MicroTCA hardware management integrated into the DOOCS.

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IPMIlib for DOOCS

Documents:

IPMI(Intelligent Management Platform Interface) specifications

- IPMI v1.0 – The base specification, released in 1998 by major system vendors(Intel Hewlett-Packard NEC Dell ...) to define manageability across multiple platforms
- IPMI v1.5 - Released in 2001 to update/enhance IPMI,unify the specification with other management initiatives(like ATCA), and add functionality like LAN interface-to-BMC functionality
- IPMI v2.0 – Released in 2004 to further update/enhance IPMI with features like management link security, Serial Over LAN and Firmware Firewall support.
- IPMB(Intelligent Platform Management Bus) – the I2C-based bus definition for IPMI.
- IPMB v1.0 Address Allocation – Defines addressing on the IPMB.
- Platform Management FRU Information Storage Definition – FRU information.

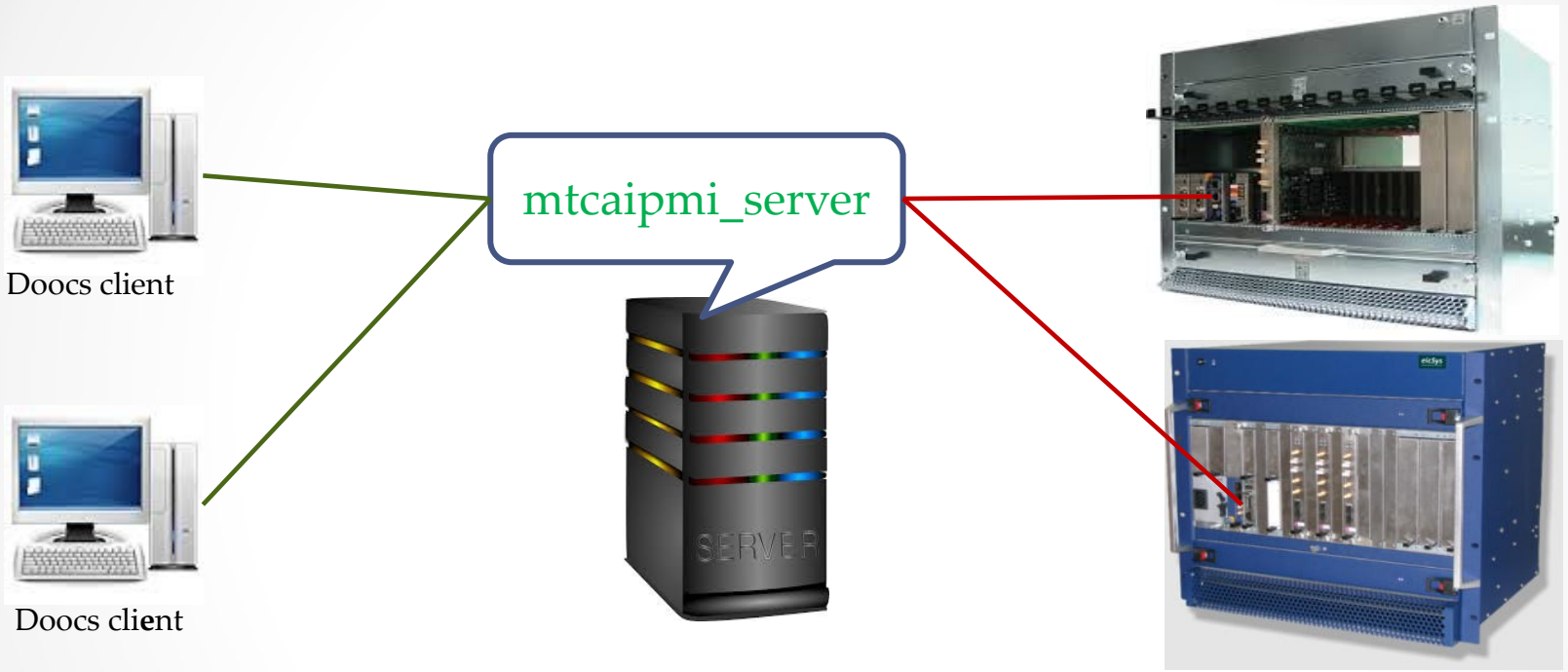
ATCA and MicroTCA specifications

- PICMG 3.0 – ATCA base specification that includes the definition and HW/SW implementation details of Shelf Management/Hot Swap Control for ATCA.
- PICMG AMC.0 – AdvancedMC base specification that includes the definition and HW/SW implementation details of carrier and module management for AMC.
- PICMG MicroTCA.0 – Base specification that includes the definition and HW/SW implementation details of management for MicroTCA and AMC.
- MTCA.4 xTCA for Physics Develops additional features and options for use in particle physics research including Rear Transmission Module(RTM) for signal conditioning, data collection and accelerator control systems.

Library sources:

IPMItool - open source command-line interface ***http://sourceforge.net/projects/ipmitool/***

DOOCS server for MicroTCA crate.



IPMI over LAN interface to MCH

Interface to DOOCS

Mtcaipmi_server

reads:

