Intel PC and Chipset Architectures

Training

Let MindShare Bring “Intel PC and Chipset Architectures” to Life for You
The Chipset is at the heart of a PC motherboard. It is a computer chip or set of chips which interconnects the processor to various subsystems of a PC which includes system DRAM memory, graphics and peripheral devices on such interconnects as USB, SATA, IDE, Ethernet, PCI/PCI Express, LPC, SMBus etc links. MindShare’s “Intel PC and Chipset Architectures” course dissects the Chipset into its subunits and explains each subunit. In doing so, you will understand modern PC architecture.

You Will Learn:
- How a PC works
- The role of a processor, system memory and peripherals
- How a variety of interconnect buses such as PCI Express, USB, SATA work
- Communication process between processor, peripheral devices and memory via the chipset
- Improve your PC board debug skills
- The basics required to understand detailed architecture of processor and a variety of IO buses

Course Length: 4 Days

Who Should Attend?
This course is hardware-oriented. It is however suitable for both hardware and software engineers. The course is ideal for RTL-, chip-, system- or system board-level design engineers who need a broad understanding of the PC and chipset architecture. Because the course contains practical examples of transactions on the various bus interfaces, the course is also suitable for chip-level and board-level validation engineers. Software engineers will understand how to access configuration space.

Course Outline:
- Role of the chipset in the system
- Role of the processor in the system
- Evolution of chipset architecture
- Current chipset architecture overview
- Memory and IO mapping and chipset address decoding
- Configuration address space and transaction generation
- MESI cache coherency and snooping protocol
- System management mode
- Communication model between various devices through the chipset including multi-processor communication via the Front-Side-Bus (FSB)
- Interfaces related to Memory Controller Hub (MCH) including FSB, DRAM bus, PCI Express, DMI and clock interfaces
- Interfaces related to IO Controller Hub (ICH) including USB, SATA, IDE, LPC, SMBus etc.
- Legacy peripherals embedded within the chipset such as 8259 and IO APIC interrupt controllers, RTC and CMOS, 8237 DMA controller, etc.
- Overview of MCH and ICH configuration register map
- Review of a variety of server, workstation, desktop and notebook chipsets

Recommended Prerequisites:
A basic understanding of digital design and college level computer architecture concepts is required.

Course Material:
MindShare will supply both hard copy and electronic versions of the presentation slides.
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- Intel PC and Chipset Architecture
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- Serial Attached SCSI (SAS)
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- High-Speed Design
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