



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 switching course](#)*

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.*

Course Outline

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*