BCDA TOM Report – December 2003

Highlights

- Implemented fly scanning support for sector 2 id.
- Continued work on the next version of synApps which will be compatible with EPICS 3.14
- Released new BCDA web pages
- Released motor record R4.8
- Completed APS PV name survey

Beamline/XOR Support

Added fly-scan database and MCS support to 2idd.

Started work on Physik Instrumente C-844 motor controller device driver for sector 2.

Added 2 (BCDA owned) Joerger scalers to ioc2bmb (sector 2). Helped Peter Lee set up and test an application that uses motor pulses to gate a shutter.

Wrote EPICS motor record device support for the Micos MoCo DC motor driver, requested by sector 1.

Upgraded EPICS in the XFD lab (triple-axis) from synApps_4_2 to synApps_4_5. Installed and tested hardware and software for 2 sets of slits, using the ACS MCB-4B for control. Modified slits database to exclude cases where opening < 0.

Confirmed CARS-CAT claim that the ACS MCB-4B drive was not working properly. Communicated problem to ACS; firmware rev. forthcoming.

Participated in testing of the JY optical spectrometer at 4idc.

Put the (hopefully) finishing touches on the design for the BIO-CAT Servo Tester. Designed and tested Altera for encoder prescale circuit.

Demoed and discussed IDL programs with Lixin Fan (user 2id): scanSee, plot2d, hdfb and their application with 2D image data.

Assisted sector 2idd in using yviewer to generate ascii reports for users

Developed image acquisition and peak finding class for use in metrology lab to auto-align table.

Upgraded Image Server in 2IDB

Helped troubleshoot camera problem in 8ID

Tested a high speed CMos camera on 2BMB. We were not able to control the exposure time sufficiently to see actual beam. Will need to develop a control application for this camera before further testing.

Attended Sector 8 Beamline Equipment Protection System (BLEPS) design meeting with J. Servino and A. Sandy to layout system requirements and timeline.

Working with A. Sandy and D. Wallis -- created a list of new user accounts to be added to the beams file server to support EPICS users and administrator needs on Sector 8.

Attended a Sector 8 meeting with J. Servino and K. Goetze to answer technical questions about switching D-Station motors from SPEC/PC to EPICS/VME. It was decided to implement the encoder interface on the D-Station motors that had not been used under SPEC.

General

Made exhaustive list of PV names for sectors 1-4. Also, updated ~bcda/iocInfo with current synApps version and IP addresses for all sector 1-4 iocs.

Wrote a script to retrieve all .adl files from all synApps modules, for remote MEDM users.

Resolved the motor record problem associated with moving off a limit switch when using a OMS58 servo controlled motor.

Enhanced the motor record "Readback settle time" field (DLY) to update the readback after the timeout.

Released motor record R4.8

Added Micos device support to 1idbApp. Tested the motors in the 1-ID-B station and verified their accuracy with the Federal encoder.

Cleaned up motorx_all.adl, added units, updated CVS repository.

Completed survey of EPICS PV names in use on beamlines. Developed APS wide PV naming scheme with ASD controls group. Circulated details to CATS.

Continued port of CCD Image Server to Linux. Managed to get ~90% of the user interface to work with the software camera emulator under Linux. Currently having some difficulty linking the PCAS into the system.

Installed camera VUV7 in Leutl

Researched several ways to integrate EPICS server code into LabView for use on the Nano-probe.

Started to take stock of equipment in lab L3120 in preparation for setting up a control system in that lab for detector characterization.

Provided technical assistance to M. Smith on a problem he is having with a crate that contains an Allen Bradley I/O card and a VIPC616 IP Carrier. The problem involved VME bus interrupt handling conflicts between the two boards. Assistance included analysis of VMETRO trace data and setting up a test system that would recreate the problem.

JCA2:
Answered user questions. Fixed some bugs. Improved and added features.
Ported the project to Ant/NetBeans, (a long but very useful process).
Wrote code documentation and a bit of user documentation.
Making a plan for an optional JCA package for GUI development.

SynApps

Modified xxxApp and changePrefix_synApps_4.6 so we can continue to use ioc prefixes that begin with a number.

Modified dbCaPutLinkCallback-enabled version of sseq record to permit end user to select whether or not to wait for completion of processing started by each output link before processing next link group.

Wrote some functional requirements of a FIFO-based data-storage strategy for the sscanRecord and saveData.

Modified SNS' vxStats module so it would build under solaris-sparc

Added SNS' timestamp record to synApps std module.

Converted 19 device support modules to 3.14, and added to stdLib

Added asyn-1_0_alpha2, ipac-2_6 to synApps support, modified mpf-2_4 and xxx module to accommodate changes going from ipac-2_5 to ipac-2_6 (ipac-2_5 published bin/tyGSOctal.o and bin/ipacLib, but ipac-2_6 publishes lib/libTyGSOctal.a and lib/libIpac.a)

save_restore: fixed reload_xxx_set() (Replaced epicsMutex with epicsEvent. EpicsMutex cannot be used for intertask signalling.)

Fixed very long-standing bug in kohzuCtl.st: if thetaMotRdbk changed by a very small amount, the program did not react.

Fixed thread priorities in saveData, recDynLink, and save_restore.

MCA configuration routines have changed syntax, but the new syntax is not yet documented. Worked out the new syntax by reading the source code, and documented it with comments and executable code in the xxx/iocBoot/iocxxx/st.cmd file.

Tested sscan record, MCA record, saveData, and MEDM for compatibility with EPICS 3.14 large-array support.

The sscan record's array mode was broken in the conversion to 3.14. Fixed it.

EPICS 3.14 complains when a CA output link results in a record's special() routine returning other than zero. (This is the only way a record can avoid having a PP field actually cause record processing, and it used to be silently honored.) The scan.db database's abort-scan mechanism depended on this behavior. Fixed scan.db so that aborts write to a sscan record only if that record's BUSY field is nonzero.

Tested user lookup-table support (std/stdApp/Db/interp.db, std/stdApp/src/interp.c). Everything works.

Modified st.cmd and st_mpfserver.cmd files in xxx module to agree with new (as yet undocumented) API in ipac, mpf, ip330, dac128V, and ipUnidig modules.

Data Visualization

Catcher:

Modified catcher to support synApps 4.2 scan and 4_6 sscan record. The next release of catcher (3.0) will be able to run with new/old scan record definition. Tested catcher for large 1D data array for EPICS 3.14.3 CA

ScanSee:

Wrote a new and simple version of scanSee data reader. It provides efficient routines to extract a complete set of 3D data array for mda files. This program also provides IDL routines for extracting mda heading and environment arrays. Intent is to evolve this program by adding simple widget application for easy access the 1D/2D/3D data with itools in the future.

Discovered that scanSee has the problem of starting the realtime displaying if the scan already started before its invocation, This problem will be fixed in the next release (3.0).

IDL Virtual Machine:

Prepared and tested catcher3_0.sav on WIN/UNIX

Prepared and tested sscan.sav on WIN/UNIX (every features works except the calibration subprogram which uses the 'execute' function which is not allowed by IDLVM)

Updated IDLsave.zip to include catcher3_0.sav and sscan.sav

plot2d:
itools keyword added, it allows the user to access the iImage, iSurface, iContour tools within plot2d

scan2d_roi.pro:
Fixed a problem of wrong index in rect ROI mode in scan2d_roi program

ezcaIDL/idl:
Modified ezcaIDL.pro, added the feature of add_caPendEvent_event to add periodic ca_pend_event to IDL program to avoid many unwanted CA disconnection messages.