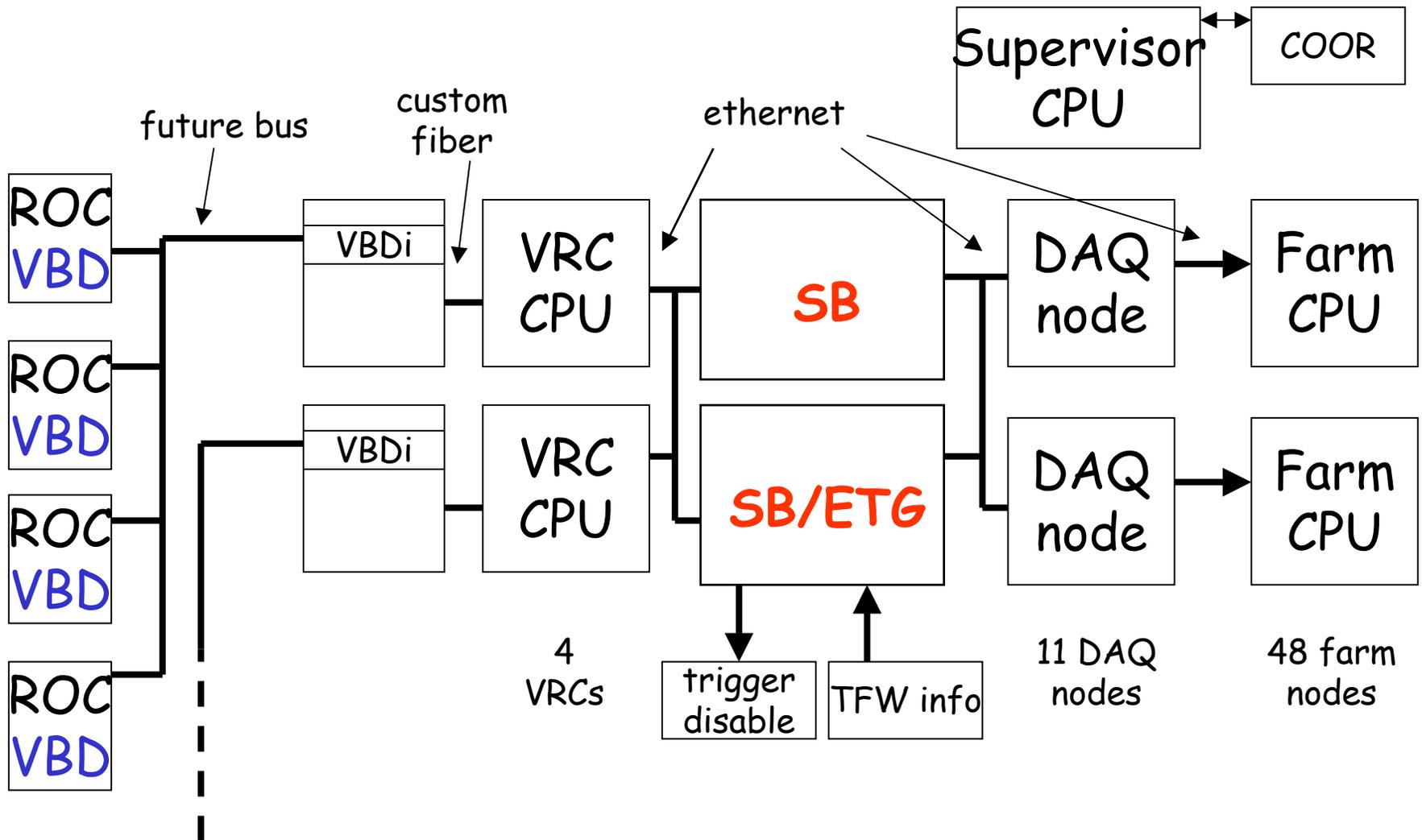


L3 DAQ

the past, the present, and your future

