STATUS OF IPMC Firmware

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Outline

- Hardware
- Firmware and Tools
• Hardware is v2 rev. 2
• Tests are done with Boundary Scan: 90% of BS nets covered, 80% of all nets.
• 120 boards have been produced and tested (100 requested) in 2014.
  – Only one with pbs (MicroC replaced).
  – 82 have been configured (MAC address and firmware) and delivered.
• New production of 120 boards started.
• Clients: ATLAS FTK, LAr & L1Calo (e/j/g/FEX, Topo), L1Track; CMS, BELLE.
• Hardware documentation:
  http://lappwiki.in2p3.fr/twiki/bin/view/AtlasLapp/ATCA
ICARE-00-01-00 available since November 2015
- tools for compiling, loading, debugging and executing the IPMC software.
- source code (ICARE framework) for the IPMC.
- Many examples for sensors, SDR/FRU...
- Installed at POINT1 in /det/lar/project/ICARE/releases

IPMC firmware
- Management of ATCA blade
  - FRU/SDR, Sensors, Backplane E-Keying.
- IPMC firmware upgrade (proprietary solution) over TCP/IP on 10/100 MbE (lwip).
- Management of AMC
- JTAG Master: Xilinx Virtual Cable server (Xilinx iMPACT and VIVADO s/w)
- Version Information available via OpenOCD or by a command to the Shelf Manager
- What is not yet integrated:
  - AMC and Clock E-Keying.
  - AMC ports control
  - JTAG Master: Serial Vector Format player (Altera).

FRU/SDR generator (GUI)
Tools, Code and configuration procedure manual available in chapter Software ATCA IPMC here:

http://lappwiki.in2p3.fr/twiki/bin/view/AtlasLapp/Informatique

Help is provided by FTK people from LPNHE for the JTAG Master.

Missing features should be available in 2016.
- Factory Firmware will be initially stored in both the configuration flash memory and micro-controllers internal flash memory.
- The factory firmware always remains available in the configuration flash memory.
- The micro-controllers will revert to it after 3 failing consecutive attempts of upgrading the internal flash memory.
- Firmware upgrade requires a new firmware in the IPMC CPLD.
  - Version 5.2 is available from the ICARE twiki page.
  - Requires the USB-JTAG Adaptor and OpenOCD tool for upgrading.
  - For those requiring it, IPMCs will be exchanged if you do not want to do the upgrade yourselves.
The IPMC hardware is in production without any problem. A second round has already started in 2016.

Firmware developments are progressing, despite the limited manpower.

Many feedback from users which allow to improve the IPMC software.

Some patches will be soon available.

The implementation of AMC and Clock E-Keying & SVF JTAG Master should be available in 2016.