Stanford Linear Accelerator Center

EPICS Collaboration Report

What We Did

- Stephanie = 120 Hz acquisition in NLCTA
- Hamid – Synchronized IOC acquisition
- Me – Aida middleware, Oracle Archiving and SNL extensions.

Some Status Summaries

- SLS controls very successful
  - Delivered ahead of schedule
  - Minimal (no?) in-house hardware
  - Steal software
- BESSY III
  - They're doing a SASE FEL too. 2.5 GeV
  - Also need a fast MPS
- SNS
  - Finished in 2005
  - Large array support
  - Long PV names > 1 year away
  - Variable string size > 1 year away
  - Multipriority Channel Access

We plan a system fully integrated under EPICS, including…

- Accelerator Systems
  - » Front End, Linac, Compressor Ring, Beamlines
  - » ~ 50,000 channels, 160 IOCs
  - » Front End already running under EPICS (at Berkeley)
- Target System
  - » Large and complex liquid Mercury Target
  - » 1000 channels, 6 PLCs
  - » Test facility already running prototypical EPICS system
- Conventional Facilities
  - » 2500 channels, 10 PLCs, 150 screens
  - » To be done in EPICS by Sverdrup in Tullahoma
  - » Training in June

Some things we have agreed upon…

- Site-wide Device and Signal Naming Convention
- ControlLogix PLCs (Allen-Bradley)
  - » ControlNet over EtherNet Driver
- Standard Cabinets
- PowerPC IOCs (MVME 2100)
- VME64x (Contract awarded)
  - » Including Utility Board
- Linux Environment where appropriate
- Oracle

Relational Databases

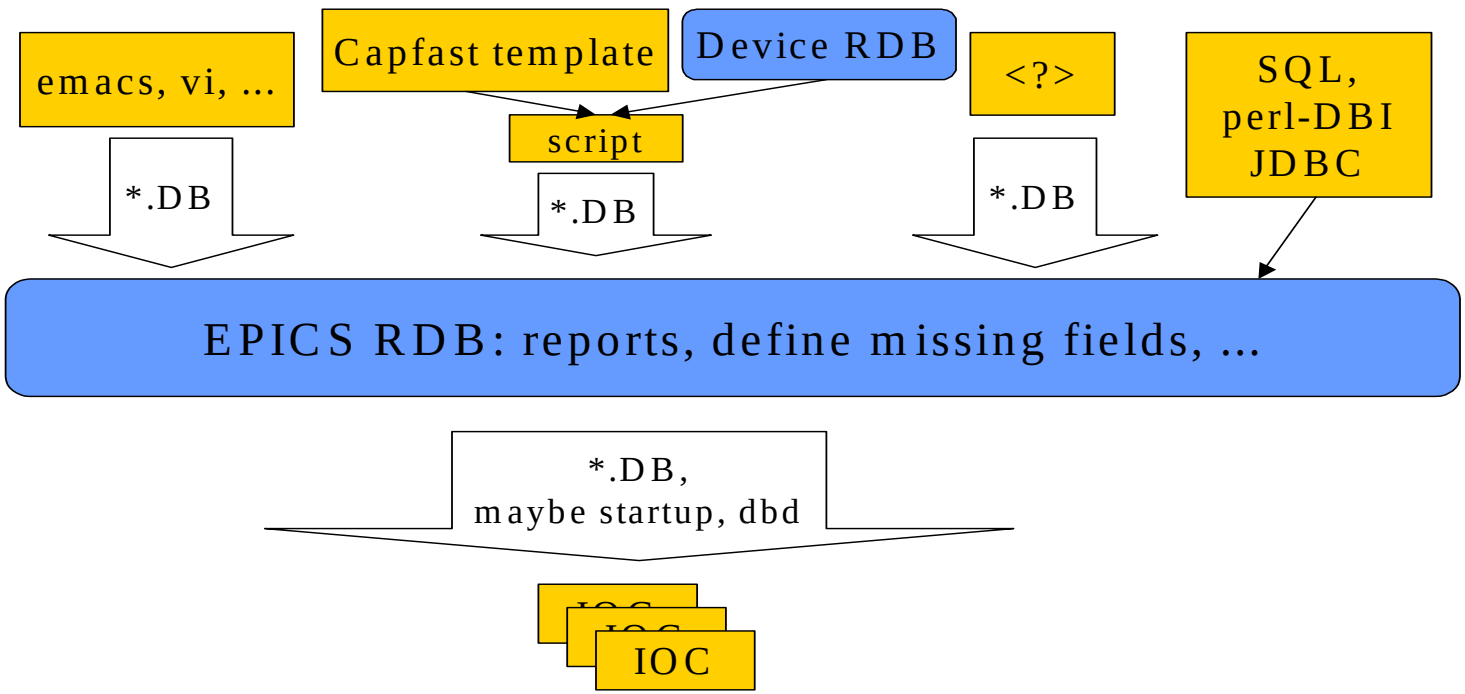
- Our Rdb revisited – BESSY – Benjamin Franksen
- http://mesa53.lanl.gov/lansce8/epics/Epics2001SL/bessy/epics_rdb.pdf
  - EPICS Configuration
  - Tables for each device type
  - Hard to maintain so trying to redesign
    - Put the structure in the data
    - Can't do simple queries; need scripts
  - We need to explore their ideas in light of what we've already done because..
- It ain't easy!!