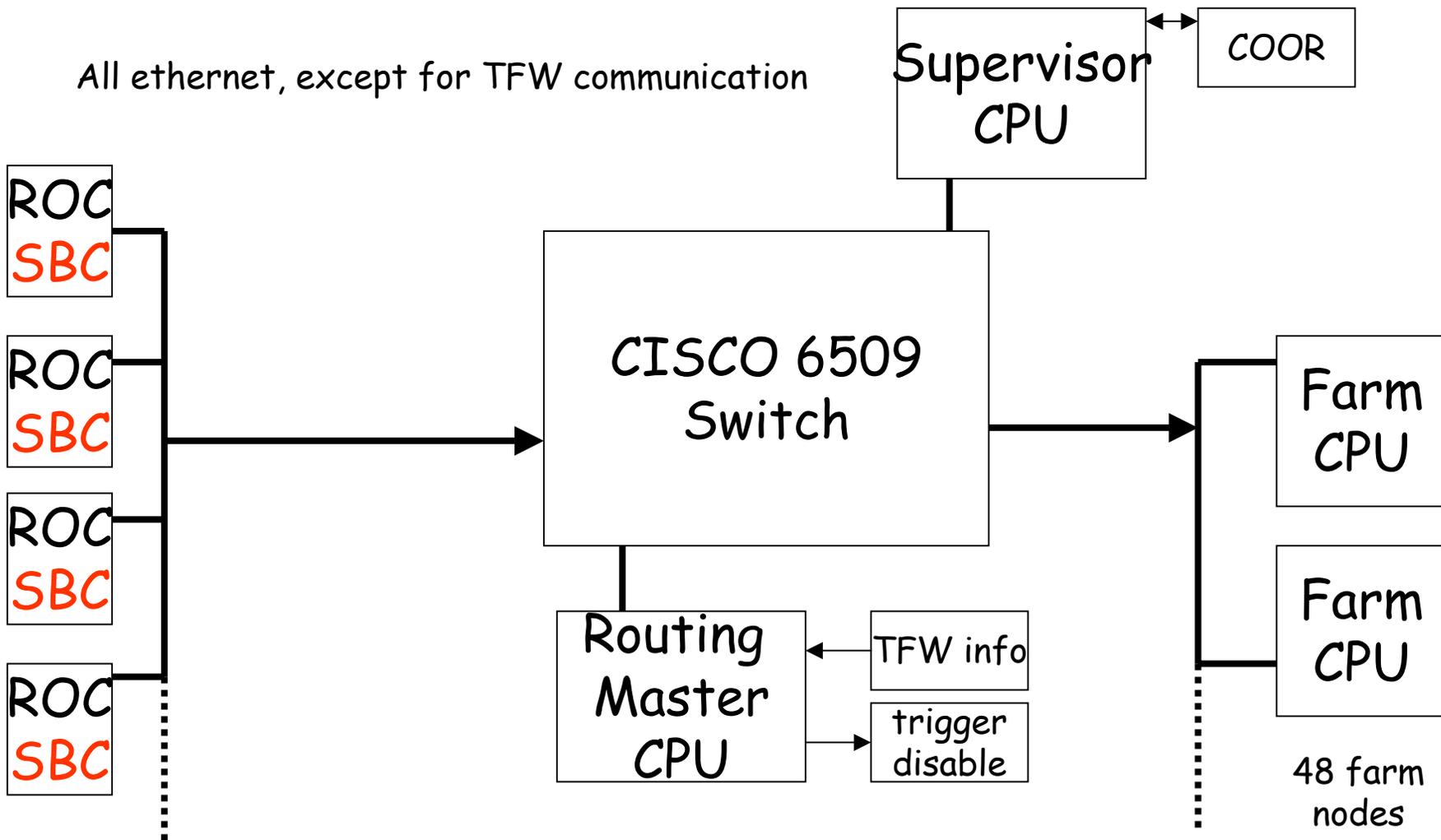
Doug Chapin
for the L3DAQ group

The (soon to be) Past System



