Overriding and Synchronizing in the Marvell Nanolab

Mercury uses computer controlled equipment interlocks that insure proper equipment use by locking out equipment until it is properly enabled or free from problem reports. When computer systems are down, this facility must be bypassed so equipment is available to lab members. This bypassing is called 'overriding'. When systems are back on-line, the interlock system must be resynchronized. (There is an automatic synchronization procedure for the "hydra" system. **Wis and ControlByWeb systems must be synchronized by hand.** Note that a utility program is in the works for a **unified** synchronization solution.

Three systems are currently in use:
1) Hydra is a system based on an Agilent 34980A switch/control unit. This system is in use in the Marvell NanoLab. Each channel on the Hydra system connects to a magnetic lathing relay circuit which is then connected to the equipment. Hydra can connect to a Hydra box or a WIS box.

2) Walker Interlock System (WIS) is based on Walker System ISA plug-in cards running on a Linux OS. WIS is used 188 Cory. Each channel on the WIS system connects to a magnetic lathing relay circuit which is then connected to the equipment. WIS systems can only connect to WIS boxes.

3) ControlByWeb are 4 channel internet connected relays with build an embedded OS. This system is only used in 218 Cory for Jeol and the Autoprobe system in the DCL (373 Cory)
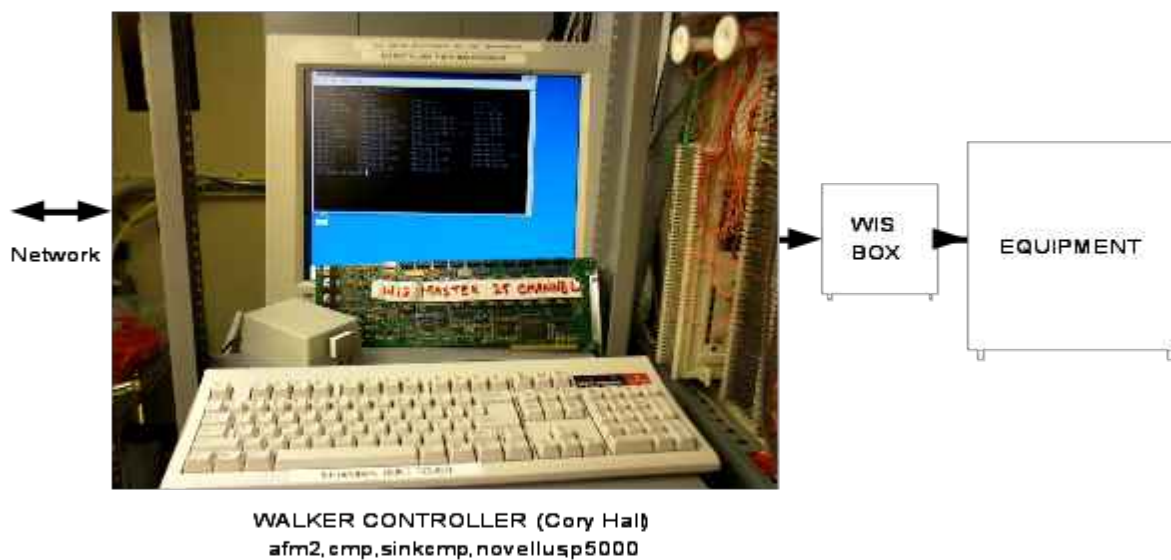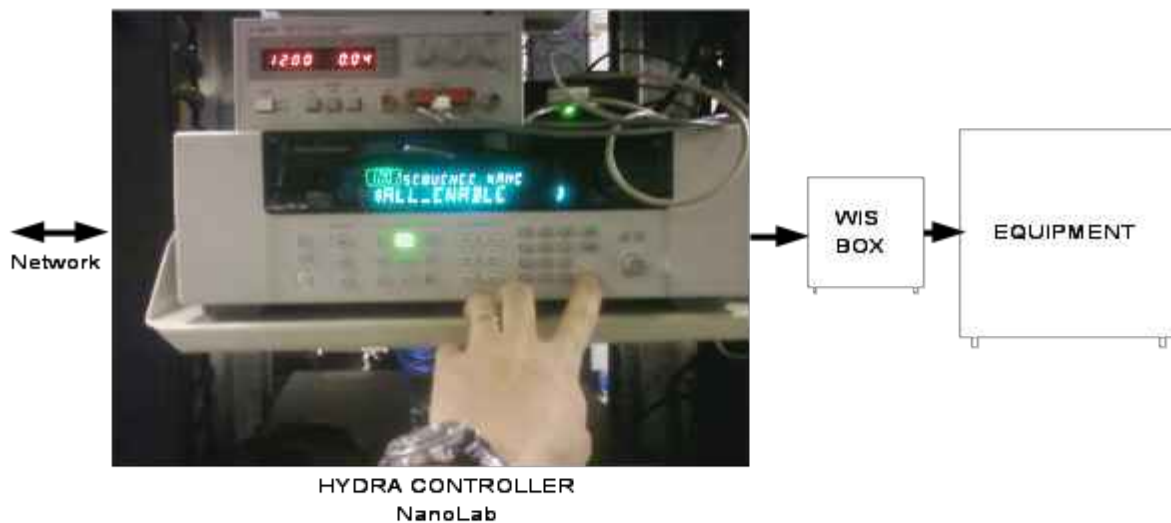
Figure 1 Block Diagram of Wis and Hydra Systems

