

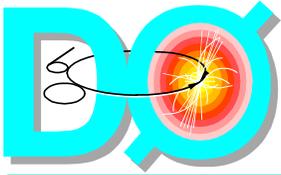
# DØ Status and Operations

## March 25 – April 1, 2002

- **Notable “features” of the last week**
  - ◆ Upgraded L3/DAQ system
  - ◆ Few Master Clock glitches
  - ◆ Possible water leak in SMT
  - ◆ Reduced losses during shot setup (but higher halo rates?)
- **Reasonably smooth operations otherwise**

Stores	Delivered Integrated Luminosity	Utilized Luminosity	Live Luminosity	Live fraction	Rate to tape
9	1.72 pb <sup>-1</sup>	1.46 pb <sup>-1</sup>	0.79 pb <sup>-1</sup>	58.7%	15.7 Hz



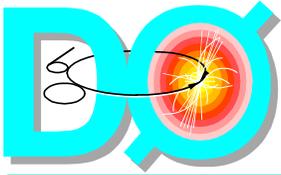


# SMT Status

- SMT

- ◆ Detector has been running fine and with good performance over last few weeks
- ◆ Trips on water drip detection on the SE Interface Boards power supplies
  - ▲ Fri (1), Sat (3), Sun (7), Mon (1)
  - ▲ No trips since this morning, 6am...
- ◆ In the cathedral area under the calorimeter cryostats and inside the muon iron
- ◆ Investigation during access today found water dripping off glycol cooling pipe junction box, probably due to a vacuum jacket that was not holding vacuum
  - ▲ Suspect this may be an unrelated problem...
- ◆ Have been adding about 1 gallon of DCW/day for last ~2 weeks
- ◆ Will watch the situation over the next few days before making any decisions
  - ▲ Technical crews at DØ are rather light this week due to vacations

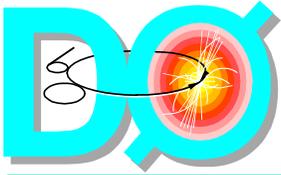




# CFT Status

- CFT
  - ◆ 131 of 198 AFE boards installed
    - ▲ 113 of these have revised temp and bias control circuits
    - ▲ 166 AFE boards necessary to fully instrument the CFT+CPS.
  - ◆ 100% CFT axial instrumented
  - ◆ 100% CPS axial instrumented
  - ◆ 61% CFT stereo instrumented
  - ◆ 45% CPS stereo instrumented
  - ◆ 0% FPS instrumented
  - ◆ Continue to study the behavior to optimize performance and improve reliability





# Calorimeter & Muon Status

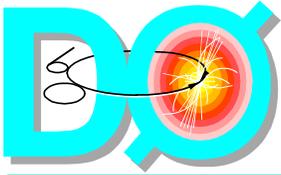
- **Calorimeter**

- ◆ Running very smoothly
- ◆ Work ongoing to understand small non-linearities in the charge to energy conversion for small signals
- ◆ May necessitate changing a few components on BLS boards

- **Muon**

- ◆ Detectors are running very smoothly
- ◆ Work on understanding and resolving readout issues ongoing:
  - ▲ Approximately 15% of the DØ dead-time from various flavors of muon readout problems
  - ▲ Some issues with the PDT front-end readout code. Expect resolution soon – gain 5-8%
  - ▲ New Muon Fanout Card being tested. Final install 4-6 weeks
  - ▲ Some unresolved issues with triggering and clock problems





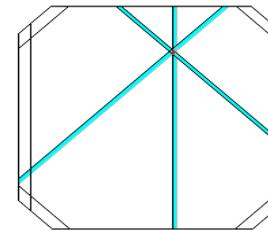
# FPD Status

- **FPD**

- ◆ Taking elastic data and commissioning
- ◆ Pots are inserted almost every store
- ◆ Stand-alone DAQ - working on integration into the DØ DAQ by summer
- ◆ Collimation studies have helped a bit with losses at the pots
- ◆ Rates are still very high and were even higher than normal this last weekend
- ◆ Timing studies planned with single coalesced proton bunch

