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SAS 3.0

Let MindShare Bring "SAS 3.0" to Life for You

MindShare's SAS Architecture course provides a comprehensive understanding of the Serial Attached SCSI interface. The course covers all aspects of the standard, primarily from a hardware perspective, and compares the usage model of SAS with other enterprise interface designs. Practical examples of the discovery process, transactions on the link, and error conditions help provide a great introduction for those new to this material. MindShare's established background in legacy platform design, coupled with a comprehensive understanding of the latest bus technologies, provides rich insight into the SAS design and results in a superior training experience. This course will provide the kind of in-depth information, example implementations, and practical guidance that will give your team a running start on working with SAS.

You Will Learn:
- The basics of the serial interface
- System topology considerations
- How connections are built and handled
- How the SAS infrastructure handles different protocols
- The responsibilities of each design layer
- How problems are reported and handled

Course Length: 3 Days

Who Should Attend?

Our target audience for this class is design or validation engineers working on an RTL-level, chip-level, system-level or system board-level design. Although the material is hardware oriented, software engineers can also benefit from seeing the big picture.

Course Contents:
- Background
- Introduction to SAS
- Usage Model
- Introduction to Architectural Layers
- Application Layer Responsibilities
    - Discovery process
- Transport layer Responsibilities
    - Protocols
        - SSP and Error Handling
        - STP
        - SMP
    - Frames
    - IUs
- Port Layer Responsibilities
    - Call Center Model
- Link Layer Responsibilities
    - Primitives
    - Address Frames
    - Serial Support
    - Connections
    - Arbitration
    - Protocol differences

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- o ACK/NAK Protocol
- o Flow Control
- Phy Layer Responsibilities
  - o 8b/10b Encoding
  - o OOB
  - o Initialization
  - o Resets
- Physical Layer Responsibilities
  - o Differential signaling
  - o Inter-Symbol Interference and Compensation
- Expander Devices
  - o Discovery
  - o Building Connections
  - o Connection Arbitration
  - o Zoning
- SATA Support
  - o STP Protocol
  - o SATA Initialization
- Changes for SAS 2.0 and 3.0

Recommended Prerequisites:

A basic understanding of SCSI is recommended.

Course Material:

1) Presentation PDF handout
2) MindShare's SAS Storage Architecture textbook
   Author: Mike Jackson
   Publisher: MindShare Press
3) Optional: SAS 1.0 eLearning course