TWIST DAQ status

- Presently installed at test station
  - 1 FB crate + NGF + PPC
  - 22 TDCs —> 2112 ch (could add 1 TDC)
  - 1 PC used for slow control & DAQ
- For April in M13 area
  - 2 FB crate + 2 NGF + 2 PPC
  - 25 TDCs —> 2400 ch (could move TDC from test station to M13 area)
  - PC + Camac for slow controls
- For April in counting room
  - DAQ host computer + DLT 8000

    capacity is 40GB/55 GB and transfer rate 6MB/s / 8 MB/s

    if event size = 2KB —> 4000 ev/s
  - Software event builder for multi crate tested with dummy loads

Twist Spectrometer Electronics & Cable Requirements

Spectrometer		Wire Planes		Wires Read/Plane			VTX			Analogue Cable					PAD	FB Readout Chs.		
Modules	Type	#	Type	Direct	Muxed	Future	24 Ch	16 Ch daughter	16 Ch	24 Ch	16 Ch (Long)		16 Ch		16 Ch	Total (TDC)		
											Type1	Type2	Type1	Type2		Present	Future	PACT
14	(UV)	28	DC(80)	80	0	0	56	0	56	56	0	0	56	0	140	2240	0	0
2	4(UV)	4	DC(80)	80	0	0	8	0	8	8	0	0	8	0	20	320	0	0
		12	DC(48)	48	0	*32	24	0	24	24	0	0	24	0	60	576	*384	0
2	2($U_m V_m$)	8	PC1(64)	32	128/4	0	0	0	32	0	0	0	32	0	32	512	0	0
1	Tgt	4	PC2(48)	48 (x2)	0	0	0	16	16	0	8	8	8	8	12	192	0	192

12

264

Spectrometer VTX	88	152			
Spare Analogue Cables on Spectrometer	8	2	2	8	2
Spectrometer Analogue Cables	96	10	10	136	10
Spectrometer PAD	264				

264 / 24 = 11 cratis capacity

Spare

2	(UV)	4	DC	80	0	0	8	0	8	0	0	0	0	0	32
1	4(UV)	2	DC(80)	80	0	0	4	0	4	4	0	0	4	0	
		6	DC(48)	48	0	*32	12	0	12	12	0	0	12	0	
1	2($U_m V_m$)	4	PC1(64)	32	128/4	0	0	0	16	0	0	0	0	0	
1	TGT	4	PC2(48)	48 (x2)	0	0	0	16	16	0	8	8	0	8	

VTX on Spare Modules	24	72			
Total VTX	112	224			
Total Analogue Cables	112	18	18	152	18
Total PAD	296				
FB Readout (excl. TEC and Scintillator)	3840	384	192		

TDC Δ

ch

40 (4) 2 m

* Instrumented with VTX but presently has no FB Readout

Note:
Type1 analogue cables are the normal 16-way microcoax.
Type2 analogue cables are 8-way microcoax on a 16–way connector assembly. These are specific to the Tgt PC.

Sc } 1 1
TEC } ?

We have 47 Do we need more ?

Grant F. Sheffer

25/01/01

TWIST Computing needs

Background

- NSERC is in the process of a 5 year plan for SAP in Canada. TWIST has indicated it needs at least $200K in computing hardware. A member of the committee is asking for details on this number.
- A group of physicists are proposing a large computing facily for Canadian SAP. It might be located at Triumf. It should serve the needs of experiments like TWIST, BNL 949 and ATLAS Canada.
- A group of Western Canada scientists is putting together a CFI proposal for a large computing facility ($25 M). Triumf users are part of this proposal and one component considered is a Beowulf cluster (1000 nodes) plus a storage facility (~ 50TB of stacker space) located at Triumf.
- We will be gathering a significant amount of data in the near future. How much computing power do we need in the coming year?

Questions

- How much data are we expecting to collect?

5Kev/s * 2KB/ev *3600 s/hr *20h/d *5d/w *20w/y = 72 TB/y

- How much MC data produced per year?

Same amount as data collected = 72 TB/y

- What will be our analysis model?

  Analyze several times a few runs? Analyze a few times several calibration runs? Check our analysis on a sample of the data?

It might be advantageous to keep a 2nd set of tapes with a sample of the data (1/100, 1/20?) which could reside in this proposed storage facility.

- What CPU power is needed to analyze one event?
- In the short term, should we add more machines to our local cluster to provide CPU power for the 1st year and terminals for the counting room and visitors?
- What percentage of the CPU load can be taken by outside groups at their institutions?

$200,000

50 machines
at 1 GHz

+ 50 for MC

100 x 1 GHz

$2k in

April 2002

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40 tapes / 10^9 ev.

2½ ⇒ 1 tape

~~$400~~