Software Status

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`http://www.hep.ph.qmul.ac.uk/~landon/talks`

Overview

- Progress since Mainz
- Documents
- Packages
- Recent work
- Remaining Tasks
- People

And some details about:

- Run Control
- Databases
- QMW Status

Progress since Mainz

Documents and Organisation

- New requirements document agreed. Add detailed use cases? External review??
  `http://www.hep.ph.qmul.ac.uk/l1calo/doc/pdf/Requirements.pdf`
- Organisation of software packages agreed. Majority have names assigned. Some tinkering to allow for module responsibilities may be desirable.

“Real” work

- Agreement on interfaces between Online software configuration database, run controllers, high level module classes and lower level HDMC infrastructure.
- Initial implementation of run controllers creating HDMC parts
- Defined system setup for slice test, network booting, etc
- Continued development of simulation package
- Still pursuing questions about readout strategy

Documents (1)

Interminable drafts

- Run control specification: no change since February
- Use of TTC system: declare finished? Put in EDMS?
- Calibration/Test procedures: no change since February
- Databases: little change since March
- HDMC changes: document needs updating following discussions

Documents (2)

Recent additions

- Requirements document...
- Software organisation and packages: wait for CMT? Other tools?
- Monitoring requirements document: detailed – needs review
- Readout issues: notes towards a proper document
- Run control user guide: under development

Other resources

- Web pages on various software issues (installing Online, recommended Linux setup, pre-requisite software, RPMs, etc)

Documents (3)

Related documents

- Description of VME spec produced
- Compendium of data formats: very useful, but still missing a few...
- Labelling: Paul BT draft is still as he left it

Missing documents

- Description of simulation package
- Design/API references for other packages
- User guide for the slice test!

Packages (1)

Responsibilities

- Hardware Access Library: Oliver
- Interactive Diagnostics: Oliver
- Module Services: Bruce/Gilles/*
  (the Module Service package may be better viewed as a collection of subpackages).
- Configuration Databases: Murrough
- Run Control: Murrough
- Readout: Bruce
- Simulation: Steve
- Test Vectors: Steve
- System Testing: Steve

Packages (2)

No Responsibilities

- Calibration
- Hardware Monitoring
- Event Monitoring
- DCS (high level SCADA stuff)
- Distributed Histogramming (may use LVL2 package)

Other responsibilities: librarian, system management, website.

Recent Work (1)

Simulation and Test Vectors

- See Steves talk...
- Outstanding issues:
  - Extending existing work to other modules and FPGA designs
  - Organising test vectors for the whole slice test setup

Readout

- See Normans talk...
- Outstanding issues:
  - Can we (should we) read out everything?
  - Triggering on events with errors
  - Time scale and support for new ROBins

Recent Work (2)

CPUs

- New Concurrent CPUs working happily (two at RAL, one at Bham)
- Mainz have ordered one of the same model.
- Four CPUs are sufficient for 1 DSS crate, 1 ROD crate, 1 CP crate and 1 JEP crate.
- QMW and Mainz also have one each of an older model without complete bus error handling.

System Setup

- Propose to standardise on RedHat Linux 7.1 for the slice tests (except ROS PC?).
- List of required software (and RPMs) on the software website `http://www.hep.ph.qmul.ac.uk/l1calo/sweb`
- Diskless booting and configuration of crate CPUs tested successfully at RAL.
- Use latest version 0.0.15 of the ATLAS Online Software.

Recent Work (3)

Run Control and Databases

- Prototype of run control and configuration database for slice test updated to use latest Online Software.
- Demo system runs at QMW and RAL.
- Outstanding issues:
  - Interface with Module Services and HDMC.
  - Definition of calibration data.
  - How to implement run types?
  - Control via new panels the standard GUI.
- More later...

Reminder: TDAQ milestone requires integration of at least one component of L1Calo Trigger with the Online Software by end 2001.

Remaining Tasks (1)

Near Future: Initial Module Tests

- HDMC changes.
- Development of classes for new Modules and their major subcomponents.

Medium Future: Serious Module Tests

- Need to integrate test vectors, trigger menus, simple calibration datasets with code to download modules, all via standard run control.
- Also needs some version of PC ROS readout (may be simple Slink)
- Simple monitoring programs to check data.

Remaining Tasks (2)

Slice Tests

- As above on a larger scale.
- Develop calibration procedures (eg internal timing)
- Add hardware monitoring and DCS?

Software Effort

People

- Thomas Trefzger has recently joined Mainz with a mandate to be involved in software.
- Present software effort now includes: Bruce, Eric, Gilles, Murrough, Norman, Oliver, Steve and Thomas – variously contributing from <10 to $\sim 90\%$ of their time.
- Probably about five full time equivalent people.
- Possibly a student at Heidelberg will help Oliver.
- Maybe also have two diploma students at Stockholm doing a project?
- Still may not be enough on the timescale of the slice tests...

Run Control (1)

Crate Controllers

- Initial document still assumed to be correct: run controller hierarchy for slice tests, actions for each create for each state transition.
- But needs more detailed thought...
  - Actions for different module types in the same crate (eg PPM and PPROD)
  - Synchronisation problems with TTC actions if TTCvi shares a crate with eg DSS or RODs.
  - Are assumptions oabout synchronisation still correct?
- Demo system updated for latest Online software release
- Recent developments to implement interface to real hardware module classes (with internal descriptions taken from HDMC parts files).

Run Control (2)

Run Parameters

- Need to define useful set of run parameters (ie things you want to change quickly between runs without editing the configuration database)
- Implement using the Online software Information Service.
- Develop panel(s) in the DAQ user interface (IGUI) to set and display run parameters.

Databases (1)

Configuration Database

- Online software configuration database extended to include classes for our modules.
- Also added a scheme for describing module FPGA configurations.
- Still need description of connection between modules...

Trigger Menu

- Trigger menu classes for L1Calo trigger defined earlier this year.
- Uses same Online software tools (OKS) as the configuration database.
- Trigger menu schema also used offline.
- However CTP are starting work on the whole trigger menu, but using pure XML (ie not via the Online software database library). Someday we will have to converge...

Databases (2)

Calibration Data

- Outline schema for run time classes suggested.
- Probably needs some more thought (and changes).
- Initially implement using Online software library (though it also uses XML as the storage format and this is rather verbose, so we may want to use something more compact eventually).
- Still a bit of work to be done here...

Other Issues

- For test runs (and calibration runs?) need a scheme to organise collections of test vectors together with their appropriate trigger menu (and calibration settings?).

QMW Status

Hardware

- HEP Linux cluster: about 15 machines variously running RedHat 7.1 and 6.2.
- One Concurrent CPU: though this is one of the older models (VP PSE/P34) without the full bus error handling.

Software

- Online software 0.0.15 installed
- Up to date HDMC
- All other prerequisites for L1Calo software.
- Tools: Together, CMT (under investigation).