

Samway Electronic SRL

- Founded in 2005 in Bucharest, Romania
- Focused on management and monitoring solutions for telecom/industrial computers
- Active member of PICMG (PCI Industrial Computer Manufacturers Group)
- Deeply involved in development of new technologies
- Offers hardware and software products and services

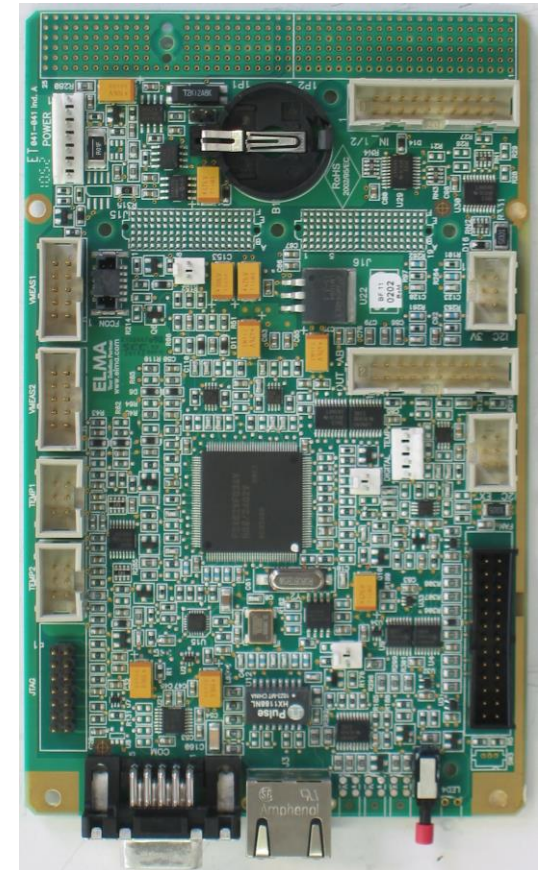
What does management and monitoring imply?

- Out of band, remote access to information
- Reading various sensors, placed on cards or inside the chassis (temperatures, voltages, currents, fans, status signals)
- Fan speed control based on temperature
- Remote power on/off
- Failures signaled by alarms
- Remote updates

Traditional Monitoring Solutions

Monitoring Solution for CPCI / VME computers

- Monitors voltages, currents, temperatures, fans
- Controls fans speed based on temperature
- Digital I/Os
- Ethernet interface supporting DHCP, Telnet, SNMP v2c, HTTP, TFTP, Serial Over Lan
- Developed together with Elma Electronic GmbH (Germany) for CERN



Introduction to IPMI

Standardized management architecture based on IPMI

IPMI (Intelligent Platform Management Interface)

- protocol was initially developed by Intel, Hewlett-Packard, NEC and DELL for server management
- Implemented as a software protocol over an I2C bus
- Defines a standard method to discover modules inside a chassis and read their sensors

Newer PICMG architectures like **ATCA** and **MTCA** have adopted IPMI for management

- The cards present in a chassis are first identified and enabled **ONLY** if they are compatible with the platform and the other cards
- This requires every component (Card, PSU, Fan tray) to have a management controller capable of “speaking” IPMI
- An additional module, the shelf manager, centralizes the information it collects from the card's management controller and present it to the external System Management Software
- Having a standardized protocol for management, monitoring and inventory of the cards is possible

Shelf Manager

Shelf Manager

- Designed for multiple architectures: ATCA, AXIe, CPCI
- Could be mounted as a mezzanine module on a card or on dedicated carrier board
- Monitors/controls cards supporting IPMI
- Monitors the chassis by reading: voltages, temperatures, currents and fans status
- Configurable digital I/Os
- 10/100Mbps Ethernet interface supporting RMCP, HTTP (graphical WEP page), Telnet, SNMP v3, DHCP, TFTP and Serial Over Lan
- Extended temperature range: -40..85 deg C
- Dimensions 68mmx95mm