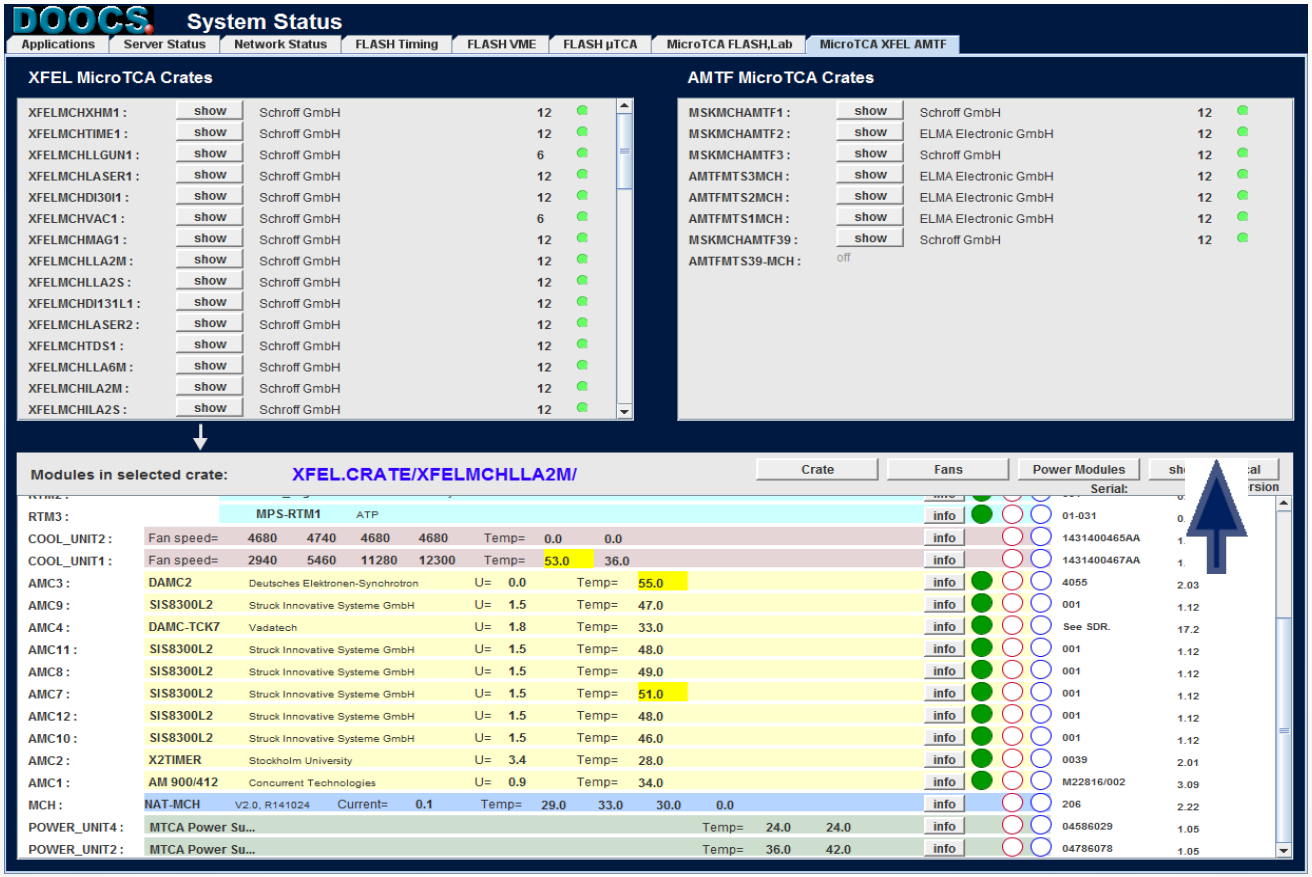
- Hostname/IP address of MCH from configuration file
- SDRs (Sensor Data Record) and FRU information of the crate and modules from the MCH
- SEL (System Event Logs) , sensor value and status LEDs in update routine

provides to *DOOCS*:

- Sensors (history, value, descriptions, states)
- Management controlled status LEDs
- FRU information (manufacture, board and product information, current consumption, link descriptions,…)
- System Event Logs (SEL)
- Remote control functions (reboot, shutdown, reset)