The Future System

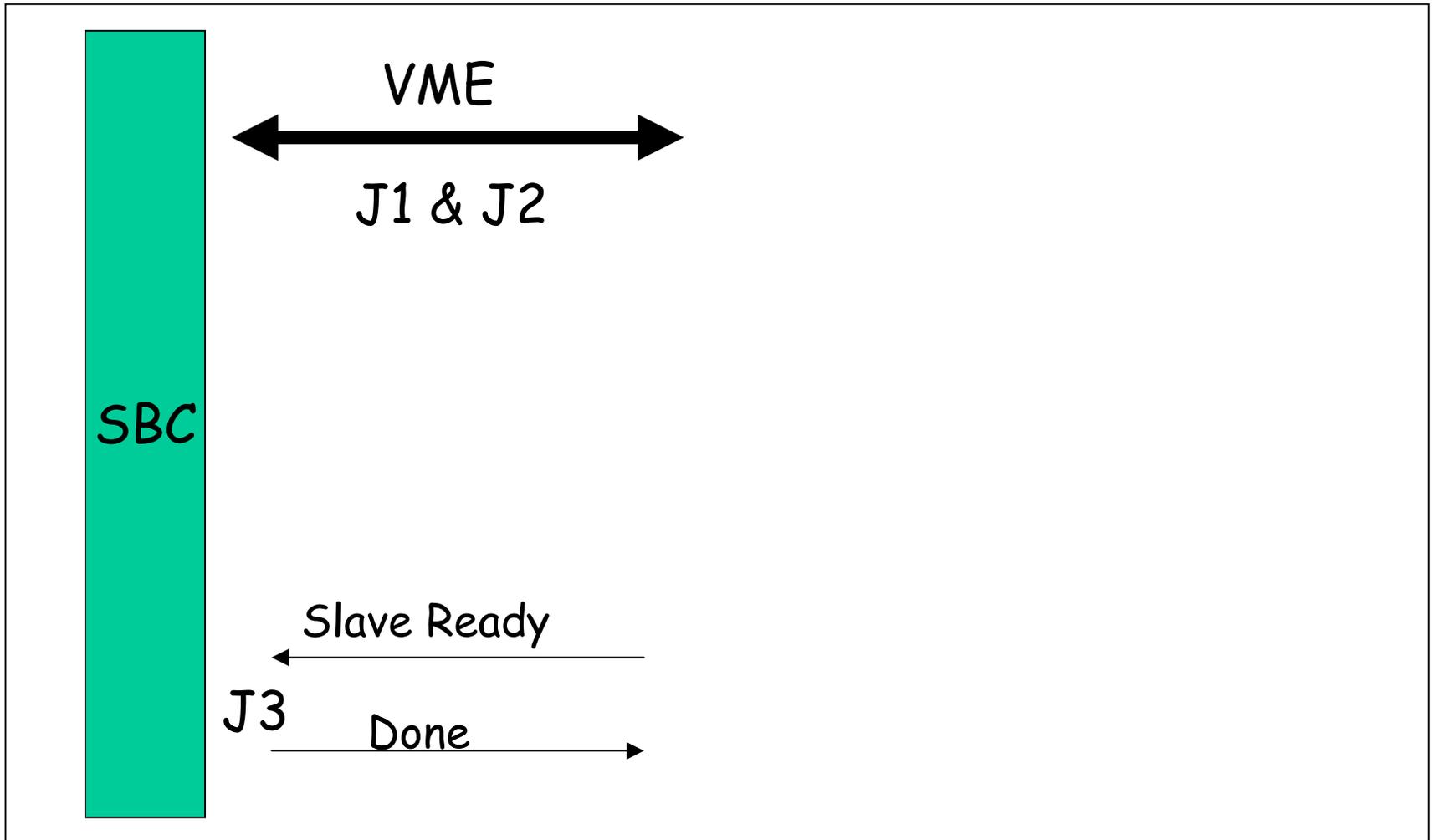
All ethernet, except for TFW communication