Shelf Manager



Shelf Manager WEB Page

- Based on REST-XML
- Provides a simple and intuitive API
- No additional software needed- just a WEB browser (could be accessed from a mobile phone or tablet)
- Board Information is obtained with just a mouse click

Sensor	Name	Value	Unit	Status
16	+1.5V	1.52	V	OK
17	+2V	1.99	V	OK
18	+3.5V	2.50	V	OK
19	+3.3V	3.30	V	OK
20	+3.3VSB	3.37	V	OK
21	+5VSB	5.10	V	OK
22	+12V	12.16	V	OK
48	Baseboard Temp	26.00	deg C	OK
49	BRD Top Temp	26.00	deg C	OK
50	BRD Bottom Temp	27.00	deg C	OK
51	BRD Center Temp	25.00	deg C	OK
138	FRU Hot Swap	0x10 0x80		
139	IPMB Link State	0x02 0x80		

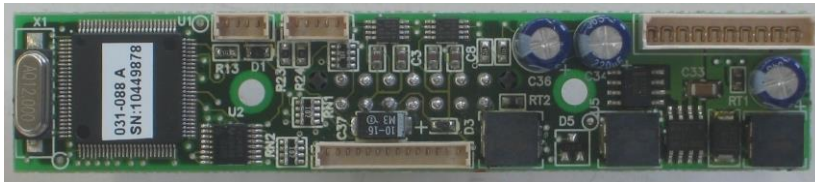
MTCA MCH

MCH (MicroTCA Carrier Hub)

- Support for up to 12 AMCs, 12uRTMs, 2 CUs and 4 Pms
- MTCA.4 Compliant
- 12 ports Gigabit Ethernet Switch
- PCIe Gen 2 switch
- PCIe clock distribution
- Front panel GbE port
- Front panel 10/100Mbps management port supporting DHCP, RMCP, Telnet, TFTP, HTTP (Graphical WEB Page)
- Front panel USB connector for debug
- On-board shelf manager
- Firmware upgrade via IPMI commands (HPM.1) or debug interface



MTCA CU and PDM



Cooling Unit with IPMI support for monitoring and controlling the fans inside the chassis.

The unit in picture is the first MTCA Cooling Unit ever developed in the industry, even before the MCHs could support it.



