CMS HCAL Data Concentrator
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- Up to 15 inputs; 20-66MHz x 16 bits channel link
- Requires TTC trigger (or some equivalent)
- Data can be read out over VME using 64 bit BLT (quite fast)
- Monitoring registers can also be read over VME at any time
CMS HCAL DCC Buffering

HTR 1
HTR 2
HTR 7 thru 15

128k x 32 FIFOs

SDRAM buffer
128 events x 15 inputs
(512x32 each)

PCI-1
PCI-2

Tag FIFOs

Event Builder

Monitor buffer
128 events

S-Link FIFO
256 x 64

S-Link currently runs at 32MHz
(256 mbyte/sec)

TTCrx

15 FIFOs
Header info for each event

L1A FIFO 624 evt
CMS DCC for DHCAL?

- **Hardware Issues:**
  - Input must be Channel Link compatible at 20-66MHz (fiber input would require some new hardware)
  - DCC memory holds 128 events as configured
    - Total 2MBytes for event builder output
    - *But* there is 256kBytes per input too
  - Some way to handle trigger input is added plus TTC clock (can probably be 10MHz... need to check)
  - Many counter registers available via VME for synchronization checks, etc

- **Firmware issues:**
  - Max event fragment per input is current 1 kByte
  - Data format must comply with CMS sufficiently
  - Some customization probably needed
CMS DCC for DHCAL?

• **Software issues:**
  - Initialization software is complex (PCI buses!)
    Would have to be ported from CMS HAL environment
  - Once initialized, operation is simple

• **Biggest issue is availability of hardware... these boards are in short supply and use hard-to-obtain parts. If we only need 2-3 boards probably we can borrow them.**