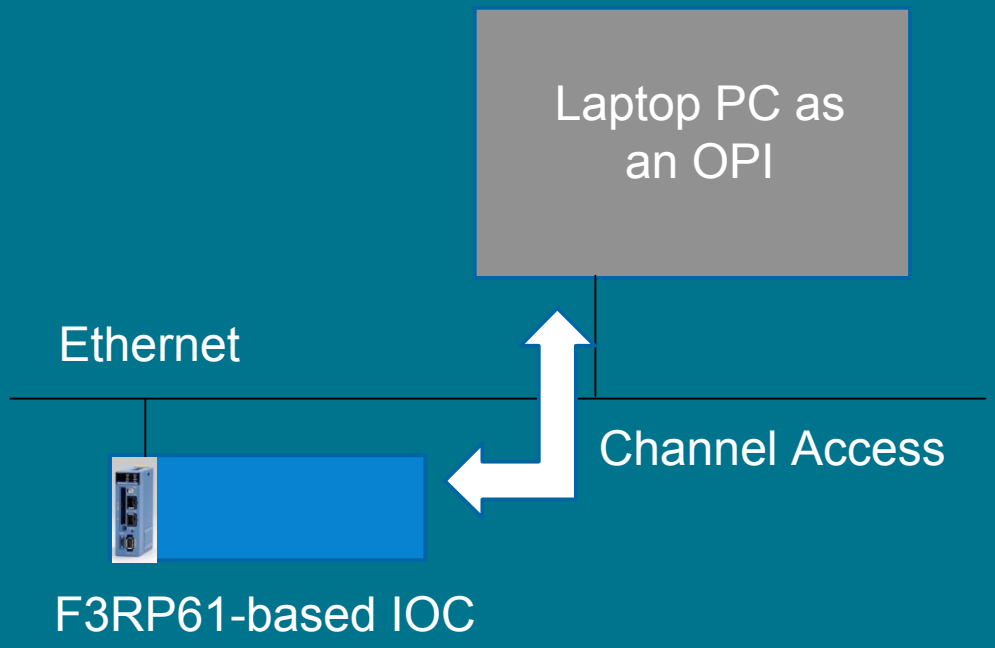
DEMONSTRATION ON EPICS ON F3RP61

J. Odagiri

2009/06/10

Hardware Configuration



Software Configuration

- Linux is on the CF card
  - F3RP61-based IOC boots up from the CF
  - Stand-alone system
  - Laptop PC is NOT necessary to boot up Linux
- EPICS is on the Laptop PC
  - Provides a development environment
  - EPICS is under /opt/epics
  - F3RP61-based IOC mounts laptopPC:/opt on local /opt upon the boot

Before getting started

- On the laptop PC
  - Open a new terminal
  - Visit /opt/epics/apptop
    - Top of the application directory
  - Visit /opt/epics/apptop/testApp
  - Visit /opt/epics/apptop/testApp/Db
    - Have a look at ai_ao.db
    - Have a look at di_do.db
  - Visit /opt/epics/apptop/testApp/src
    - Have a look at sncDemo.stt
  - Visit /opt/epics/apptop/iocBoot
    - Have a look at st.cmd

Let's login to F3RP61

- On the laptop PC
  - Open another new terminal
  - Telnet to the F3RP61
    - The target IP-address is: 192.168.0.2
    - Login as "root"
    - No password is required
  - After logged in
    - Try "pwd" and "ls"
    - Confirm that F3RP61 is seeing the file system under /opt on the laptop PC

Let's start EPICS

- The iocCore program runs on F3RP61
  - Check which terminal is the console of F3RP61
  - Under /opt/epics/apptop/iocBoot/ioctest, type "./st.cmd"
  - You'll see the booting process of iocCore
  - Try the iocsh command, "dbl"
- MEDM runs on the laptop PC
  - Open yet another terminal on the laptop PC
  - Just type "medm"
  - Switch the mode to "execute"

Let's play a trick

- Plug off the network cable

- After a while, get it back

About saw-tooth chart

- ai_ao.db uses a pair of channels of the looped back A/D, DA modules
  - Calc drives the activity (SCAN=periodic)
  - Calc processes ai through INPA (PP option)
  - Ai reads the signal from A/D module
  - Calc updates its own value
  - Calc processes ao through FLNK
  - Ao gets the value to write from calc through DOL
  - Ao writes the value into D/A module

About blinking objects

- di_do.db uses a pair of channels of the looped back DI, DO modules
  - No links between the records
  - A sequencer program drives the activity
- sncDemo.stt
  - Loops forever in the “act” state
  - When the input channel turns to off, it turns on the output channel
  - When the input channel turns to on, it turns off the output channel

Cross compile

- On the laptop PC
  - Open one more terminal
  - Go to /opt/epics/apptop/testApp/src
  - Edit sncDemo.stt
    - Just delete the “printf” statements
  - Compile the source
    - Type “make linux-ppc”
  - Stop the iocCore program on the console
    - Thpe “Ctrl + c” or “exit”
  - Restart the iocCore program
    - Type “./st.cmd”

Installed BSP of F3RP61

- Visit /opt/f3rp6x
- Visit /opt/f3rp6x/usr/bin
  - Build tool chain
- Visit /opt/f3rp6x/usr/include
  - Include files

Adding the target in base

- Visit /opt/epics/base/configure
  - Have a look at CONFIG_SITE
    - “CROSS_COMPILER_TARGET_ARCHS=linux-ppc”
- Visit /opt/epics/base/configure/os
  - Have a look at CONFIG.Common.linux-ppc
  - Have a look at CONFIG.linux-x86.linux-ppc

Device Support

- Visit /opt/epics/extensions/src/f3rp61
  - Have a look at some files