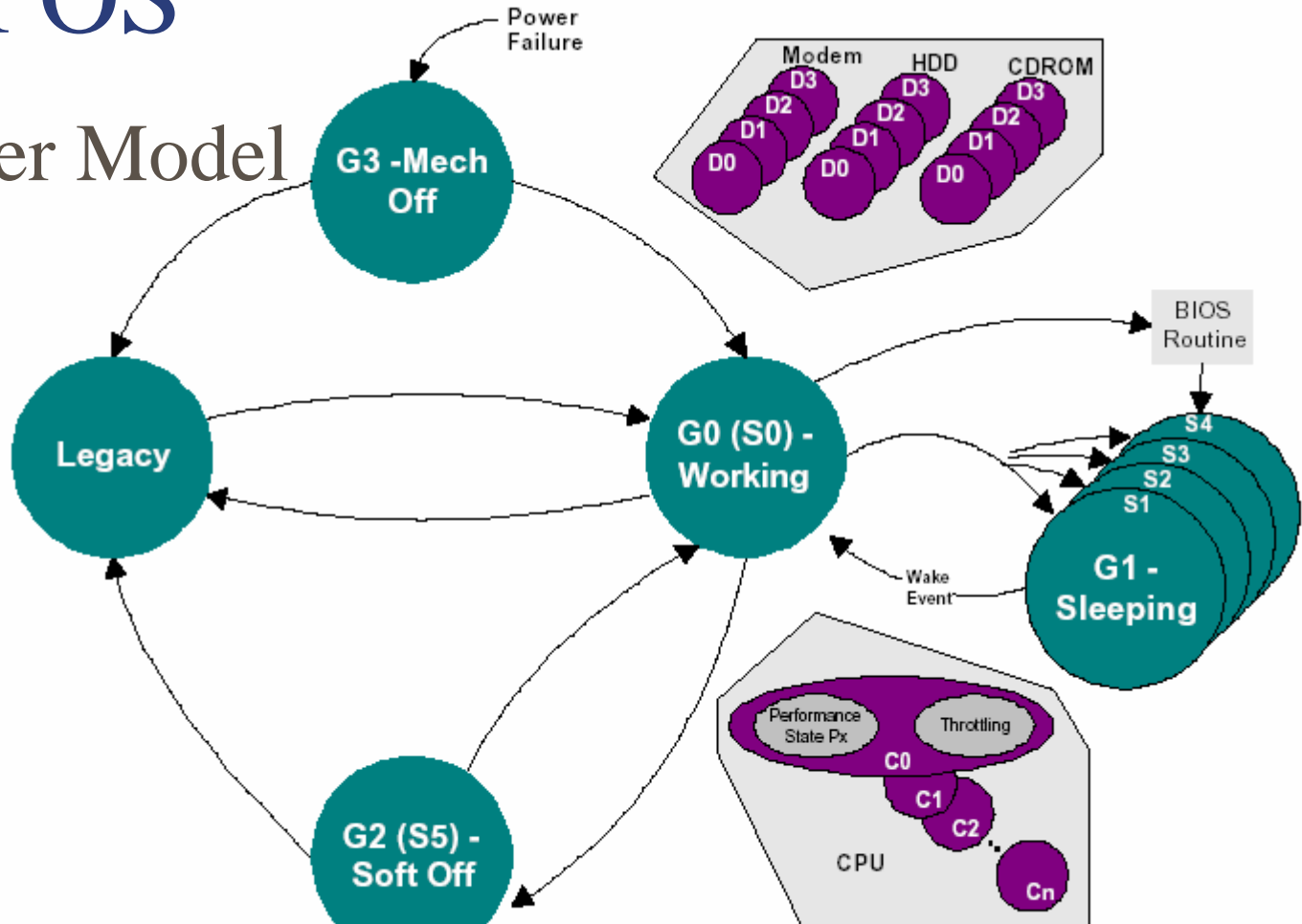
ACPI OS

■ ACPI vs. Legacy

| Hardware\OS | Legacy OS | OSPM/ACPI OS |
|---|---|---|
| Legacy hardware | A legacy OS on legacy hardware does what it always did. | If the OS lacks legacy support, legacy support is completely contained within the hardware functions. |
| Legacy and ACPI hardware support in machine | It works just like a legacy OS on legacy hardware. | During boot, the OS tells the hardware to switch from legacy to OSPM/ACPI mode and from then on, the system has full OSPM/ACPI support. |
| ACPI-only hardware | There is no power management. | There is full OSPM/ACPI support. |

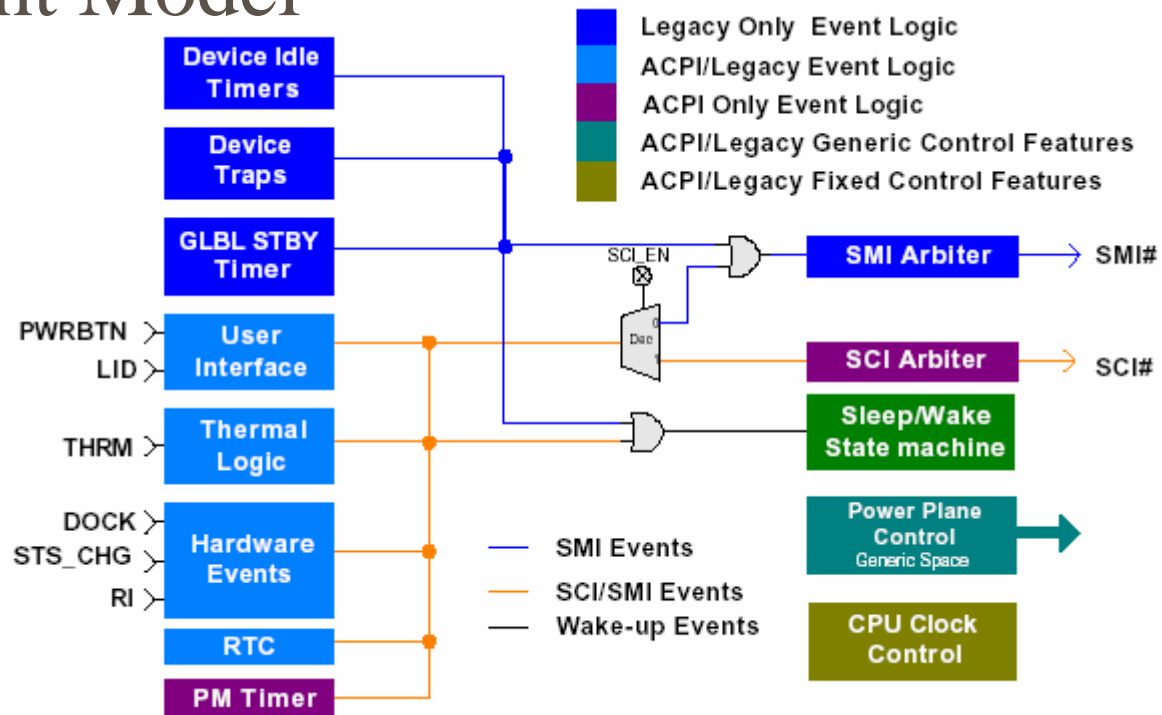
ACPI OS

■ Power Model



ACPI OS

■ Event Model





DOS Service Routine

- 256 Vectors Table
- Multiple Services
 - Int 10h – Video Vector
 - Int 15h – Miscellaneous Services
 - Int 21h – Showing Characters ...
- DOS Services



Conclusions

- ACPI OS will be the standard.
- APM is out of date.
- Microsoft WHQL and Knowledge Base provides many related information.