MINOS DocDB XXX

List of Action Items for the 2012 NOvA Shutdown

DRAFT 1

Benton Pahlka

Fermi National Accelerator Lab

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Abstract

This document describes the action items and a schedule for completion.

Contents

1 Introduction

1.1 Computing Infrastructure

- Replace all control room computers (if not already done) The present systems are years out of warranty, and difficult to maintain.
- Get badge based lock installed on Control Room for use during the shutdown.
- Replace all DAQ computers.
- Retire remaining use of AFS in the Control Room (minos-om, event display)
- Update all control room software to be based on current releases. Upgrade CR computers to SLF6 before MINOS+ data taking.
- Restructure software installation so that all Control Room systems are equivalent, for redundancy and reduced maintenance cost.
- Isolate control room computer power from surrounding rooms.
- Update data archivers to use gridFTP or NFS 4.1 copies.
- I would like a new machine to be dcsdcp. The one we have is very old.
- Same with the DCS windows box in the control room. Even a scrap one decommissioned by CD for the crim eof being three years old is better than the 8+ years old the current ones are. I suspect minos-gateway isn't much better.

1.2 General Underground Maintenance

1.3 Above Ground Surface Building

- Decommission or fix beige PMT rack/Gary's minder cabinet

1.4 Near Detector Maintenance

- UPS batteries.
- rack air filters.

- vacuum dust out of racks
- test smoke det heads with canned smoke.
- backflush LCW HX really darn good, with cleaning agent and injected bubbles.

1.5 Near Detector DAQ

- The DAQ computers themselves probably need going over bigtime. The DAQ group always did this in the past.

Items to do for Minos DAQ upgrade, not necessarily in order

1.5.1 Test Stand

- Find physical home for test stand and move old CDF L3 PCs and two Minos test crates
    1. Connect PCs to general network; connect MVME5500s to private net
    2. Contact sysadmins: request SLF6 installed on old PCs with centrally supported home areas
    3. Configure mini-network for MVME and "n" PCs at test stand
- Try to build online software on PCs
- Set up local SVN repository for online code (or recommended repos)
- Build Ethernet-only software for new RIO3
    1. Eliminate PVIC dependencies
    2. Intermediate step in process to converting to MVME5500
- Build Minos style VxWorks kernel for MVME5500
    1. Investigate using latest VxWorks version 6.? (latest is 6.9)
    2. Build "PVIC free" version of online DAQ software
- Test data flow from MVME5500 to test PCs, as far as is reasonable
    1. Compile with ethernet options

2. Extract worker to master PVIC communication
3. Remove distinction between master/worker
4. Configuration options to distinguish between data gigE port and control port

- Re-implement Branch receiver as single process on one CPU

1. Have 8-to-1 private switch for data flow
2. Compile Branch receiver with ethernet options
3. Modify configuration scheme (should be simpler, more convenient)
4. Downstream may require some minor mods

1.5.2 Main System

- Get approval for installation of two new relay racks adjacent to existing online racks:

1. Electrical – estimate power needs and have additional circuits enabled to location; consult with electricians
2. Cooling – consult with rack cooling experts as to best method to keep them cool and clean (Who?)
3. Wiring – draw diagram showing new cables needed: Three new cables for each MVME5500 (gigE for data flow; slow ethernet for monitoring and control; serial cable for console); plus network for new PCs
4. Supvervise installation

- Spec out new PCs for system:

1. Write down memory and CPU needs, consult with CD on purchase
2. How many? including spare
3. Network boxes needed – data and control
4. Central disk services desired (login and development areas) while considering need to be able to run stand-alone (network isolated)

- Install MVME5500s in situ and in parallel with existing system, during shutdown
    1. Spare 6U slot in left hand side of crate
    2. Ensure legacy (old) system still functions
- In situ software development during shutdown, especially on items not possible with the test stand
    1. Take data!

1.6 Magnet Power Supply

- I think there should be a complete inspection of the power supply, reversing switch, and magnet of the ND during the down time, estimated time to do this if no repairs are necessary is 1.5 man-days. The issue with the interlock wiring in the power supply that drops out when there is no possible faults should be worked on, estimate 1 man-day. The Far Detector magnets and power supplies should also be inspected, I did go through the inspection procedure with Jerry Meier the last time I did it at the Far Detector. This work is the standard preventive maintenance that should be do to improve reliable operation. The remote reset of the power supply through the Camac system need to be checked out to determine why remote reset is not working. I will need someone at a remote console and depending on what I find we my need someone from AD controls. Estimate 4 hours.
- Also there are some power measurements I would like to do on the ND power supply at some point in time. The NOvA shutdown may not be the right time to do this testing. I need about one hour to hook up the instrumentation with AC off on the power supply, then run the power supply at its nominal operating current for one day and then power down to remove the instrumentation. The purpose of this test is to understand the phase relationship of AC current to voltage and if adding power factor correction on the power supply would boost the AC line at the power supply enough to be able to tap the power supply primaries down to 50%. Tapping down would reduce the heat load on the cooling system, reduce the ripple on the output of the power supply, increase the longevity of the power supply, and save power.

1.7 Spare Parts List