EPICS Base Installation

From CLONWiki

Procedure was used to install EPICS R3.14.8.2 base into $CLAS area (this is NOT a replacement for Slow Control Group's EPICS environment; it will be used to develop Soft IOCs to provide Channel Access in frame of CLAS Monitoring Upgrade project).

Login to clon10 (or other solaris-sparc) machine

Go to $CLAS directory, create R3.14.8.2 directory, go into it, create .setup file with following contents and execute it (normally it must be called from .cshrc; env vars OSTYPE and MACHINE are set in CLAS startup procedure):

```
if ( ($OSTYPE = "SunOS") && ($MACHINE = "sun4u") ) then
  ##setenv EPICS_HOST_ARCH solaris-sparc64
  setenv EPICS_HOST_ARCH solaris-sparc
endif
if ( ($OSTYPE = "SunOS") && ($MACHINE = "i86pc") ) then
  setenv EPICS_HOST_ARCH solaris-x86
endif
if ( ($OSTYPE = "Linux") && ($MACHINE = "i686") ) then
  setenv EPICS_HOST_ARCH linux-x86
endif
if ( ($OSTYPE == "Linux") && ($MACHINE == "ppc") ) then
  setenv EPICS_HOST_ARCH linux-ppc
endif
setenv EPICS_VER 3.14.8.2
setenv EPICS_BASE $CLAS/R$EPICS_VER/base-$EPICS_VER
setenv EPICS_EXTENSIONS $CLAS/R$EPICS_VER/extensions
setenv EPICS_BASE_LIB $EPICS_BASE/lib/$EPICS_HOST_ARCH
setenv EPICS_BASE_INC $EPICS_BASE/include
setenv PATH "$PATH":$EPICS_BASE/bin/$EPICS_HOST_ARCH
#setenv EPICS_CA_ADDR_LIST "129.57.255.4 129.57.163.255"
setenv EPICS_CA_ADDR_LIST 129.57.167.60
```

Get the base tar file baseR3.14.8.2.tar.gz from http://www.aps.anl.gov/epics/ into current $CLAS/R3.14.8.2 directory

Untar it and build via:

```
gunzip baseR3.14.8.2.tar.gz
tar -xvf baseR3.14.8.2.tar
rm baseR3.14.8.2.tar
cd base-3.14.8.2
### source startup/Site.cshrc
```

Edit configure/CONFIG_SITE:

```
set CROSS_COMPILER_TARGET_ARCHS=vxWorks-ppc604_long
set CROSS_COMPILER_HOST_ARCHS=solaris-sparc
you may also consider to change STATIC_BUILD=NO to STATIC_BUILD=YES,
  this way you can move the resulting binaries to other linux-x86 platforms
  [like a pc104 card] and they will run without needed to find shared libraries;
  unfortunately some other platforms may not build with STATIC_BUILD=YES ...
```

NOTE: you may use gmake -e CROSS_COMPILER_TARGET_ARCHS=vxWorks-ppc604_long then you probably do not need to modify 'configure/CONFIG_SITE'

Edit configure/os/CONFIG.Common.solaris-x86 and configure/os/CONFIG.Common.solaris-sparc:

```
add OP_SYS_LDLIBS_10 += -lCrun -lc -lCstd
```

Edit configure/os/CONFIG_SITE.Common.vxWorksCommon:

```
set VX_DIR = /usr/local/clas/devel_new/VxWorks55/ppc
  (do not do VX_DIR = $(WIND_BASE), it will not work !!!)
```

Fix src/libCom/test/epicsExceptionTest.cpp:

```
replace 'exThread athread;' with  'exThread *athread;'
replace 'athread.waitForCompletion();' with 'athread->waitForCompletion();'
```

Compole:

```
gmake
```

Making example IOC shell and boot script for Solaris

Just for testing, normally will be done in $EPICSB, see corresponding documants.

```
bin/solaris-sparc/makeBaseApp.pl -b $EPICS_BASE -t example ioctest
bin/solaris-sparc/makeBaseApp.pl -b $EPICS_BASE -i -t example ioctest
  answers:
    solaris-sparc
    ioctest
```