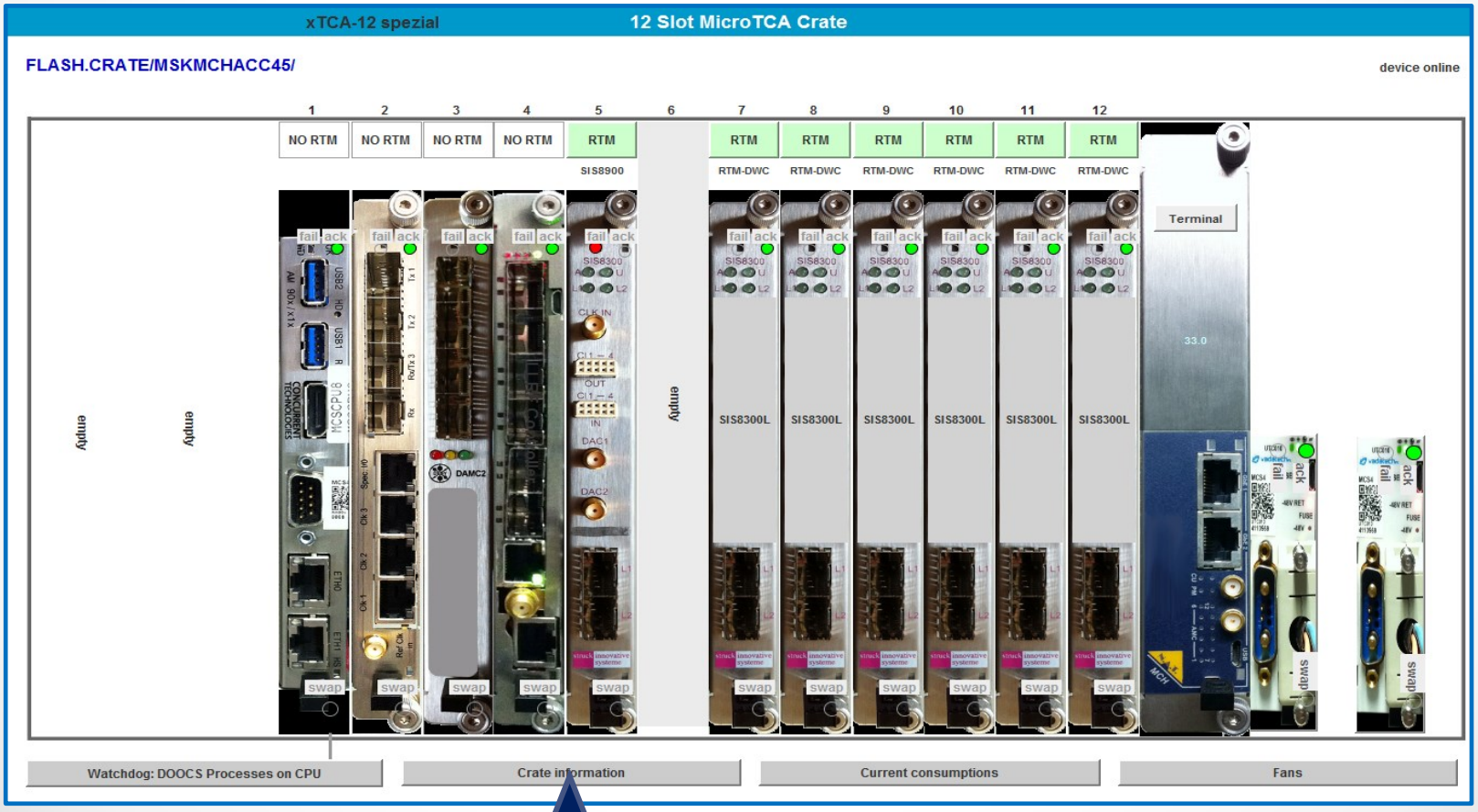
MicroTCA crates in system status panel

Overview of the crates in XFEL and AMTF



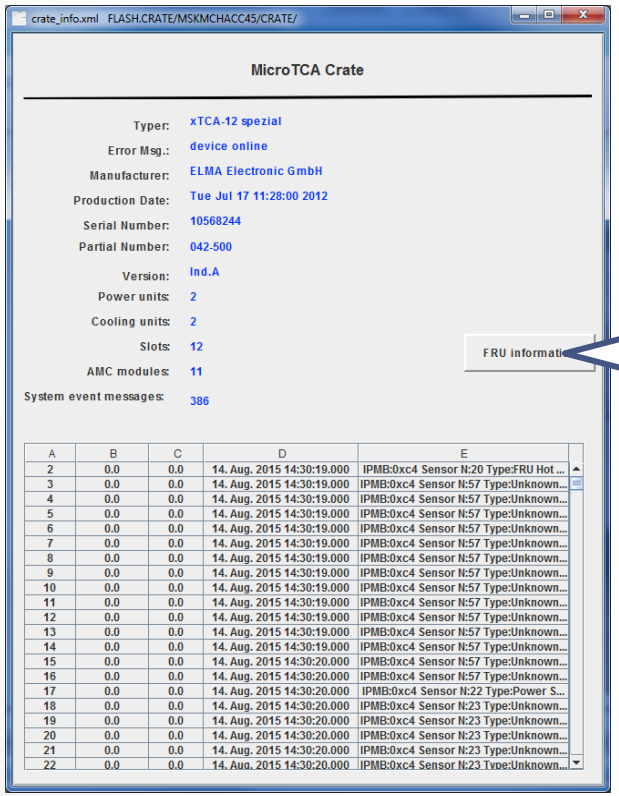
View of the MicroTCA crate

JDDD panel for MicroTCA crate

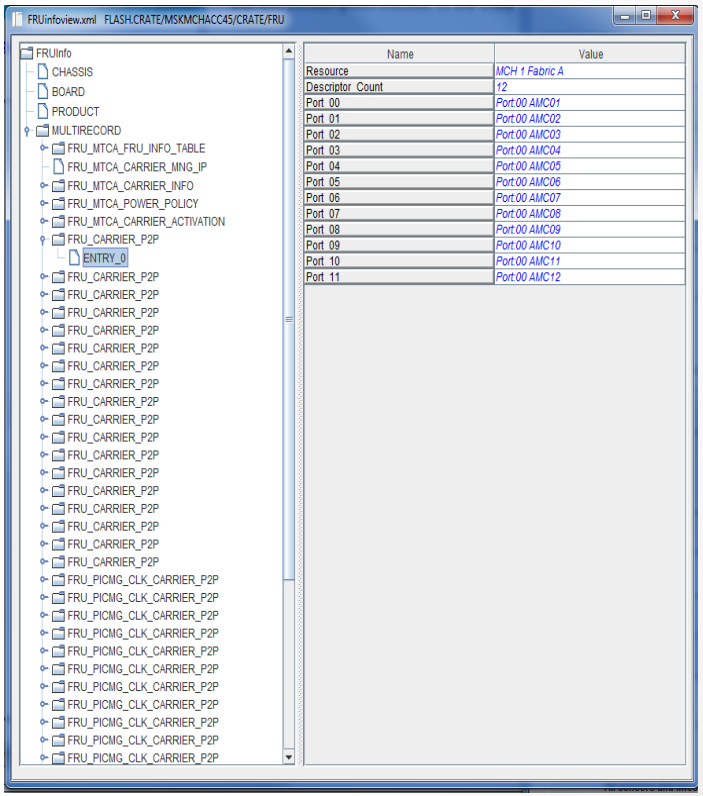