SBCs

- SBC (Single Board Computer)
 - Intel ~1GHz, VME, dual 100Mb ethernet, 64MB flash for storage
- "Dumb" Operation
 - No communication with supervisor
 - All farm nodes connect to each SBC
 - Receive routing information from RM
 - Pull event fragment over VME
 - place in memory buffer
 - send to appropriate node when routing info arrives

A ReadOutCrate with SBC



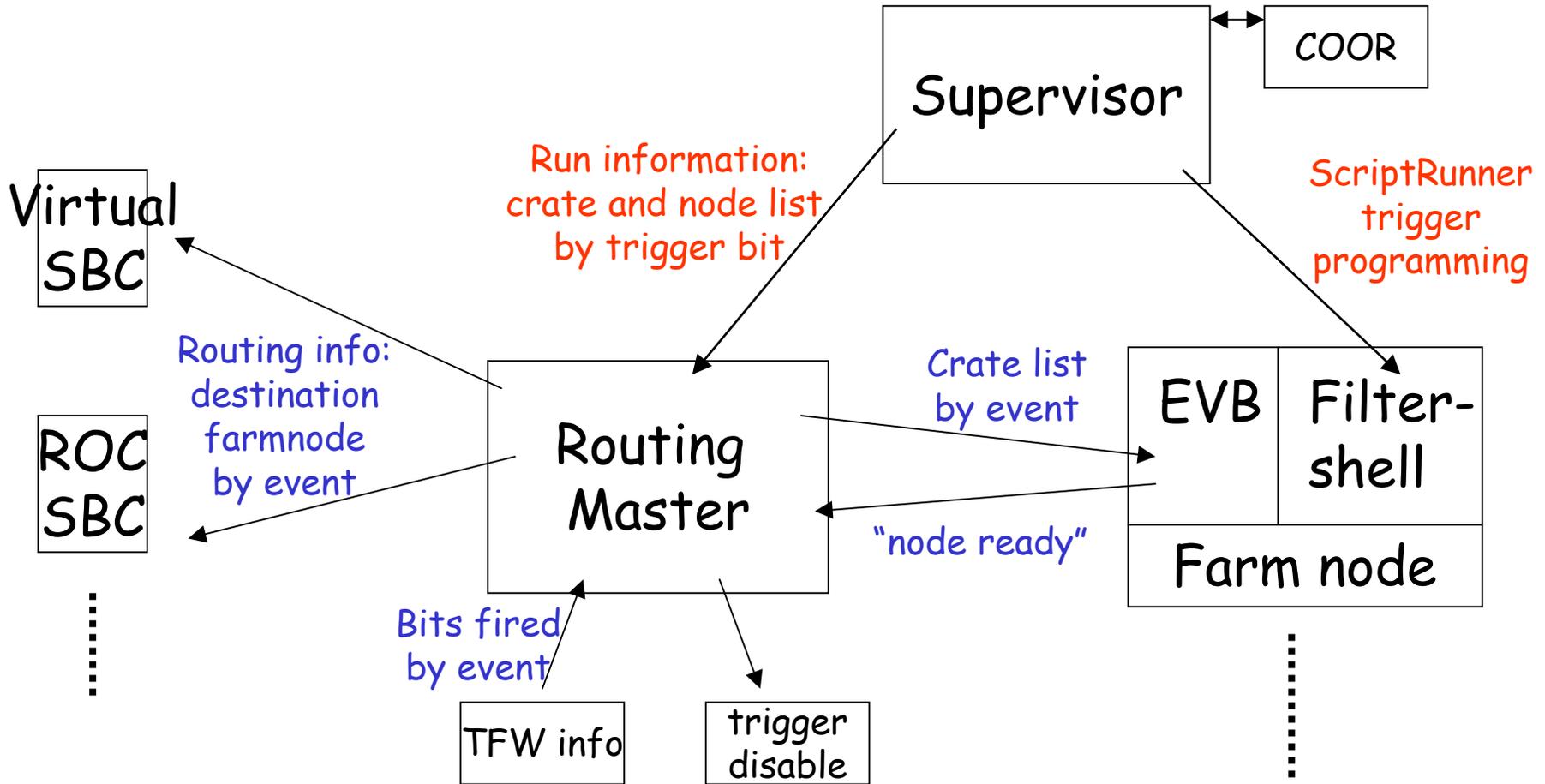
Farm Nodes

- Runs EVB/IO and Filtershell processes
- Filtershell
 - This is ScriptRunner (L3 filters)
 - Receives trigger programming info from supervisor
 - Receives full event from EVB process
- Event Builder (EVB) Operation
 - Each farm node connects to all SBCs
 - Receive crate list by event# from RM
 - Sends no. of free buffers to RM ("node ready")
 - Builds full event from received fragments
 - No communication with supervisor

Routing Master (RM)

- Receives "run" information from supervisor
 - Farm node list and crate list per bit
- Gets bit fired by event# from TFW
- Receives no. of free buffers from each farm node
- Decides which nodes receive which events
- Sends routing info by event# to SBCs
- Sends crate list by event# to farm nodes
- Disables triggers when necessary