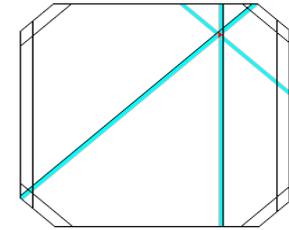
Scintillating fiber detectors in Roman pots near beam used to tag protons and anti-protons

beam



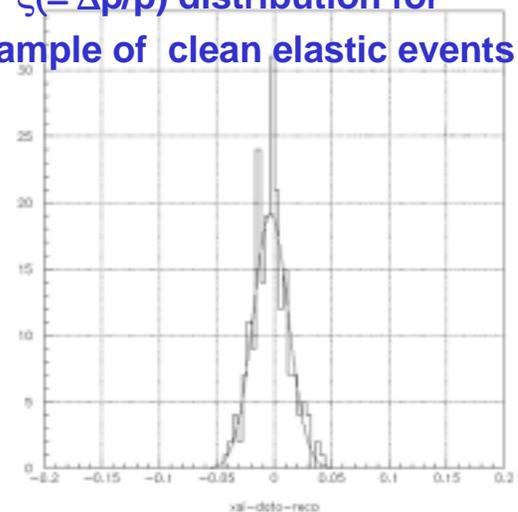
**Proton Detector 1**

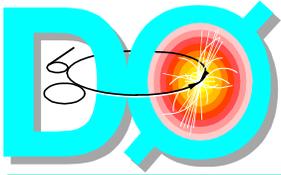
