HiDEOS Details

Jim Kowalkowski

HiDEOS

Levels

- Using existing support
- Writing EPICS/HiDEOS device support
- Writing HiDEOS embedded programs

Steps

- Set up your MVME162 jumpers
- Build g++ compiler and HiDEOS OS code
- Build HiDEOS package
- Build EPICS/HiDEOS device support
- Modify EPICS ascii files
- Create database
- Configure vxWorks startup script
- Boot

http://www.aps.anl.gov/asd/controls/hideos/intro.html

One Time Setup Items

MVME162 HiDEOS Processor

- Read “Setting up your MVME162”.

HiDEOS home directory

- Create a home directory for HiDEOS (optional login)
- Make directory for GNU, os_code, and hideos.
- Read “How to quickly install HiDEOS”.

Compiler Notes

- Get all GNU pieces from HiDEOS Home Page.
- Follow instructions explicitly.
- Do not change sun3 to sun4.
- Compile and install g++ and related GNU tools.

OS Code Notes

- Get “Required C Library source”.
- Adjust variables in os_code/config/HIDEOS_VARS
- Set GNU_DIR to your g++ install directory.

OS Code is really a modified libc which runs on the HiDEOS processor, it does not change on a regular basic.

Build HiDEOS

Adjust Variables in HIDEOS_VARS

- Set GNU_DIR to the GNU installation directory
- Set CORE_DIR to the os_code directory

Adjust Variables in HIDEOS_VARS_vx*

- Set VX_DIR to your vxWorks directory

Type “gnumake World” in hideos directory

- The “gnumake World” command will clean out the tree, do a generate all dependancies, do a make and an install.

Important Installed Files

- install/include/msg - HiDEOS message header files
- install/include/hideos - HiDEOS system header files
- install/usrapps/bare162/* - Applications that can be downloaded to a 162 HiDEOS processsor
- install/usrapps/vx167/* - Applications that run under vxWorks

---

Application xfd_app is the standard program to download to the 162 HiDEOS processor. Application bp_test is used under vxWorks with EPICS.

EPICS Device Support

- Read “EPICS device support”
- Get “EPICS HiDEOS device support source” and place it **in your EPICS getrel or application developers directory**. The programs in this module depend on HiDEOS and on an EPICS release. The build of this module must be done in a getrel-type directory.
- Contains three standard makefiles: Makefile, Makefile.Vx, Makefile.hideos. You must modify the .Vx and .hideos makefiles to point them at the tops of the getrel and HiDEOS trees. Follow the direction in the makefiles.
- Creates three files in O.mv167 directory that you must load into vxWorks.
    - ldpp.o - Front end to vxWorks loader for c++ object modules.
    - Hideos.o - The HiDEOS system
    - EpicsHideos.o - All of the EPICS device support to communicate with HiDEOS.

Booting

vxWorks Start Up Script

- load EPICS
- load databases
- load ldpp.o
- load Hideos.o with ldpp
- load EpicsHideos.o with ldpp
- download embedded HiDEOS executable (xfd_app)
- start HiDEOS running under vxWorks (hideos_main)
    - configure HiDEOS serial ports here
    - configure HiDEOS GPIB links here
- start EPICS (iocInit)

HiDEOS Processor Information

- Auto detects IP modules.
- Generally starts and names one task per IP module.
- Starts one task per serial port.
- Names of tasks print out on MVME162 console
- Name is prefixed with slot ID “[abcd]-”
    - a-Serial[x] = serial port x of IP module in slot a
    - b-ip488 = GPIB IP in slot b
    - c-ADC = An ADC IP module in slot c
    - d-DAC = A DAC IP module in slot d

EPICS Databases

General Device Support Names

- stringin - devSiHideos - Hideos Stringin
- stringout - devSoHideos - Hideos Stringout
- waveform - devWfFanuc - Hideos Fanuc
- ai - devAiLove - Hideos Love Controllers
- ai - devHideosADC - Hideos ADC
- ao - devHideosDAC - Hideos DAC

Records used for HiDEOS will appear as VME links. Use the CARD field to specify the HiDEOS system you want to talk to. **Card zero is the vxWorks EPICS processor**. The SIGNAL field is device support specific. Enter the name of the HiDEOS task that you want to connect to in the PARM field of the link.

- Be sure to do “makesdr” after modifying the EPICS ascii files.
- Set serial parameters such as baud rate using ConfigureHideosSerialPort() from the vxWorks shell.
- Set up Love controller tasks using ConfigureLoveTask()
- Set up GPIB support using HiDEOSGpibLinkConfig().