6/26/03
C:\WINDOWS\TEMP\Trouble Shooting Guide Lines.doc

Multibus Controller Trouble Shooting Guide Lines

Diagnostics:
1. Is there communications between all chassis? Can you talk to the station; does the station talk to the controller? Configure and spreadsheet would be a good tool to use. If no communications, a reset or cycle power on the chassis would be indicated.
2. Check that controllers and devices are loaded in the station. Use configure.
3. Are the "snow flakes" on spreadsheet changing color for **users** being used?

Timing:
1. Are things loaded for the right user? Check event link monitor
2. Are the correct timing codes on the event link? Check event link monitor.
3. Are there any external clocks or triggers; if so are they missing? Check that they are the correct level and without distortion.

Power Supply:
1. Check that power supply voltage is above +4.75V on the chips. Use DVM
2. Check that power supply voltage has no AC ripple on any of the voltages. Use scope to check

Hardware:
1. Are all cables hooked up to the right connectors inside and outside of chassis?
2. Check that all F/O cable ends are clean and not broken.
3. Check that all boards are seated in the chassis.
4. Check that all card edge connectors are clean.
5. If replacing circuit board are the jumpers the same for both boards?

VME Chassis Trouble Shooting Guide Lines

Diagnostics:
1. Is there communications between all chassis in a location? Can you ping or rlogin to a chassis?
2. Are all the devices drivers loaded for all the boards? Use "**devs**" command to check.
3. Are there any suspended tasks? Check by rlogin of front end and using the " **i** " command or by using the "FIT" application.
4. Are all the boards in a chassis on line? If on line, do they appear to be working correctly?
5. Is the V108 Utility module working correctly? To check, for RHIC systems use "checkout" program from StartUp, for AGS systems from spreadsheet (/other/utility module).
6. If the front-end computer cannot load files from the cache memory board (MM6702CN slot 2), try removing and reinstalling the backup battery jumpers on the memory board. This will erase any corrupted files in memory.

Timing:
1. Are the correct timing codes on the event link? Check event link monitor.
2. What is the cycle time of the station? Use configure to verify this if it is the default value of 10s than there is no t-zero.

Power Supply:
1. Check that power supply voltage is above +4.75V. Use DVM with load board.
2. Check that power supply voltage has no AC ripple on any of the voltages. Use scope to check
3. No power to chassis:
    1. Power supply is bad.
    2. Chassis fuses are blown (bad fuse holder). This is a problem with Elma chassis.
    3. AC reset module is bad (blown fuse). This is a problem with Dawn chassis power supply failure.

Hardware:
1. Are all cables hooked up to the right connectors inside and outside of chassis.

2. Has work been done on the system before or things added? Check the trouble or system change logs on the web. It is possible that some application software was changed and does not work correctly with the system.
3. Check that all F/O cable ends are clean and not broken.
4. Has the IACK and bus grant jumpers been removed or installed?

Low Res Power Supply Interface with Loop back:

1. Are the active led's on front panel on? If not check WFG that drives that board.
2. Are the WFG transmit and receive led's on the front panel on? If not check led 's on Low Res interface module.
3. Remember that the transmit output of the WFG goes to the receive input of the low res module. The transmit output of the low res module goes to the receiver of the WFG.
4. Check that all F/O cable ends are clean and not broken.
5. Is there an analog output signal from the transition module connector? If so is it correct?

A permit link overview and some trouble shooting tips...

For the latest write up of this system, check URL:
http://www.cadops.bnl.gov/Hardware/permit/permit.htm.

From PET several pages can be used to look at the links.

RHIC/Links/Permit/RingSummary shows the status of the links as reported by each module and the status of each input. Masked off permit inputs show OK. If the module is not in the quench link, a --- is displayed in the link status.

RHIC/Links/Permit/RingTimestamps shows the failure and corrected times. When the links are working corrected times get updated to the time the trigger code was sent, reset quench or reset permit. When there is a problem the location that does not get corrected is usually downstream of the failure location. For instance if 3b does not get corrected or shows an upstream failure in usually means 3a has a problem and did not pass the carrier through.

The links work by just constantly transmitting a 10Mhz carrier around the ring, any location with a problem on its I/O inputs will not let this carrier pass. If the carrier is not detected by the MASTER module in 10a the beam will dump. When a "link trigger" is sent the MASTER sends out a burst of clocks and waits for it to return. If it does the link is good and continues running until there is a failure. If there is a problem in any location this burst will not be passed through and the downstream module will not show the corrected time.

RHIC/Links/Permit/(location)/(location A or B) is a PET page that allows you to look at each module in some detail to see what inputs are masked, what's connected to specific inputs, event link status's, etc.

Things to look for if there is a problem...
Are the inputs to the I/O panel good?
Is the EVENT LINK good?

Is there a problem with the V120?

If you suspect the problem is with the V120/T120 short blue hose cables can be used to jump out a location by connecting the F/O RX to the F/O TX. Trigger the links and if they come up the problem is local, bad board, cables or inputs.

If there is still a problem it could be with the F/O TX or RX, the RX LED should flash during the burst when a trigger is sent as well as the TX LED if things are OK. If the RX LED does not flash the problem is likely to be TX upstream or a problem with the fiber link. If the RX flashes but the TX does not the problem is likely to be that local RX or the local TX.

Modicon Momentum PLC Guide

The troubleshooting guide for the PLC's is at the following web page:

http://www.cadops.bnl.gov/Controls/doc/Troubleshooting/modicon_momentum_plcs/PLC.html

V126 FEB Control Module

This module is located in chassis cfe-911-res and is used to generate one of three different FEB event outputs (Gfebrequest, Bfebrequest and Yfebrequest), which is put on the AGS and RHIC event links. Full write up can be found at the following:

http://www.cadops.bnl.gov/Hardware/util/V126.html

Trouble shooting module:
1. The permit input to this board is from the ATR (AGS to RHIC) line. If the ATR permit is up and permit enable is "PERMIT REQUIRED ON" in the RHIC injection pattern program, there will be no Gfebrequests. See figure #1.

AGS Beam Inhibit System

Check out write up by Rob Michnoff at the following URL.

http://www.cadops.bnl.gov/Controls/doc/agsBeamInhibit/AgsBI-Overview.html

Other System Troubleshooting URL's

For other system, troubleshooting links try the following.

http://www.cadops.bnl.gov/Controls/doc/Troubleshooting/Troubleshooting.html