

Status Of The GIII Card Testing

Server Requirements

The GIII cards require 66MHz/64bit PCI bus slots

→ *Generally not available on desktop PCs*

At CDF we surplussed 6 old Consumer Server Logger prototype machines.

Originally servers were going to be used as part of a Fermi Analysis cluster... Several developed problems and in the end the idea was scrapped

We salvaged two fully configured machines

These systems are on loan from CDF...

They are fairly decent machines with two large RAID disk arrays

2 × 2.4 GHz Xeon

2 × 8 × 250 GB disks (4 TB raw disk)

→ One used for HCAL test beam data

→ One used for the GIII teststand

Available on the network... Node name: [cmsroctest](#)

The systems may not be highly reliable... so use them with this in mind...

Kernel Requirements

Need to have the “**bigphysarea**” patch applied to the kernel.



Something that is typically needed in video for linux applications...

This allows the system to reserve a large contiguous memory buffer to be used for DMA transfers *anytime* after booting...

Available in older CERN 2.4 kernel releases

→ *Not generally available in Fermi Releases...*

→ *A special Fermi release compiled with the patch is available...*

Patrick installed the Fermi Kernel on Monday July 9...

```
Jul 10 08:35:43 cmsroctest kernel: bigphysarea: Allocated 16384 pages at 0xc2e2b000.
```

→ *Generated some interest when we inquired about the “bigphysarea” patch*

→ *Looks like other groups at Fermilab are also interested in the “bigphysarea” patch*

Prompted Connie to compile the patch into the latest Its3 kernel

→ *Should pursue having this installed in a standard Fermi release
- or see how 2.6 kernels handle physical memory allocation.*

→ *Looks like we have a working Fermi version...*

Next step: Verify that the application software works.

Software Requirements

Next step is to compile a test program and talk to the cards

```
cvs -d :pserver:anonymous@isscvs.cern.ch:/local/reps/tridas login
cvs -d :pserver:anonymous@isscvs.cern.ch:/local/reps/tridas co \
  -P -r fedkit_v_1_39 TriDAS/daq/itools TriDAS/daq/extern/i2o
```

Latest version (v_1_39) of fedkit compiled without complaints
(earlier versions had problems with header file paths...)

```
cd TriDAS/daq/itools
make fedkit
make fedkit-install
```

Tried running the test program:

```
[chlebana@cmsroctest fedkit]$ ./test_merge
To run again :
./test_merge -r 0 -s 0 -t 1 -m 10 -M 10000 -n 50 -c 0 -L 3 -o 0 -a 1 -T 0
               -b 2048 -B 4096 -h 0 -S 0 -R 0 -i 0 -F 1000 -g 0 -K 0 -J 0 -O 2
Sucessfully opened a FEDkit receiver with FPGA version 0x3f00002a
Sucessfully opened a FEDkit sender with FPGA version 0x3f200009
/dev/fedkit_sender1: No such device
```

→ *Looks like we can at least communicate with both the cards...*

Next step: Understand what we are doing...

Other Issues

Should be ok to have an older version of the kernel on the network as long as we keep the services up to date.

→ Will wait for a complaint

Possibly will need to isolate the node on a private network with a gateway machine...

May be a general requirement as the complexity grows...

We are making progress with the Fermi version of the kernel...

→ *If this becomes too problematic we can use the environment that is used at CERN*

At some point we may have to worry about moving to a more recent version of the kernel (2.6)

Summary

Took a while to procure a test system

Cards are physically installed and cmsroctest is on the network

Have a working version of the kernel with the “bigphysarea” patch

fedkit (itools) package compiled and installed...

Was able to recognize both? cards...

→ Now need to transfer test patterns between the cards...

For now, collecting documentation at:

<http://ncdf76.fnal.gov/~chlebana/CMS/LumiHardware/>