SBND T-1053 DAQ Meeting

Status and Thoughts on SBND Test Stand area at DAB

William Badgett
Fermilab
Neutrino Division

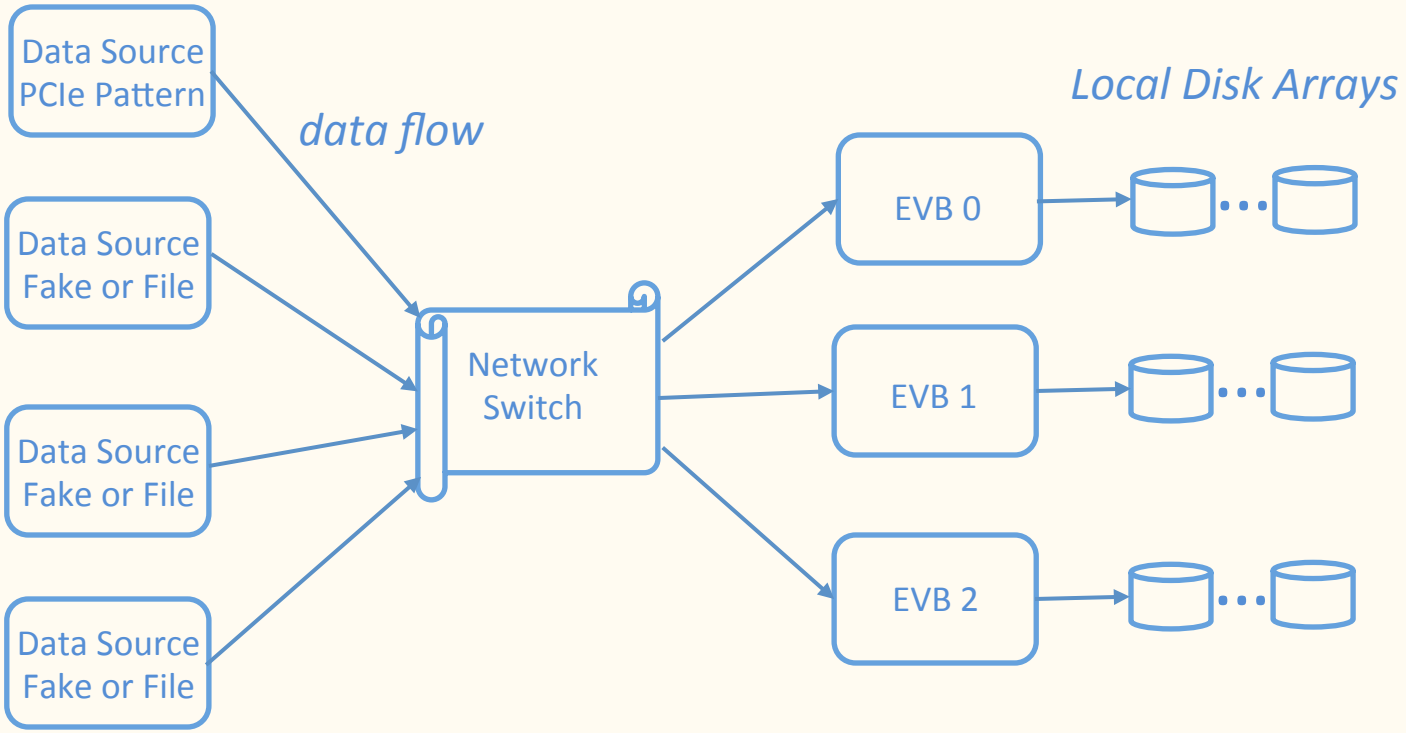
DAB Test Stand Room

- Room 313 at DAB, “The Annex”
  - Major cleanup over last few weeks
  - Electrical refurb soon, more outlets including 208V 3ϕ
  - Available for use for Neutrino experiments
- Need to know details of vertical slice chimney test
  - Space and power
  - Whether we have cryogens, liquid nitrogen or argon for the baby TPC
  - Safety reviews take time, need planning

SBND DAQ Test Stand Cluster

- Have recovered existing Dell and Koi servers from FCC
  - Eight dedicated to SBND DAQ sbnd-daq20 … daq27
  - Powered, registered, have
  - Also have disk array servers, no plans yet
- Housed at DAB floor 2 computing room 210 – northern most room
  - Servers quite noisy, try to avoid Annex
  - Can run fibers from Annex to D0/2/210 if needed
- Idea: have a multi-computer cluster up and running quickly
  - Start software development testing, especially new ArtDaq event building schemes
  - With 1 Gb ethernet, cannot do realistic through-put tests
  - Do have one Nevis Phenix PCIe to be installed here
- Future: buy modern 10 Gb prototype DAQ servers later 2016

ArtDaq EVB Testing at DAQB



Initial work to concentrate on event distribution and building logic rather than through-put rate and latency measurements

Thoughts WinDriver

- Used by µBooNE to communicate to Nevis Phenix PCIe card
- Commercial product, ~ $7 to 8k for three seat development license
  - License permanent; non trivial support significant extra $
  - Production use does not require additional cost
- Idea: Develop in-house driver instead
  - Rechenmacher*, Badgett experience writing PCIe drivers
  - Pros: open source; complete control; optimize for our application; knowing details helps debugging
  - Cons: Extra labor cost; WinDriver may be good enough – any problems at µBooNE ?

* expressed interest in possibility

Thoughts on Disk Through-put

- µBooNE limitations are disk writing speed
  - They are looking for simple hardware solution I believe
- SBND provisional plan is to implement ≥ 2 event builders and/or archivers
- Final systems generally have less through-put than you originally estimated, shown time and time again
- I argue this means we should also optimize through-put in the hardware prior to making major purchases of computing
  - SSD vs. HDD – SSDs have made significant advances in reliability for a modest additional cost
  - Either solution, find optimal hardware to write to arrays – tricky issue with controllers, driver arrays and device drivers
- Rennie and his group have expressed strong interest in researching and advising on this issue