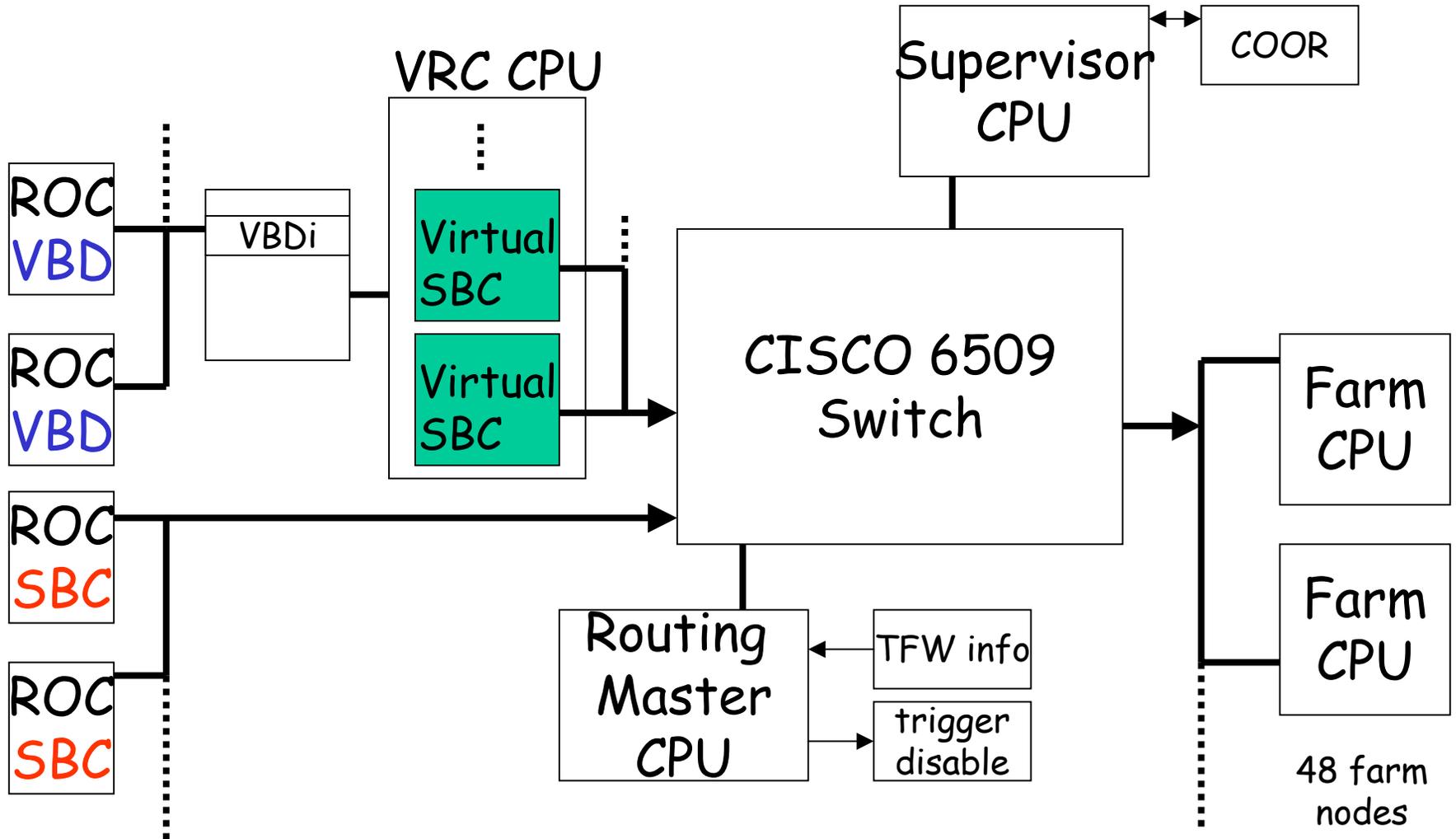
Communication Flow



Before the Future Begins

- Issues
 - SBC delivery/installation will be steady but slow
 - Several months
 - RM, SBC, EVB, and Supervisor software need real DAQshifter-level abuse
- Solution
 - Transitional SBC + VRC system

The Transition System



Transition System Status

- Super, RM, EVB, SBC all tested
 - They even work
- Use of the system is imminent
- Minor Issues / Big Changes
 - New monitoring
 - Control ("Reset L3")
 - Trigger Disable!!!
 - Experts

L3 Trigger Crate

- TFW provides (ECL lines)
 - Output from L3DAQ
 - 128 "disable" lines, one for each trigger bit
 - Can now only disable 32 bits for lack of hardware!!!
 - Input to L3DAQ
 - 16 bit L3 transfer number (event number)
 - 128 bit "L1/L2 AND terms" (which bits fired)
- Under development
 - "L3 Trigger Crate" to house the RM and receive/control TFW ECL lines
 - May take several months to complete

L3 Disable: Interim Solution

- Put RM on the TFW readout crate SBC
- Spy on the TFW data block
 - Extract L1 fired bits and L3 transfer number
- When L3-disable is needed
 - RM tells SBC to stop reading out the TFW crate
 - TFW crate goes front-end-busy and stops triggers
 - Acts as global disable
 - Sets a flag in the RM monitoring information
- Cons
 - The actual L3 Disable line is not used