MicroTCA crate information

Crate main info and System Logs

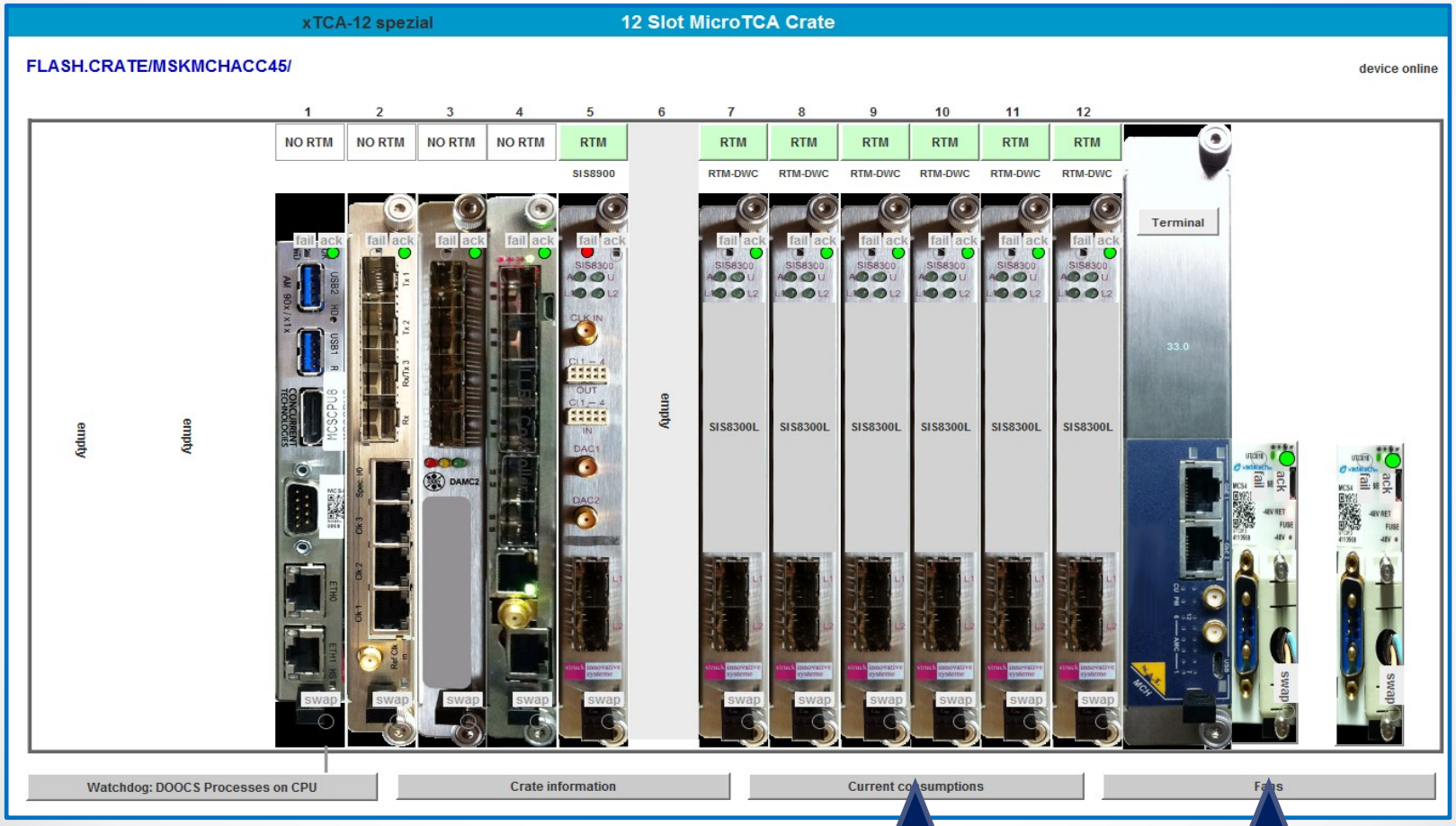


FRU information of the crate



View of the MicroTCA crate

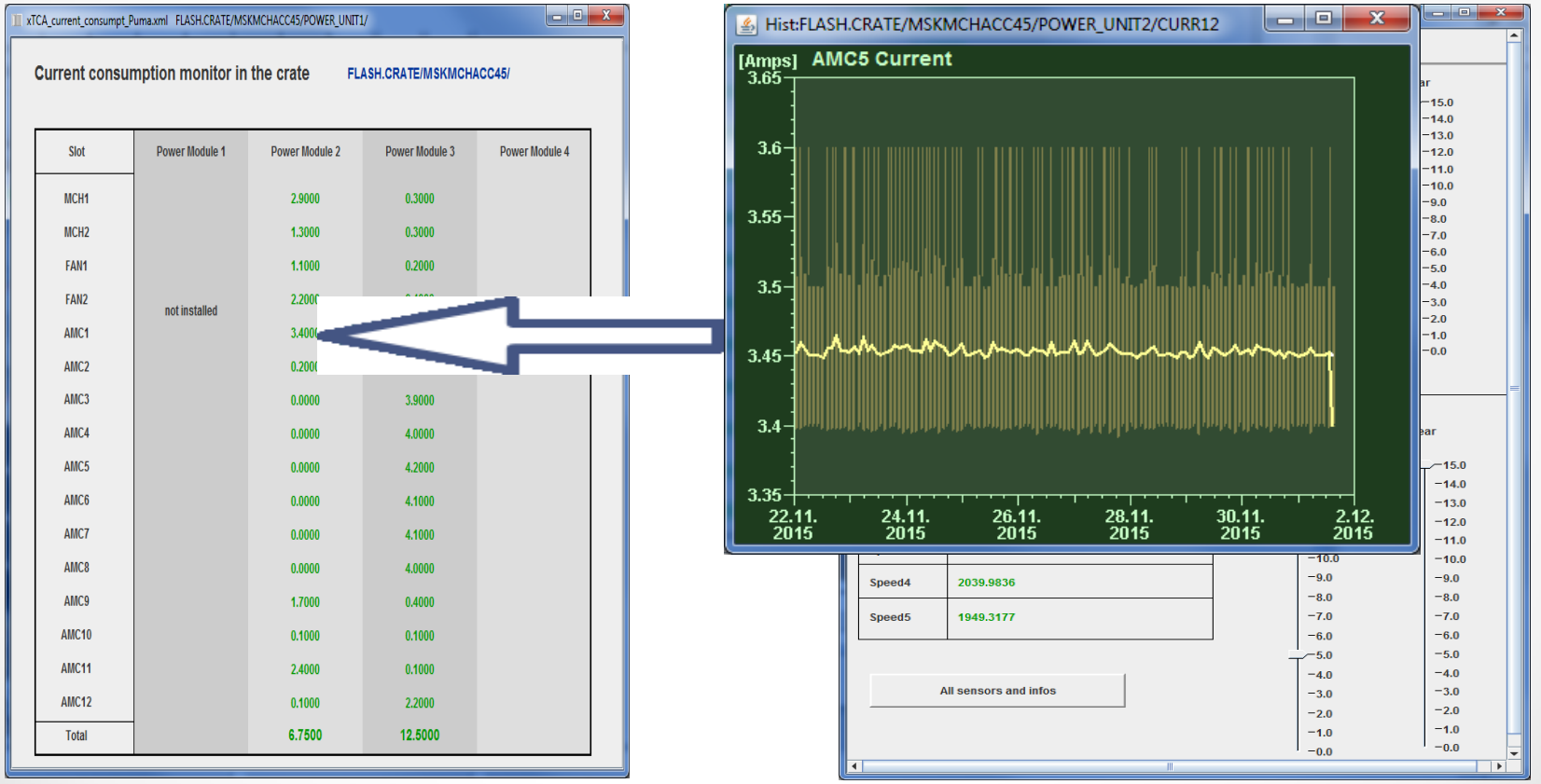
JDDD panel for MicroTCA crate



MicroTCA crate information

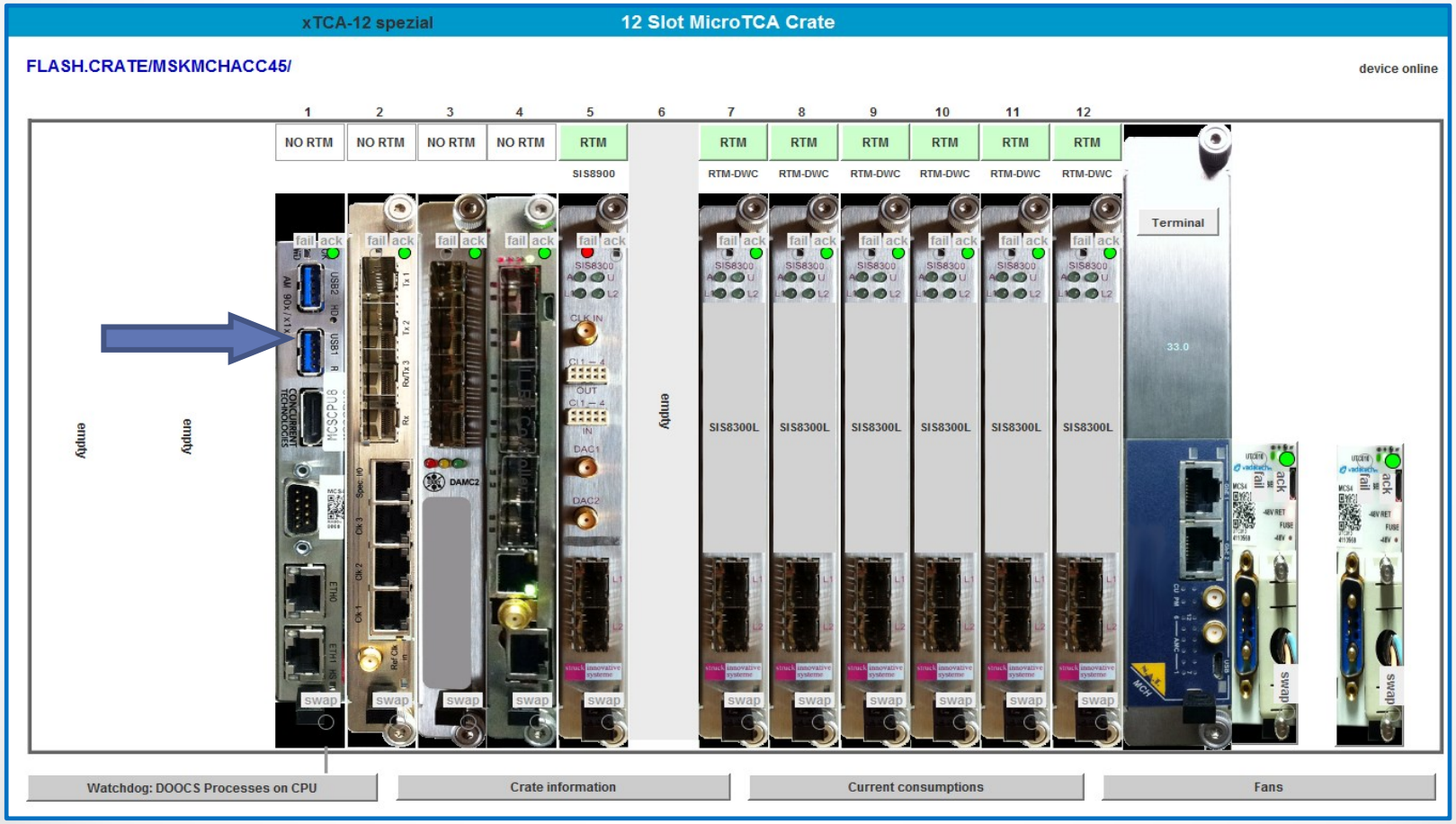
