ac6

II2 - IPMI v2.0

This course covers Intelligent Platform Management Interface version 2

Objectifs

- Explaining the functional units used in an IPMI system (BMC, SDR, SEL, PEF, etc.).
- Understanding the bus protocols on which IPMI messages are transferred : I2C, IPMB, SMbus.
- Clarifying the chassis management based on ICMB protocol.
- Sending alerts through LAN or serial/modem interfaces.
- Explaining the parameterizing of message channels.
- Studying the IPMI commands through sequences.
- Detailing how system software and BMC embedded software interact.

- This course has been delivered several times to companies developing complex processing systems.

A more detailed course description is available on request at training@ac6-training.com

Prerequisites

- Experience of a 32-bit processor, such as NXP ColdFire or AMCC 4XX microcontrollers.
- Knowledge of Ethernet is recommended, see our course reference N1 - Ethernet and switchingcourse
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Course Environment

- Theoretical course
  - PDF course material (in English) supplemented by a printed version for face-to-face courses.
  - Online courses are dispensed using the Teams video-conferencing system.
  - The trainer answers trainees' questions during the training and provide technical and pedagogical assistance.
- At the start of each session the trainer will interact with the trainees to ensure the course fits their expectations and correct if needed

Target Audience

- Any embedded systems engineer or technician with the above prerequisites.

Evaluation modalities

- The prerequisites indicated above are assessed before the training by the technical supervision of the traineein his company, or by the trainee himself in the exceptional case of an individual trainee.
- Trainee progress is assessed by quizzes offered at the end of various sections to verify that the trainees have assimilated the points presented
- At the end of the training, each trainee receives a certificate attesting that they have successfully completed the course.
  - In the event of a problem, discovered during the course, due to a lack of prerequisites by the trainee a different or additional training is offered to them, generally to reinforce their prerequisites,in agreement with their company manager if applicable.

Plan

INTRODUCTION TO IPMI

- **Objectives**
- **BMC, required functions**
- **Serial port and LAN interfaces**
- **System Management Software, system interfaces**
- **Messaging**
- **System Event Log**
- **Field Replacement Unit**
- **Platform Event Filtering**
- **Interaction between host software and IPMI**

X86 SYSTEM MANAGEMENT MODE

- **Platform specific software**
- **Automatic save / restore mechanism when SMI# is asserted**
- **Entering low power modes**

IPMI I2C-BASED PROTOCOLS

- ○ **I2C protocol basics, transfer sequence, START / STOP session delimiters**
- **Electrical interface**
- **Addressing, 7- and 10-bit modes, broadcast**
- **Clock stretching**
- **Multi-master operation**
- **Accessing a serial EEPROM**
  - ○ **Intelligent Platform Management Bus [IPMB]**
- **Interconnection topology**
- **Request / response protocol**
- **Interleaving requests and responses**
- **Missing response handling**
- **Network functions and commands**
- **Completion codes**
- **Hardware interface, connectors**
  - ○ **System Management Bus [SMBus]**
- **Physical layer**
- **Device identification**
- **Commands**
- **Bus protocols**
- **Address resolution protocol, related commands**

INTELLIGENT CHASSIS MANAGEMENT BUS

- **Introduction, possible topologies, addressing**
- **Physical layer**
- **Link layer, framing, packet format**
- **Bridged ICMB-to-IPMB request message**
- **ICMB-to-IPMB response message**
- **Event message**
- **Arbitration and collision**
- **Dynamic address assignment**
- **Population discovery**
- **Bridge command summary, chassis commands**

IPMI MESSAGING

- **Message interface description**
- **Channel number, protocol type, medium type and access mode**
- **GetChannelInfo command**
- **BMC channels**
- **Event Message Buffer**
- **User and password support**
- **Session activation and IPMI challenge response**
- **IPMI messaging support commands**

SYSTEM INTERFACE

- **Keyboard Controller Style [KCS] interface**
- **Server Management Interface Chip [SMIC]**
- **Block Transfer [BT] interface**
- **SMBus System Interface [SSIF]**

LAN INTERFACE

- **Introduction to RMCP**
- **VLAN support**
- **LAN configuration**
- **Sessions**
- **IPMI messages related to LAN interface**
- **Serial over LAN**

SERIAL / MODEM INTERFACE

- **Serial / modem capabilities**
- **Serial port sharing**
- **Connection mode auto-detect**
- **Basic mode**
- **PPP/UDP mode**
- **Serial / modem callback**
- **Terminal mode**
- **IPMI messages related to serial / modem interface**

EVENT MESSAGES

- **Critical events and system event log restrictions**
- **Event receiver handling of event messages**
- **Platform Event Filtering [PEF]**
- **Event Filter Table**
- **Alert Policy table**
- **Event filter, policy, destination and string relationships**
- **Event commands, PEF and alerting commands**

IPMI DEVICE GLOBAL COMMANDS

- **GetDeviceID**
- **ColdReset**
- **WarmReset**
- **GetSelfTestResults**
- **ManufacturingTestOn**
- **GetDeviceGUID**

SDR REPOSITORY

- **Discovering management controllers and device SDRs**

- **Reading the SDR repository**
- **Sensor types and data conversion**
- **Sensor initialisation agent**
- **Related commands**

FRU INVENTORY

- **FRU format**
- **GetFRUInventoryAreaInfo command**
- **ReadFRUData command**
- **WriteFRUData command**

ACTEL FUSION SUPPORTING IPMI APPLICATIONS

- **Analog functions**
- **Embedded flash memory block**
- **DirectCore IP in IPMI**
- **IPMI software**

Renseignements pratiques

Inquiry : 3 days