 - Shifter must check L3DAQ monitoring every time TFW crate is 100% front-end-busy
 - All L2 decisions are ignored!

Control

- COOR \leftrightarrow Supervisor communication unchanged
- Reseting L3 will be uncentralized
 - Farm node processes
 - online script "l3xreset"?
 - SBC and RM processes
 - online script "l3xdaq_reset"?
 - Supervisor and VRCs (virtual SBCs)
 - via the familiar "Farm Control" webpage

L3 DAQ Experts

- New expert contact list for L3DAQ
- Our expertise does not overlap yet
- At first
 - Andy (RM, SBC software)
 - Doug (VRCs, SBC hardware)
 - Ron (SBC hardware)
 - Gustaaf (EVB, Filtershell)
- Others will join
 - Reiner? Martijn? Gordon (Supervisor)?

Monitoring

- All processes (SBC, RM, super, EVB) produce monitoring info
 - EVB and Filtershell use separate monitor server
- Two new monitor clients
 - jMon will be deprecated
 - l3xmon
 - EVB and Filtershell info
 - üMon is the client of the future
 - SBC, RM, and Supervisor info currently
 - EVB info (missing crates!) added in future
 - Send comments to sean@fnal.gov

Summary

- Transition system in place very soon
- Bad news:
 - New problems, new monitoring, new experts, new instructions
- Good news:
 - Known VRC problems still around
 - Additional fun, excitement, and adventure
- Stay tuned to
 - d0daqshifters mailing list
 - <http://d0onlinelx.fnal.gov/www/groups/l3daq/default.html>