EPICS Config in Rdb for SNS

- Put *.db files in Rdb
- “Logic Table” is a collection of records
- Also a table for IOCs
- Helper tables for
  - Records types
  - Allowed fields
- Generate *.db files from Rdb

Just Put EPICS db into Rdb

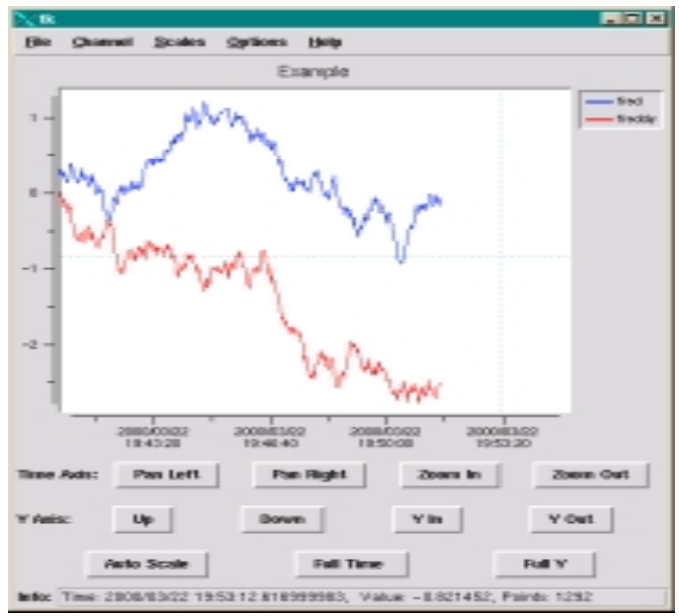
EPICS RDB Idea



Archiver Update

Bob Hall, SLAC: Python-Browser

- Interactive
- Configurable: axes, labels, linestyle
- Needs some integration work:
  - Unix only
  - Only Matlab export via SLAC version of ArchiveManager



Some Archiver Issues

Issues/Plans

- ArchiveManager: Rename a channel
- ArchiveEngine: File System Error Handling
  - Throttle messages, handle NFS-faked disk problems
- Never enough methods of plotting
  - Improve MATLAB support, but no more plotting code
  - Add perl/python example for CGI plotting
- Network-access, not via NFS but to server with data reduction (averaging, FFTs, ...)
  - JLab, Chris Larrieu?
- Contributions are very welcome and start to arrive (scripts, new exporters)

Archiving at Bessy

- Works and well accepted
  - Archive ~ 170 MB/da
  - Only fixed frequency
  - Want network interface
  - Data only accessible via filesystem or
  - CGIExport = BIG files

Most Interesting was NOT a Talk

- 1 programmer + 1 Physicist = CORBA based beam dynamics!
  - CORBA layer on top of CDEV
  - 2 Orbs; 1 for C++ and 1 with a TCL mapping
    - And they both interoperate – of course
- Use Event Service to monitor CDEV changes
- Oracle database for modeling parameters
- Put a nice layer on top and you've got...
- (a)Ida!!