The NSCL Readout System

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Project Goals

- Use Commercial Off the Shelf Hardware
- Readout Data Using ‘Normal’ operating system
- Do all Readout With User Level Code
- Low Event Response Latencies
Technology

- Commodity Dual Processor PC.
- Bus Bridge PCI $\leftrightarrow$ VME.
- Linux Operating System.
  - C++
Hardware

- Linux Server e.g. Dell PowerEdge 1550
- Bit 3 6xx PCI to VME bus bridge
  - Supports mmap(2) access to VME address segments.
  - Dma transfers at 35Mb/sec.
Software

- All Software User Mode C++
- Embedded Tcl/Tk Interpreters.
- Readout mmap s to get to VME, can block read to turn on DMA transfers.
Interrupt latencies are 50\(\mu s\) (depending on CPU).

Poll for events:

- Burns a CPU but:
  - This system is a ‘microwave’ not a general purpose system.
  - You’ve got 2 cpus.
- Latencies go like the VME access time (less than 10 \(\mu s\)).
Scaling: Distributed Event Building (in development).

- Common Trigger mode.
- Time-Stamped free trigger mode.
- Assembly in Block-Mode.
Other hardware:

- SIS 3100/1100 bus bridge.
- Wiener PCIVME
- Wiener CC16 with either
  - VME interface
  - CAMAC interface