beam



**Proton Detector 2**

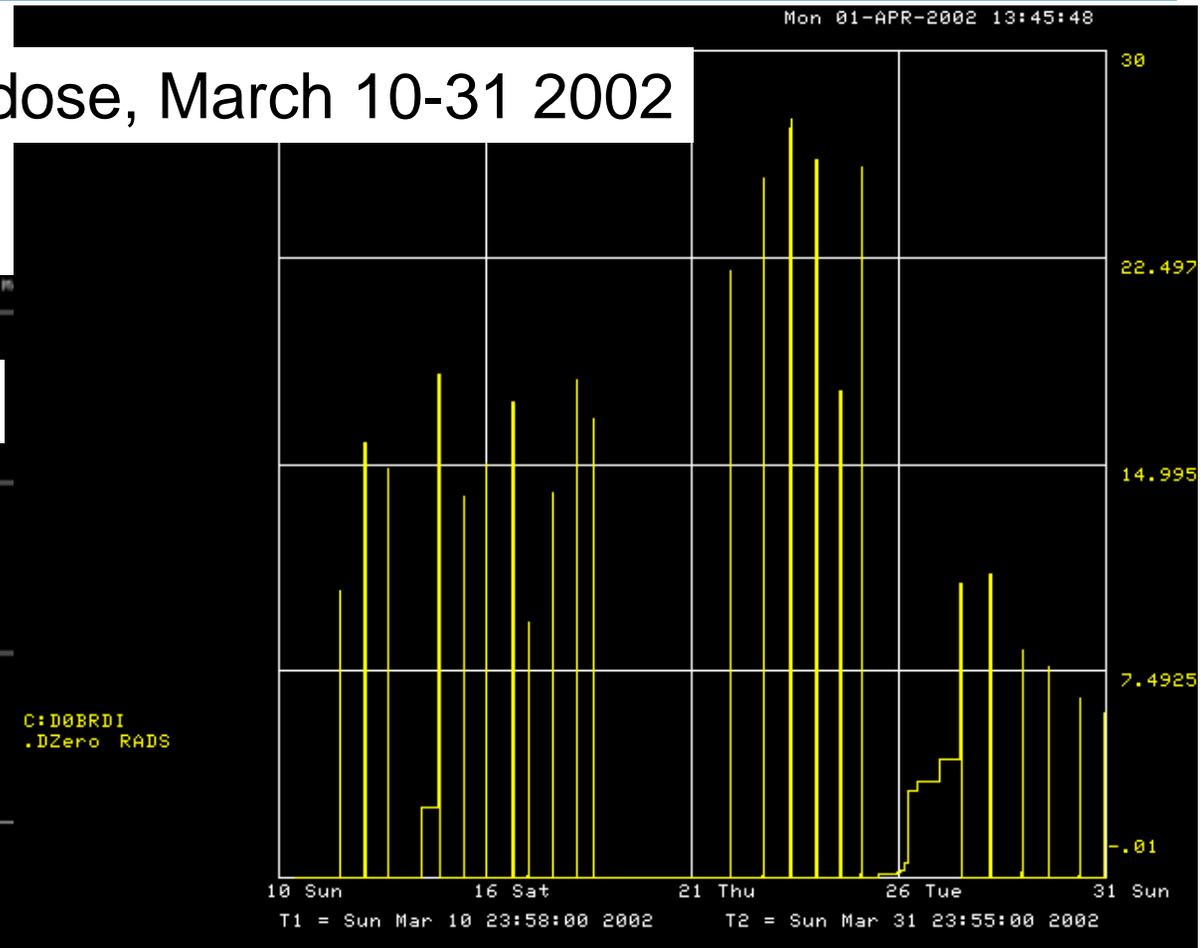
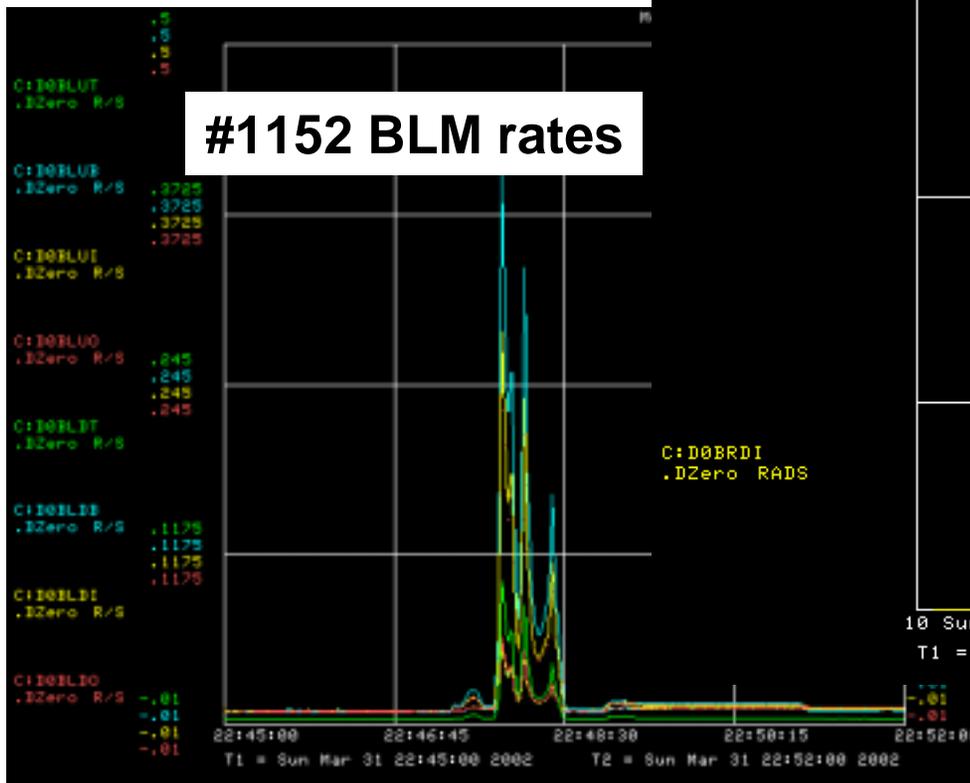
$\xi (= \Delta p/p)$  distribution for a sample of clean elastic events