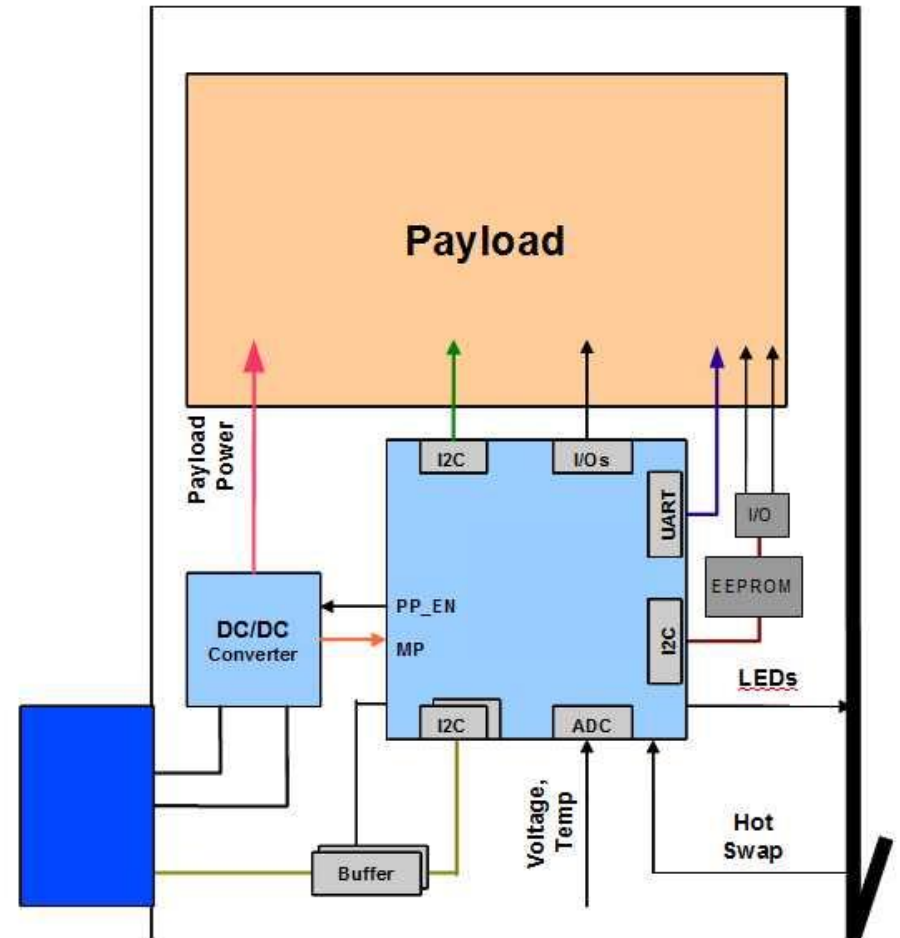
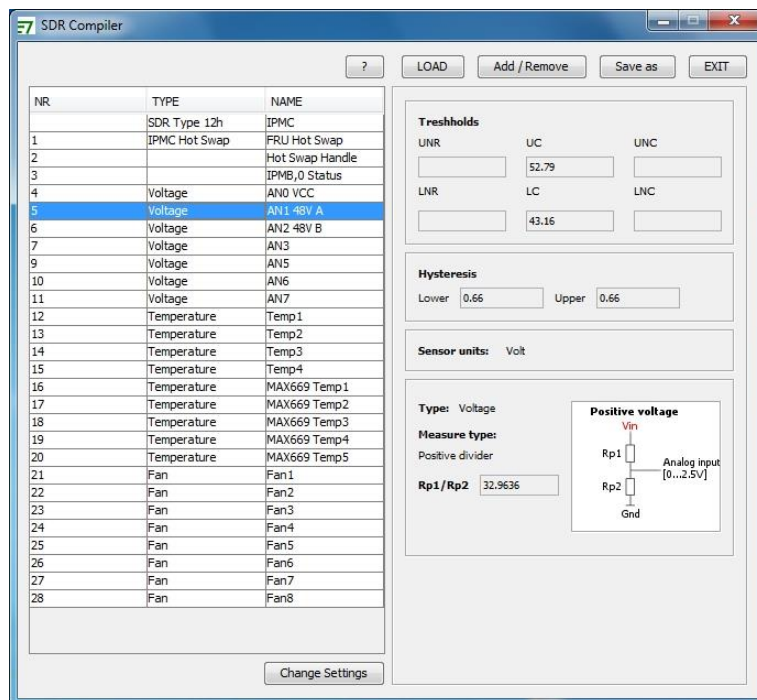
Power Distribution Module for MTCA

- 12V input
- Inrush control and over-current protection for MP and PP
- Redundant operation

IPMI Software

IPMI Software for ATCA/MTCA cards (IPMC/MMC)

- Delivered on preprogrammed microcontrollers
- No royalties
- Fast development, low cost and minimum risk
- Easy customizable
- Graphical tools for configuring the sensors and board information (manufacturer name, part number...)



