

STATUS OF IPMC FIRMWARE

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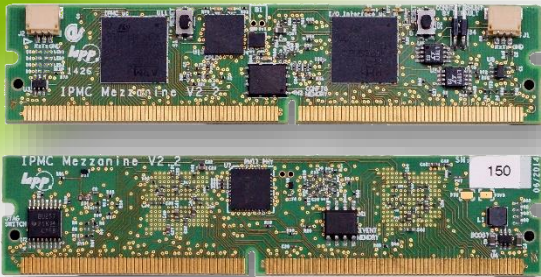
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Outline

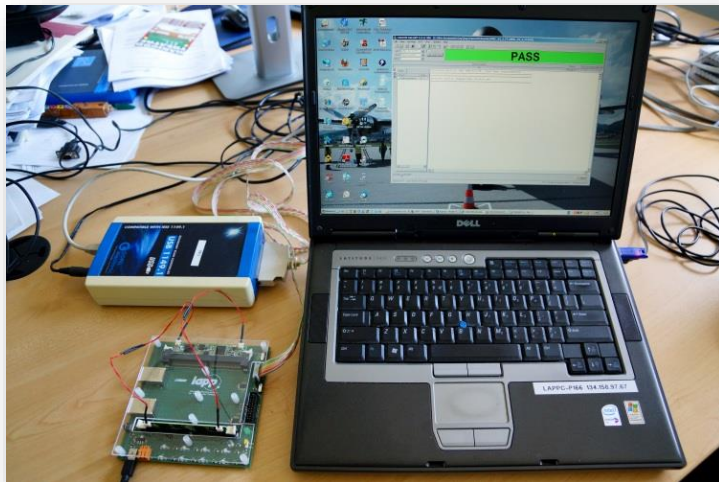
- **Hardware**
- **Firmware and Tools**

Hardware



- 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>



Firmware and Tools

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 **NEW**
- JTAG Master: Xilinx Virtual Cable server (Xilinx iMPACT and VIVADO s/w) **NEW**
- Version Information available via OpenOCD or by a command to the Shelf Manager **NEW**
- 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:

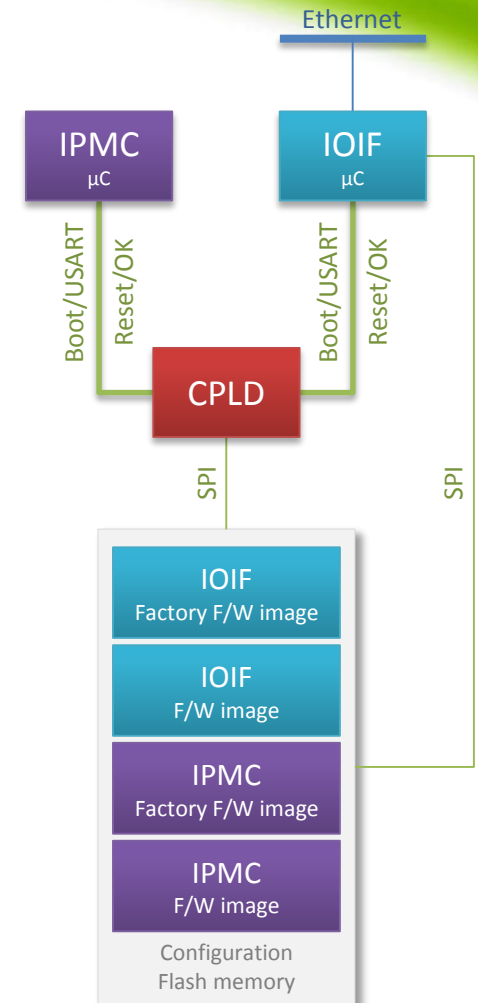
<http://lappwiki.in2p3.fr/twiki/bin/view/AtlasLapp/Informatique>

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

Missing features should be available in 2016.

Firmware upgrade

- 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.



FRU/SDR Generator

The main application window displays a tree view of FRU records. The selected record is 'Carrier_Site_Numbers' under 'Carrier_Information_Record'. A context menu is open over this record, showing options like 'Add child', 'Delete', 'Undo', 'Redo', 'Move Upward', and 'Move Downward'. The 'Add child' option is expanded, showing a list of potential child records: 'Internal_Use_Area', 'Chassis_Info_Area', 'Power_Supply_Information', and 'Module_Current_Requirements_Record'.

Name	Type	Value	Encoding
Board_Info_Area			
Language_Code	language	25, English	
Mfg_Date_Time	dateTime	2000-01-01T00:00:00	
Board_Manufacturer	string	CNRS/LAPP	Latin1
Board_Product_Name	string	IPMC-TEST	Latin1
Board_Serial_Number	string	LAPP-ATCA-TEST-2013-0000	Latin1
Board_Part_Number	string	CARRIER-TEST	Latin1
FRU_File_ID	string	fru_data.bin	Latin1
Product_Info_Area			
Board_P2P_Connectivity_Record			
Carrier_Activation_And_Current_Mgmy_Record			
Carrier_Information_Record			
PICMG_Record_ID	uint8_t	26	DEC
AMCO_Extension_Version			
minor_version	4 bits	0x2	HEX
major_version	4 bits	0	DEC
Carrier_Site_Numbers_Count	uint8_t	4	DEC
Carrier_Site_Numbers			

The Configuration dialog box shows the 'Files' tab. It includes a 'Plugin repository' field with the path 'F:\LAPP\ProjectFiles' and a 'Browse...' button. Below this, there are radio buttons for 'Bit fields endianness', with 'Little-endian' selected. A table lists installed plugins:

	Name	Version	Summary
1	<input checked="" type="checkbox"/> C Generator	0.0.0.1	C structure generator plugin
2	<input checked="" type="checkbox"/> PDF Genera...	0.0.0.1	This is a pdf generator plu...

Buttons for 'OK', 'Cancel', and 'Apply' are at the bottom.

Summary

- 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.