Current consumption of the modules

Cooling units monitor and control



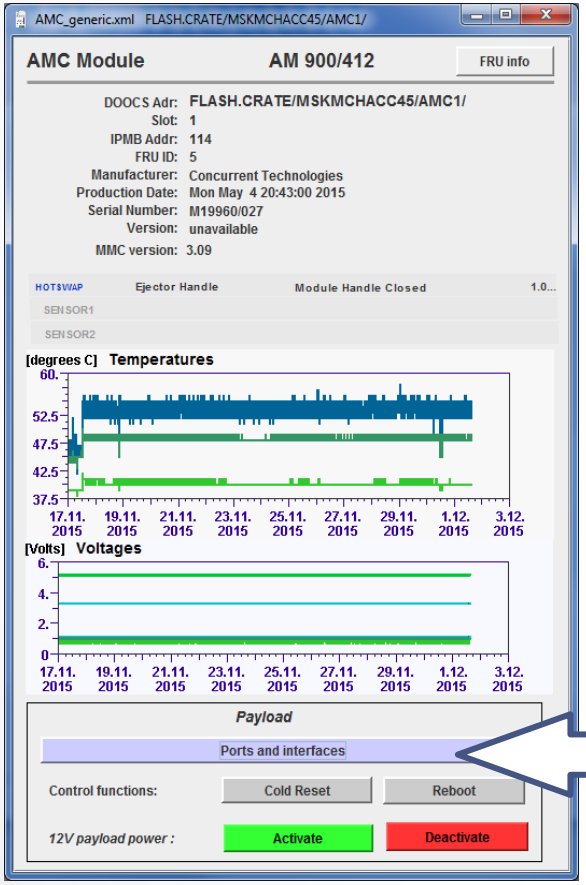
View of the MicroTCA crate

JDDD panel for MicroTCA crate

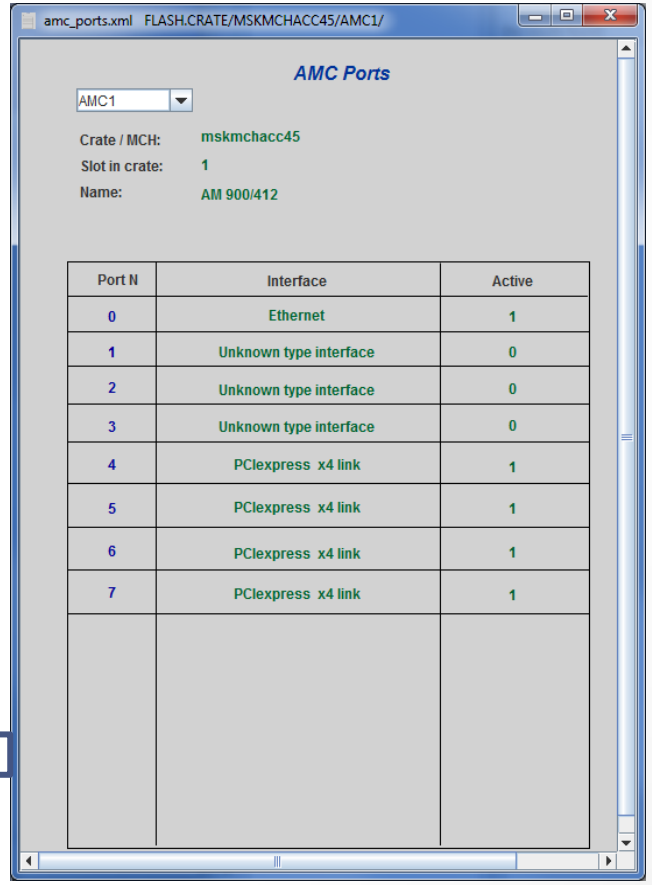


AMC module

AMC module main panel