# Integrated BLM Doses

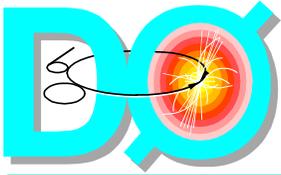
Shot Setup Integrated dose, March 10-31 2002



Leslie Groer  
Columbia University

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DØ Status

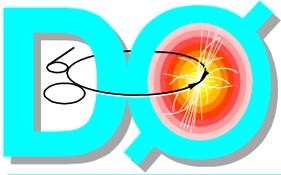
FNAL All Experimenters Meeting  
April 1, 2002



# DAQ Improvements

- **Master Clock “glitches”**
  - ◆ Culprit sighted but not apprehended yet...
  - ◆ VMETRO card caught write cycles that wipe out the dynamic time lines
- **Studies of multi-buffering capability in all subsystems ongoing**
  - ◆ VRBC – Trigger and Tracking crates
  - ◆ Calorimeter readout
  - ◆ Muon readout
- **Needed for operation at  $>$  few hundred Hz and to reduce latency dead-time in L2 trigger**
  - ◆ Expect a few more weeks to resolve all issues
- **Successful L2 trigger tests issuing Accepts and Rejects last week**

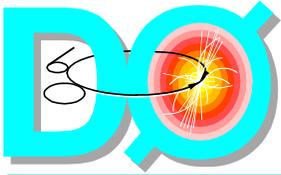




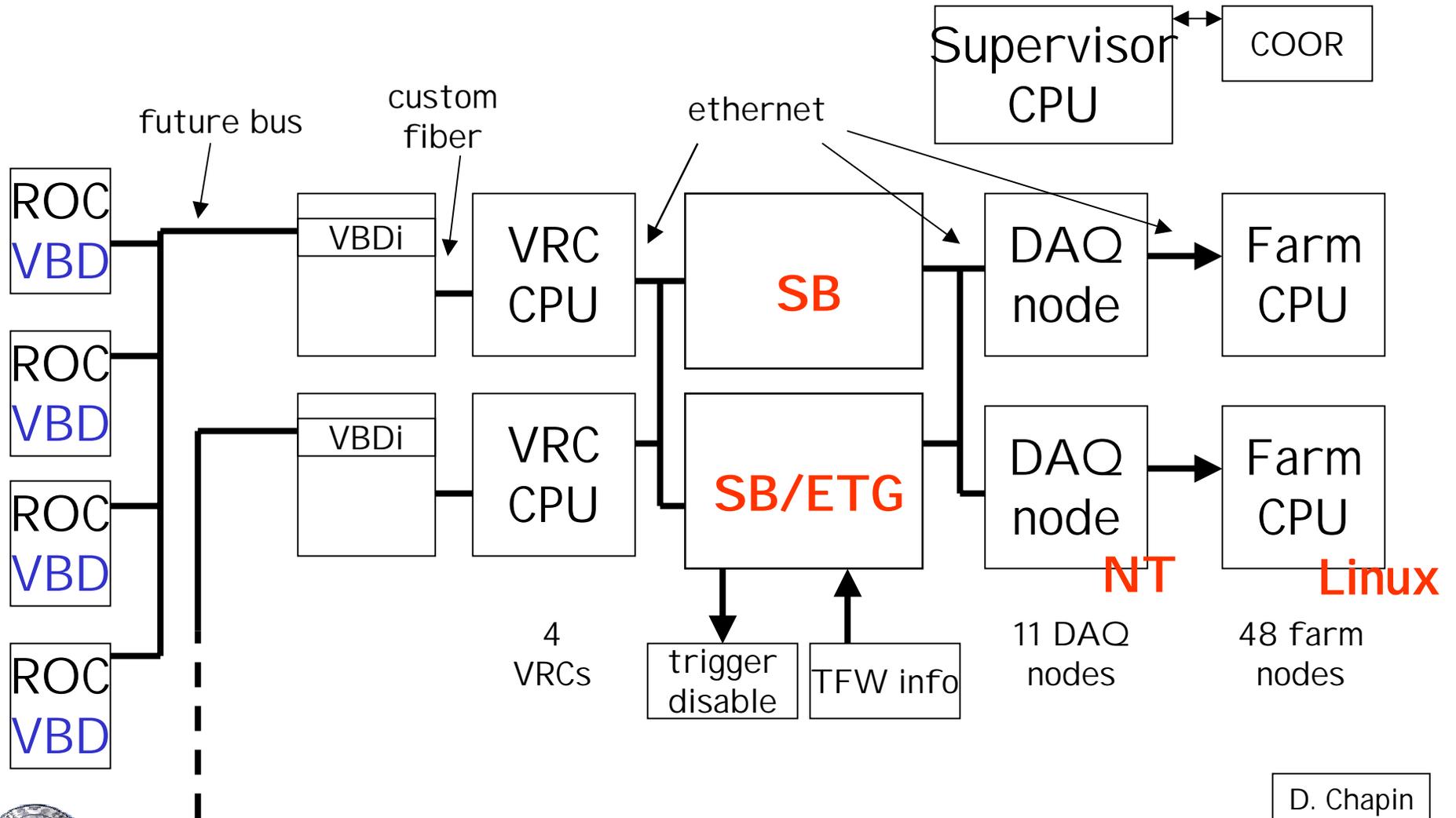
# Replaced L3/DAQ System

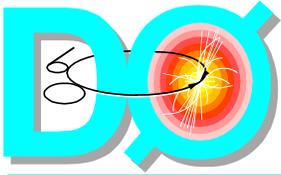
- **L3 “Commodity” DAQ**
  - ◆ Replace all VME Buffer Driver boards (VBD) by SBCs and send data over fast ethernet switches
- **SBC (Single Board Computer)**
  - ◆ Intel ~1GHz, VME, dual 100Mb ethernet, 64MB flash for storage, running Linux OS
- **Routing of data blocks performed by specialized SBC which talks to the Trigger Framework – the Routing Master (RM)**
- **Event building and trigger decisions performed by Linux farm nodes**
  - ◆ Old system used NT DAQ nodes for event building with Linux farms for filtering



