

Updates on the Compute Nodes
at
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in Alba Italy

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Compute Node xFP v3



- Incompatibility of xFP v2 with Compute Node carrier board made new xFP design necessary.
- Changes from xFP v2 → xFP v3:
 - Virtex-5 FX70T-1 → Virtex-5 FX70T-2
 - Platform flash 16Mb → 32Mb
- Two modules were produced for Gießen in February 2013

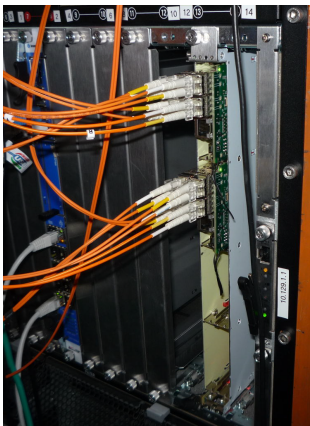
Testing of the xFP v3 Modules at IHEP

- RocketIO intercon. via carrier board:
 - 4.0 Gbps: Tested with no problems
 - 5.0 Gbps: Tested with bit errors.
- Reading & writing at 200 MHz DDR2_A/DDR2_B.
- Downloading from Platform Flash.
- Parallel reading & writing from flash.
- Testing the SFP+ with 6.25Gb/s.
- Testing the Gigabit Ethernet.

Testing of the xFP v3 Modules in Gießen

- Tested with Linux on the FPGA PowerPC:
 - Both DDR2_A & DDR2_B at full speed,
 - Gigabit Ethernet,
 - UART-to-USB converter and
 - Flash.
- The DDR2 DIMMS on both modules were tested with a long term memory-test.
- Automatic stand-alone programming:
 - Configuration bitstream is loaded into FPGA from PROM on power-up.
 - Linux kernel is loaded from the flash.

Optical links and RocketIO through the Carrier Board



- The optical links were tested at 6.25 Gbps using a bit-error test and an Aurora connection without problems.
- Connecting two AMC cards through the carrier board causes problems:
 - 3.125 Gbps: No problems
 - 6.25 Gbps: Bit error.
- Connecting two carrier boards via ATCA back plane causes problems.



- Tested one xFP channel of two card in a MicroTCA with 6.25 Gbps; without errors.

- The two xFP v3 cards in Gießen were tested successfully.
- Links through the carrier board cause problems.
- The carrier board will be redesigned.
- Version 4 of xFP and carrier board with Xilinx's Kintex 7 is in planning.