NOTE: use 'bin/solaris-sparc/makeBaseApp.pl -b $EPICS_BASE -h' to get all possible options; for example: bin/solaris-sparc/makeBaseApp.pl -b $EPICS_BASE -i -t caClient caclient bin/solaris-sparc/makeBaseApp.pl -b $EPICS_BASE -t caServer caserver Directories 'caclientApp' and 'caserverApp' will be created; you can go inside and type 'gmake' and use contents as examples

```
cd ioctestApp
gmake
cd ../iocBoot/ioctest
chmod +x st.cmd
edit st.cmd:
  comment out '< envPaths'
  change all 'dbLoadRecords("db...' to 'dbLoadRecords("../../db...'
./st.cmd
```

This will fire up the epics ioc shell.....if this results in an *epics*> prompt...you're looking pretty. At the *epics*> prompt type *dbl* to see the database records loaded in this example.

If you want, on some host, direct your EPICS_CA_ADDR_LIST to *ioctest* and from there you can *caget* or StripTool the

records being processed on your ioc.

For vxWorks ioc, use following boot script:

```
#
# simple epics boot example
#
# usage:
#   cd "$CODA/VXWORKS_ppc/bootscripts"
#   < epics.boot
#
cd "$CLON/R3.14.8.2/base-3.14.8.2/bin/vxWorks-ppc604_long"
ld < ioctest.munch
###sysAtReboot not found. epicsExit will not be called by reboot
cd "$CLON/R3.14.8.2/base-3.14.8.2"
dbLoadDatabase("dbd/ioctest.dbd",0,0)
ioctest_registerRecordDeviceDriver(pdbbase)
dbLoadRecords("db/dbExample1.db","user=boiarino")
dbLoadRecords("db/dbExample2.db","user=boiarino,no=1,scan=1 second")
dbLoadRecords("db/dbExample2.db","user=boiarino,no=2,scan=2 second")
dbLoadRecords("db/dbExample2.db","user=boiarino,no=3,scan=5 second")
dbLoadRecords("db/dbSubExample.db","user=boiarino")
iocInit()
dbl
```

To build on other UNIX platforms:

```
cd $EPICS_BASE
gmake clean
gmake
cd ioctestApp
gmake
cd ../iocBoot/ioctest
edit first line in st.cmd setting appropriate path to 'ioctest'
./st.cmd
```

IOCs examples were successfully started on 4 unix platforms mentioned above, and on 5 Motorola controllers under vxWorks: mvme2306, mvme2432, mvme5100, mvme5500, mvme6100. For vxWorks make sure following C++ flags are defined in prjParams.h:

```
#define INCLUDE_CPLUS
#define INCLUDE_CPLUS_DEMANGLER
#define INCLUDE_CPLUS_LANG
#define INCLUDE_CPLUS_STRING
#define INCLUDE_CPLUS_STL
#define INCLUDE_CPLUS_IOSTREAMS
#define INCLUDE_CPLUS_STRING_IO
```

==========

FROM ARNE's INSTRUCTIONS, UNTESTED: Building the sequencer/SNC example:

```
get the source from: http://www.slac.stanford.edu/comp/unix/package/epics/sequencer/
put the tarball in the base-3.14/src area
       1. cd $EPICS_BASE/src
       2. tar -zxvf seq-2.0.4.tar.gz
OK at this point I got bitten by the impenetrable epics Makefile scheme and had to kludge
       1. cd seq-2.0.4/configure
       2. chmod a+rw *
       3. comment out the line that starts with EPICS_BASE in RELEASE
       4. cd ../
       5. make # this will fail....but don't fret
       6. cd include
       7. ln -s ../../../include/* .
       8. cd ../
       9. ln -s ../lib .
      10. make # this too will result in an error message.....
      11. cd test/simple/O.linux-x86
      12. ls -l sncExample
if sncExample has been built then you are in good shape.....
follow the instructions in the R3.14.0beta1 howto on how to test the sequencer/state code
I've had builds go where sncExample did not get correctly built unless I editted a seq-2.
  changing EPICS_BASE_HOST_LIBS to EPICS_BASE_IOC_LIBS. If you get a bunch of unresolved
```