HYDRA: OVERRIDING AND SYNCHRONIZING

The hydra2 server can be used to generate an override on the Hydra system in IDF5. Follow instructions below:

 1.) Connect to hydraserver2.banatao.berkeley.edu using secure shell.
 2.) Login as user 'someuser'
 3.) password: somepassword

Note that you may receive a security alert regarding the host key. Select "yes" to accept the key.

 4.) override
  The following output will be shown on the terminal

```
nano@hydraserver2:~$ override
    Executing ALL_ENABLE
    rout:seq:trig ALL_ENABLE;
    rout:seq:busy?;
    Done.
```

To resychronize:
 1.) A NanoLab system administrator should login to mercury4 with secure-shell
 2.) cd /export/projects/microlab/mercury/Mercury-1.1/Mercury/utils/hydra
 3.) Use the su command to run the following script as user 'micro'
 4.) su micro –c '/hydra_utils.pl synchronize'

COMPUTERS ARE DOWN

If computers are off line the Agilent Switch/Control Unit can be controlled from the front panel. (Figure 2)

 1.) Set the Agilent 34980A to local (**push the local button**).
 2.) Select "Sequences" from the front menu.
 3.) Execute sequence "ALL_ENABLE"

Figure 2 Going to Local mode and executing a sequence.

WIS OVERRIDING

THERE IS NO SYNCHRONIZATION FOR WIS OR CONTROLBYWEB. CHANNELS WILL NEED TO BE DISABLED AS NEEDED.

When the network is up and computer systems are running the override can be turned on for a 'planned' maintenance.

The WIS override can be turned on as follows from the Staff program on silicon2. computers->==>W Run the eqcontrol program.

Turn On the Override
1) Staff -> computers -> eqcontrol (W) ==>o Override Control and Status-> oTurnOn override in 178 Cory (note you will need to supply your silicon unix password).

Check the Override status as follows:
1.) Staff -> computers -> eqcontrol (W) ==>c Channel Control and Status l 178 Cory Controller Status

If the data returned shows a daemon connection failure, the override is active.

Turn Off the Override
1.) Staff -> computers -> eqcontrol (W) ==>o Override Control and Status-> l TurnOff override in 178 Cory

When the Staff program is down or the network is not functioning:
When wis3.eecs is not available through the network, the override can be activated manually.

      1.) Go to the wis3
      2.) Sign-in
            a. user: wis
            b. password: inthechase
      3.) # cd /usr/local/bin
      4..) # ./forec_labeqc /usr/local/etc/setall
Then logout.

Note the WIS system has a daemon that runs 'labeqd'. It starts up in from a script in /etc/rc.d/rc3.d/S21labeqc [start | stop]. If the daemon doesn't restart after a reboot manually start it.

Control By Web
 An additional equipment control device has been released to enable/disable jeol and autoprobe --purchased from ControlByWeb.
 Staff Program ==>c computers   ==> W Run the eqcontrol program
 ----
Check Status (this device is slow to respond).
      1.) ==>c Channel Control and Status   ==>Y status in 218 CORY
 Status for Host: xytron2
Name   Board Channel State
----
jeol   0   1   DISABLED
Enable all channels on a ControlByWeb device:
      1.) ==>o Override Control and Status ==>Y Enable All in 218 CORY

If the network is down, control of a ControlByWeb box is possible by using a laptop or pc with a network connection. Set the laptop's ip address so that it is on the same network as the CBW device. Connect to the CBW's web address ipaddress:port. (use port 8080). See system admin for authentication details.

Using the Walker Maintenance Unit to Enable WIS or Hydra Boxes

The Walker Maintenance Unit can be used to enable channels one at a time at the WIS box location or the distribution panel. See Figure 3.

Figure 3 Walker Maintenance Unit (located in CA-2).

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