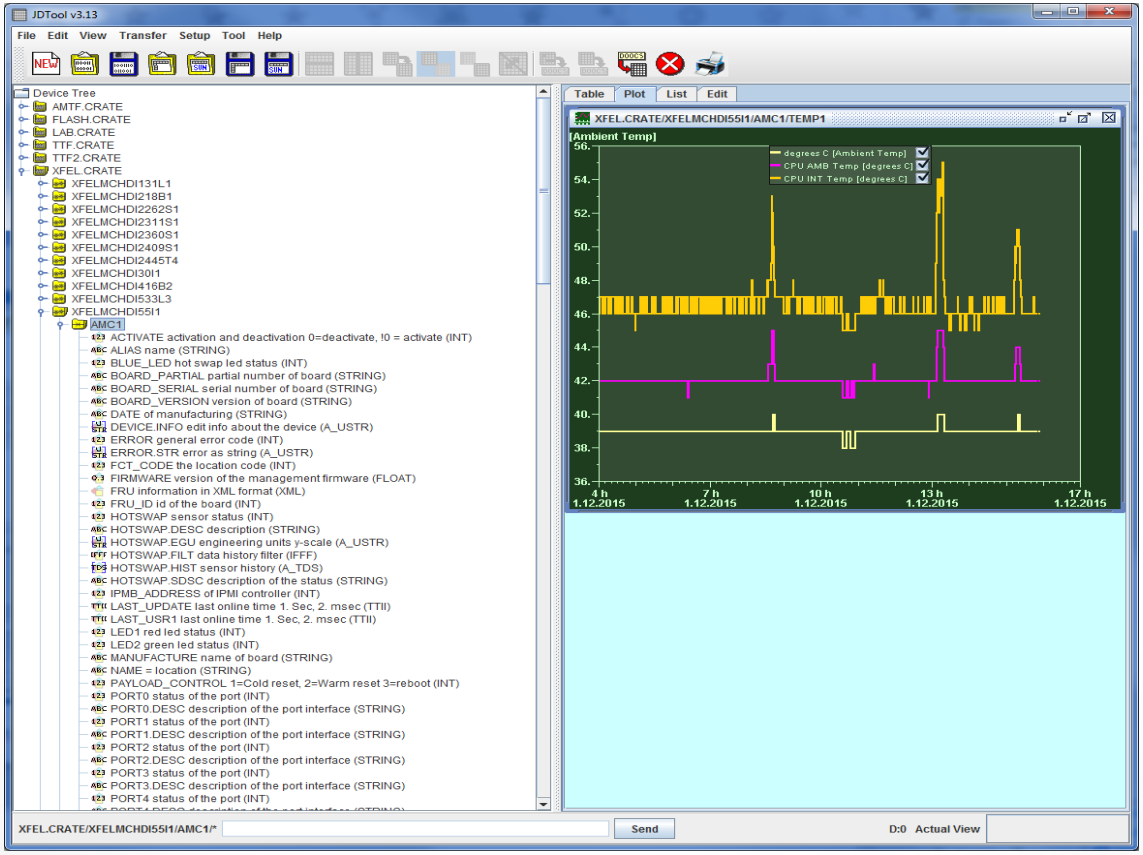
AMC port types and statuses



Port N	Interface	Active
0	Ethernet	1
1	Unknown type interface	0
2	Unknown type interface	0
3	Unknown type interface	0
4	PCIexpress x4 link	1
5	PCIexpress x4 link	1
6	PCIexpress x4 link	1
7	PCIexpress x4 link	1