Innovation in IPMI

Simplified IPMI management solution proposed by Samway

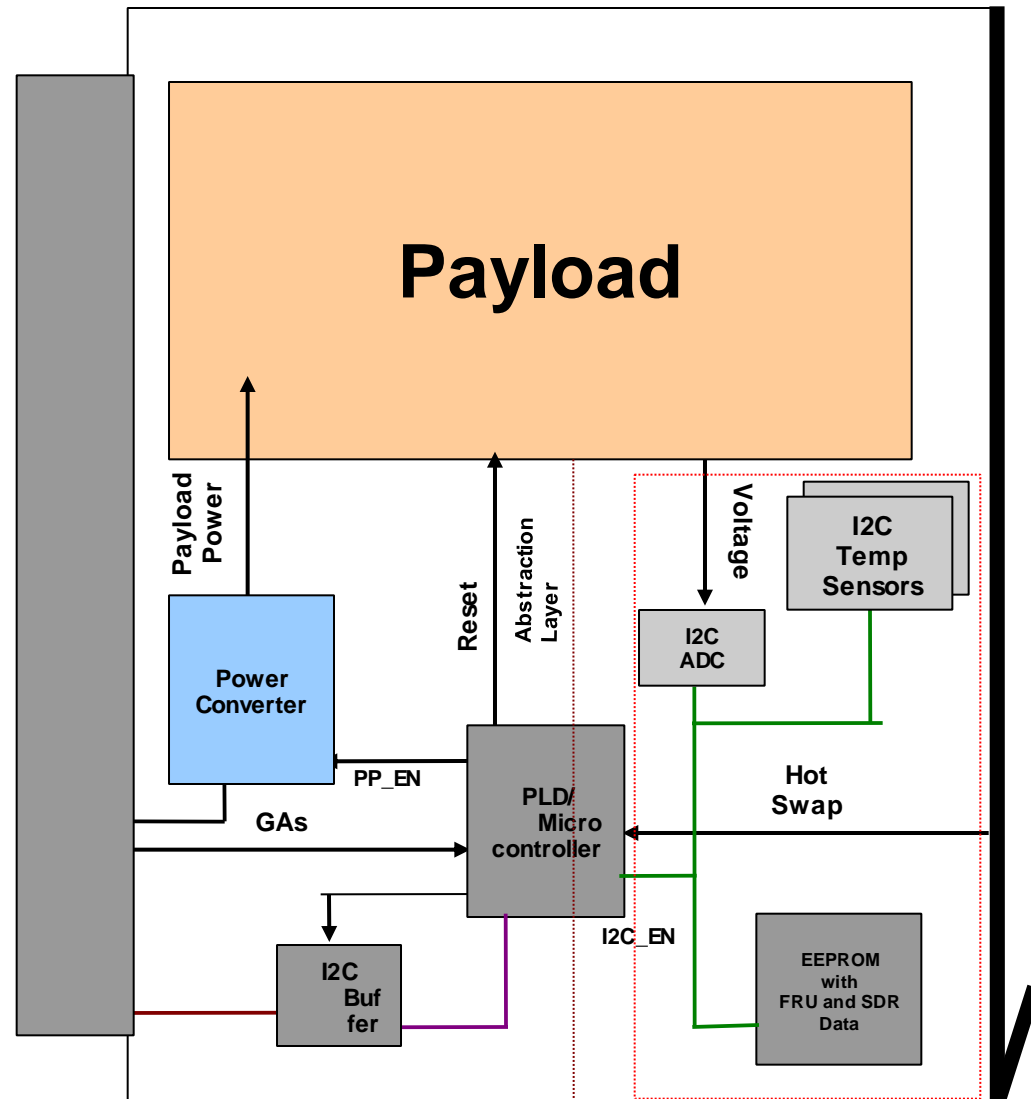
- The IPMI controllers are replaced by a simple device (PLD/Microcontroller) which implements an abstraction layer between the local sensors and the IPMI
- The simplified IPMI board is seen by the shelf manager as a memory.
- Board information and sensor values are read from different offsets
- The Shelf Manager instantiate Virtual IPMI controllers to represent the simplified IPMI boards to an external System Manager

Benefits:

- Fast development
- No complex IPMI software needed on the cards. The IPMI complexity is transferred to the Shelf Manager
- Compatible with standard IPMI boards

This solution will be standardized for CPCI-Serial

- Specification is under development
- Could be extended to represent mezzanine modules attached to a carrier card



THANK YOU!

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