Ethernet Daughterboard

Status Report

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Daughter Board Specifications

• Specification Changes since last meeting:
  – Board size enlarged to 85x120mm
  – Power supply now 15V (<0.5A)
  – Trigger signal added

• We prefer if RJ-45 (Ethernet) jack on ATM has integrated transformer
  – Should result in lower system noise
Module Identification

- Each daughterboard must have a unique Ethernet MAC address
  - We propose to supply this using a “silicon serial number” chip (i.e. Dallas DS2401).
- Each ATM should “know” its location
  - Hut number, crate number, slot number
  - This could be set by switches, either on ATM or daughter board
    - hut number (1-4)
    - crate number (1-12)
    - slot number (1-10 or 1-20)?
Module Identification (2)

- **When DAQ is started:**
  - Each ATM (daughter board) requests I/P address using DHCP
  - When all I/P are assigned, event builder asks each ATM for some information:
    - Current firmware revision
    - Location (hut, slot, crate)
    - Any other information needed for the run

- **This way we can easily check for errors and ensure all ATM are working at start of a run.**
DB Prototype Features

- Spartan 3 FPGA (XC3S4000)
  - Production board can use smaller FPGA
- Flash memory
- DDR SDRAM memory
- Ethernet PHY
- Silicon serial number
- Voltage regulators (1.2V, 2.5V, 3.3V)
  - powered from 15V
- JTAG programming connector
DB Prototype Status

- Detailed design now underway
- Estimate PCB layout complete 2nd week of April
- Initial TCP/IP test software now being developed using Microblaze embedded processor
- Test board (simulates daughter board site on ATM) also being designed