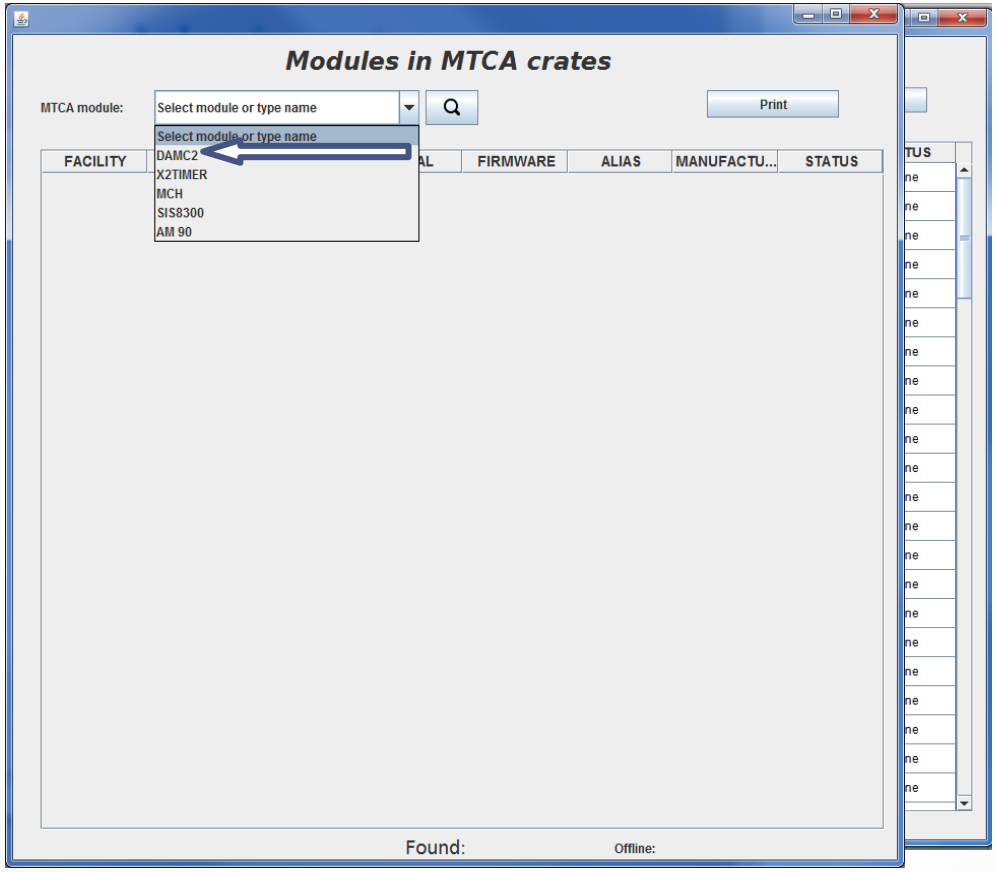
Crates and Modules in DOOCS hierarchy

JDTool application



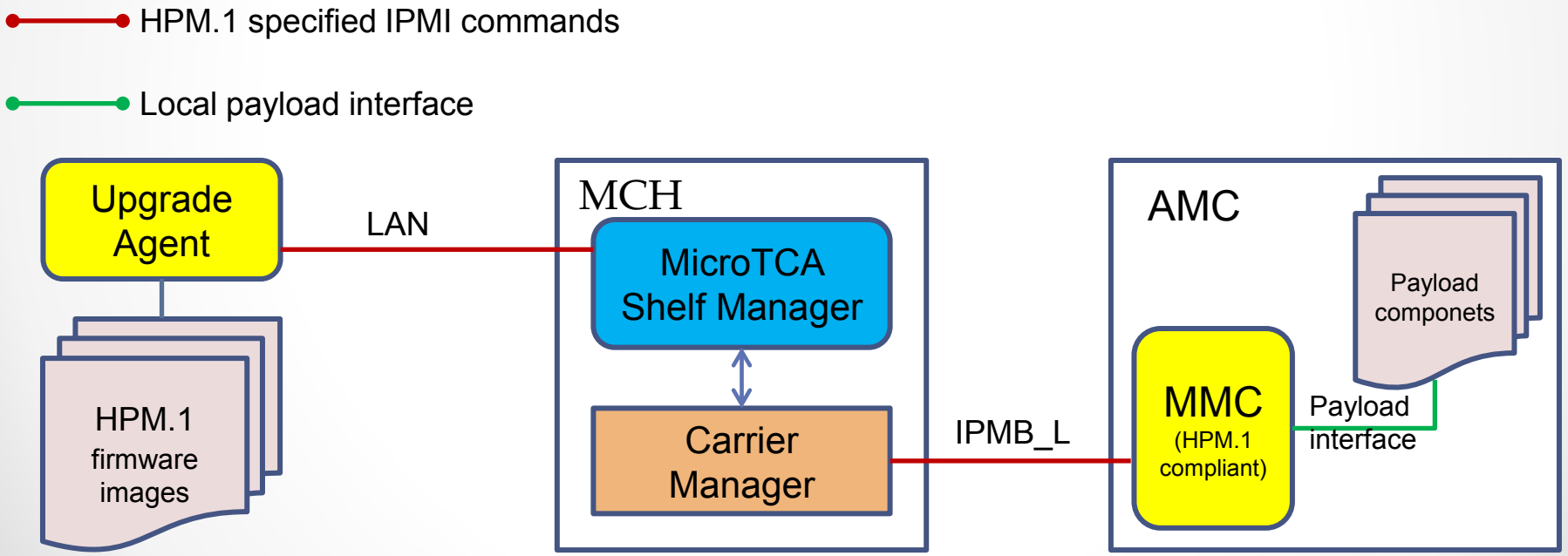
Search MicroTCA modules in crates

JDTool application



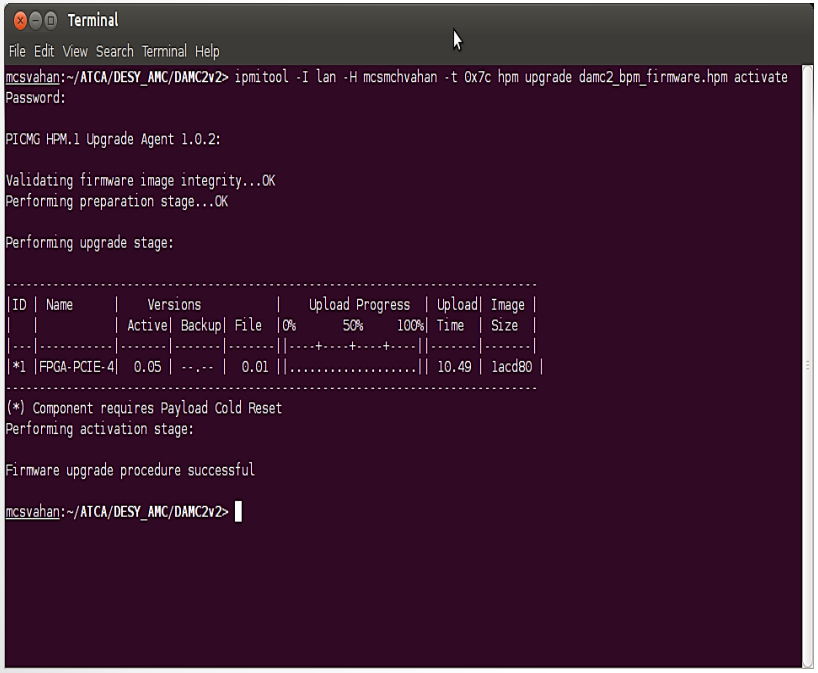
HPM (Hardware Platform Management)

HPM.1 is IPM Controller Firmware Upgrade specification, was adopted in 2007 and defines firmware file formats and IPMI command protocols for updating the firmware in ATCA, AMC, and MicroTCA management controllers.

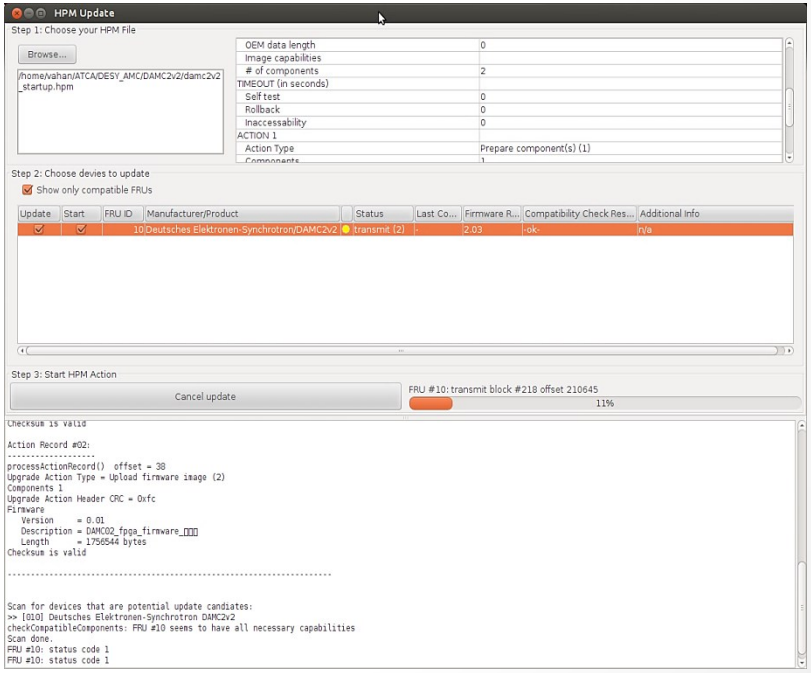


HPM Upgrade Agents.