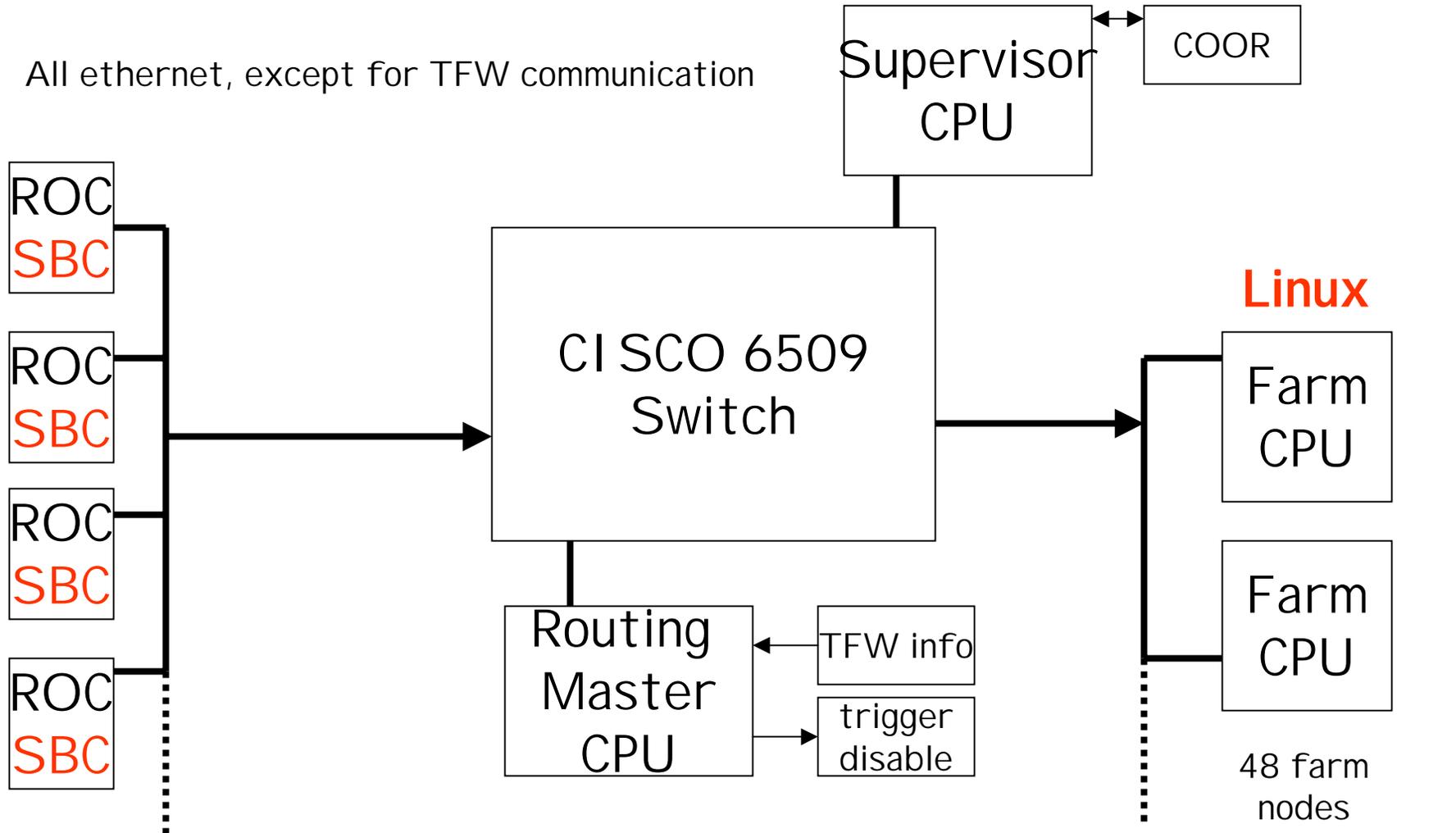


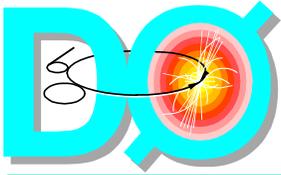
# The Past System



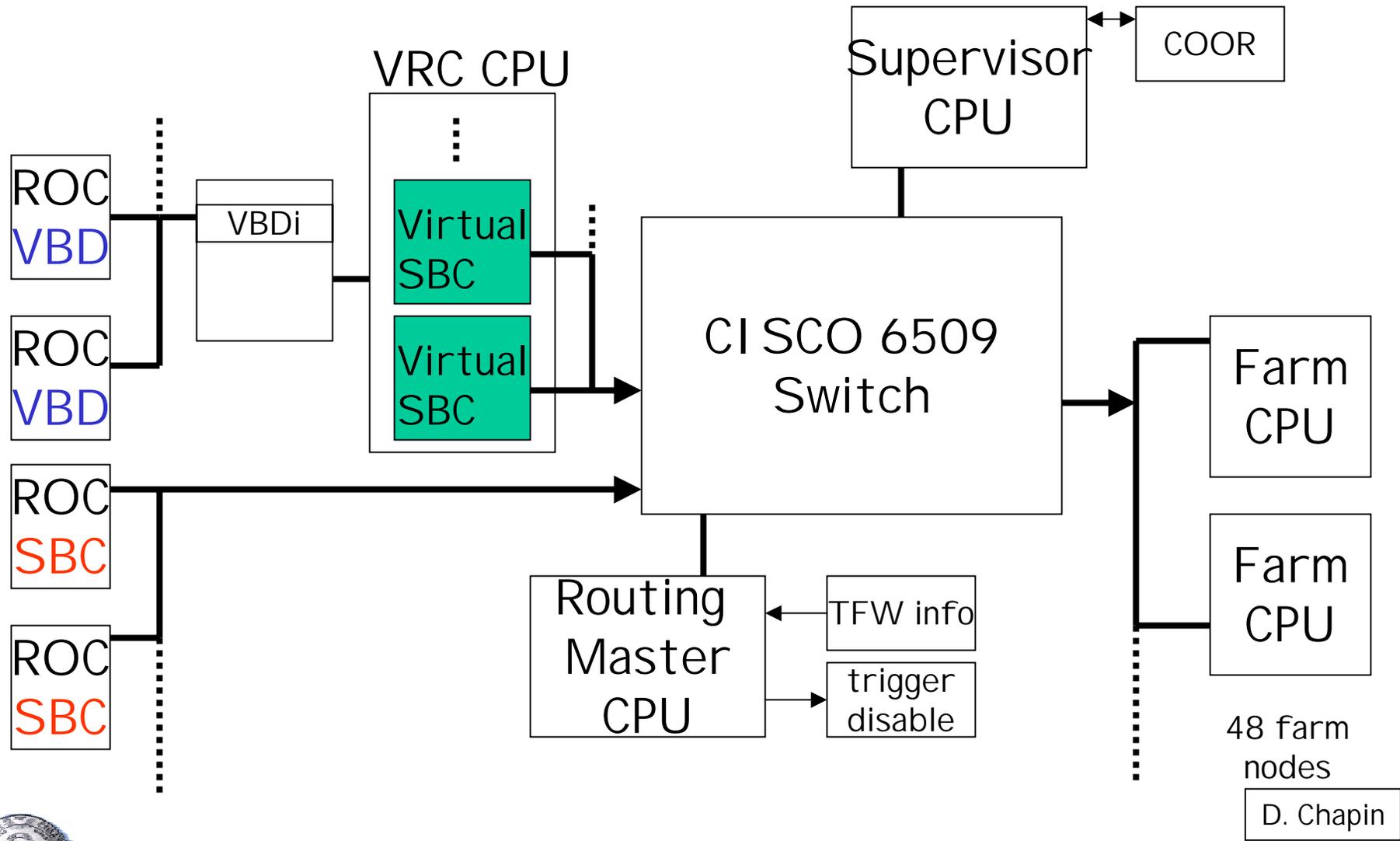


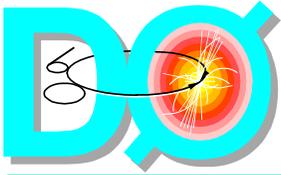
# The Future System





# The Transition System





# L3/cDAQ continued

- All essential components have been ordered
  - ◆ All switches delivered and installed
  - ◆ 58/72 SBC's delivered
  - ◆ 17/77 Digital I/O boards delivered
- Expect to start installing SBCs in 2-3 weeks
  - ◆ 5 installed now for testing and real operations
- Software conversion was made on 3/26
  - ◆ Fine tuning and improvements in monitoring and operations
- Waiting on purchase of additional farm nodes until dual P4 machines and maybe blades for the switch are available (late Spring-Summer)
- Work on Trigger Crate for RM to have 128 disable lines to the TFW continuing (have 32 now)