IPMItool command-line interface



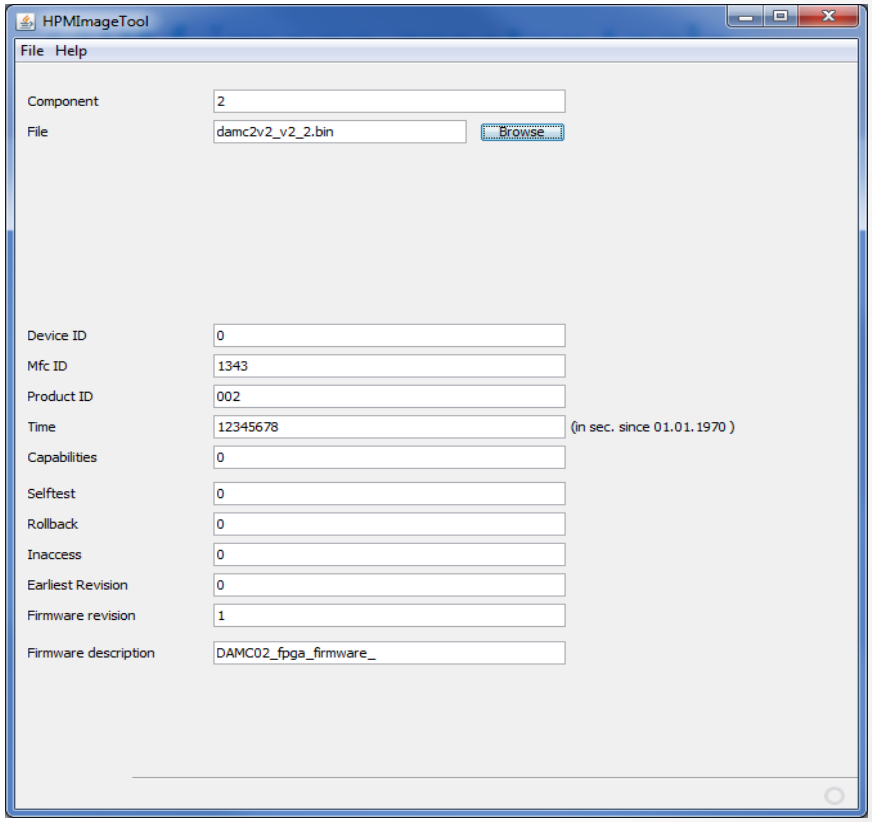
NATView tool (N.A.T)



HPM image tool.

- No available tool and program

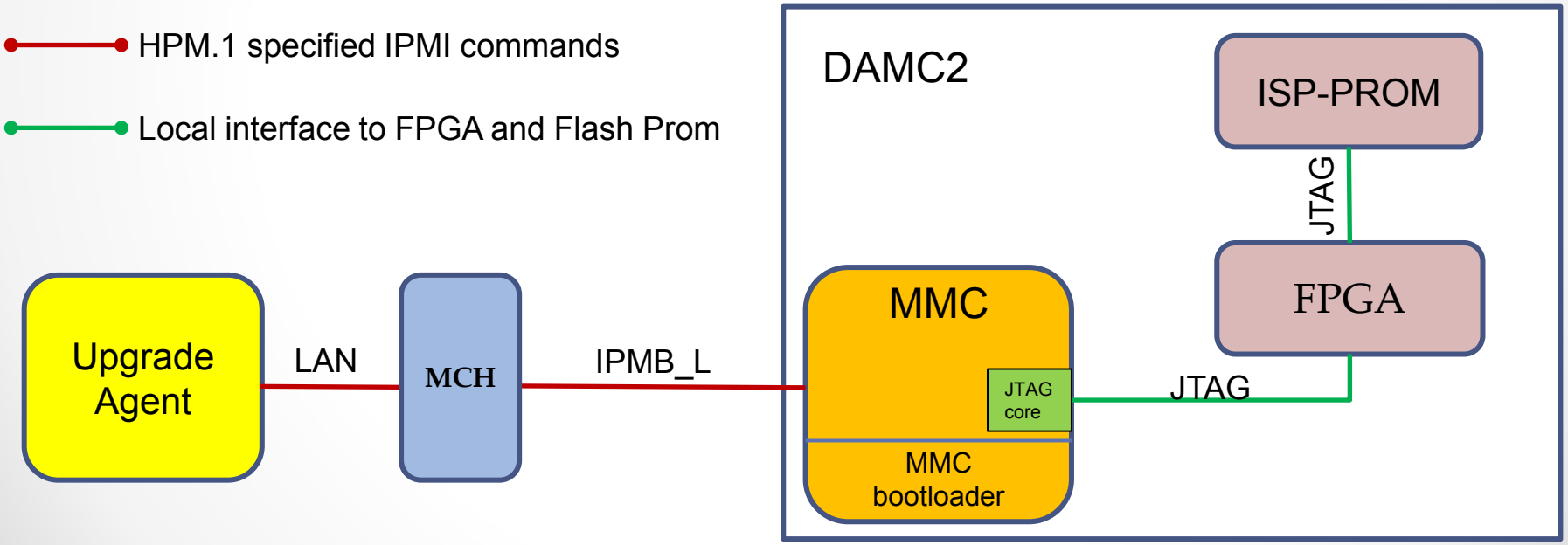
- A Java-based tool was developed in DESY to create HPM.1 compliant images.



HPM capability of DAMC2

2 Components are available for firmware upgrade:

- ✓ MMC firmware for ATXMEGA128 microcontroller
- ✓ Flash Prom for FPGA configuration



HPM capability of X2TIMER

3 Components are available for firmware upgrade:

- ✓ MMC firmware for ATXMEGA128 microcontroller
- ✓ SPI Flash Prom for FPGA configuration
- ✓ Firmware for up to 12 ATXmega32 microcontroller on Piggyback boards