## L2 Components

#### James T. Linnemann Michigan State University DØ Workshop July 9, 1998

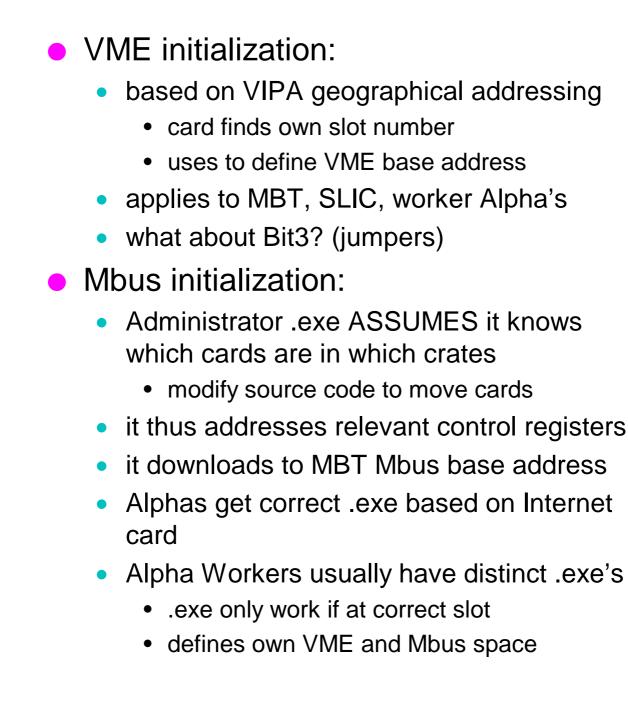
# Agenda

Schedule this sur	nmer JL	5
• Prototype/testing	issues JL	15
<ul> <li>MBT progress</li> </ul>	Bard/Baden	20
<ul> <li>MBT/SLIC Inputs</li> </ul>	Fortner	20
<ul> <li>SLIC status</li> </ul>	Fortner	20
FIC status	Le Du	15
VME Space/Initialization		
	JL/Laurens	15
Monitoring	JL	20
<ul> <li>Alpha ordering/ T</li> </ul>	est Stands J	L 10

# Prototypes / Testing

- Connectors on VIPA crates
- Bit3 Extenders
- Any other purchases needed?
- VMETRO VME Bus analyzer?
- Any other test equipment required?

### VME and MBus Initialization



### VME Address Space

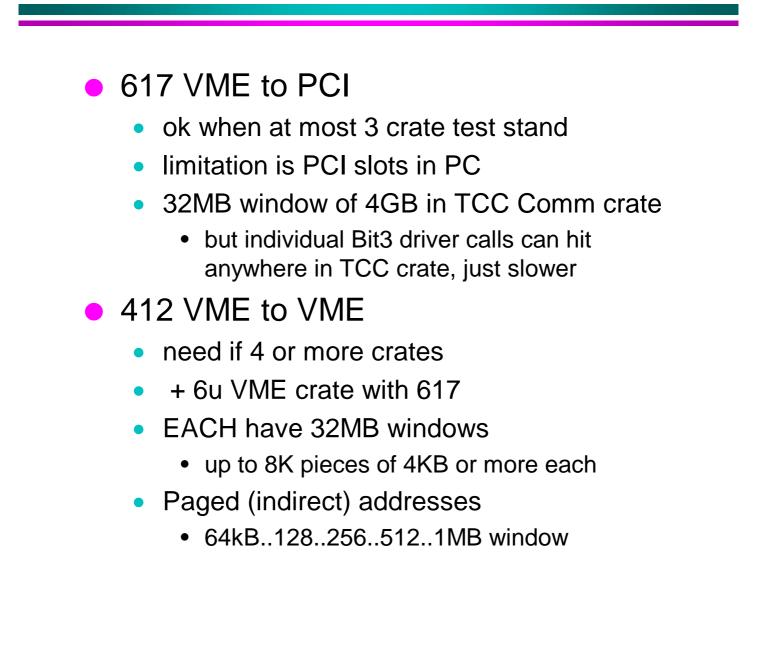
- Long Note from Philippe
- Issues
  - WHAT IS VISIBLE FROM TCC
    - VME space is 32b/crate = 4GB
    - TCC views through all (16) crates thru single 32MB window on Bit3 617 card (28b)
    - splits for A32, A24, A16 spaces separately
    - interrupts also must be mapped

#### Principles

- equal share of direct mapped VME space
  - for each crate
  - for each card
- try to confine problems to 617 in TCC crate
- try to make test code = final code
  - 412 (VME VME) not 617 (VME PCI)
  - equivalent ONLY for direct mapped

How do we proceed

#### Bit3 cards



#### Communication

#### TCC Communication Crate

- single 617 VME to PCI
  - use 16 windows to map to 412's
- a 412 VME to VME for each L2 crate

#### TCC Communication Crate

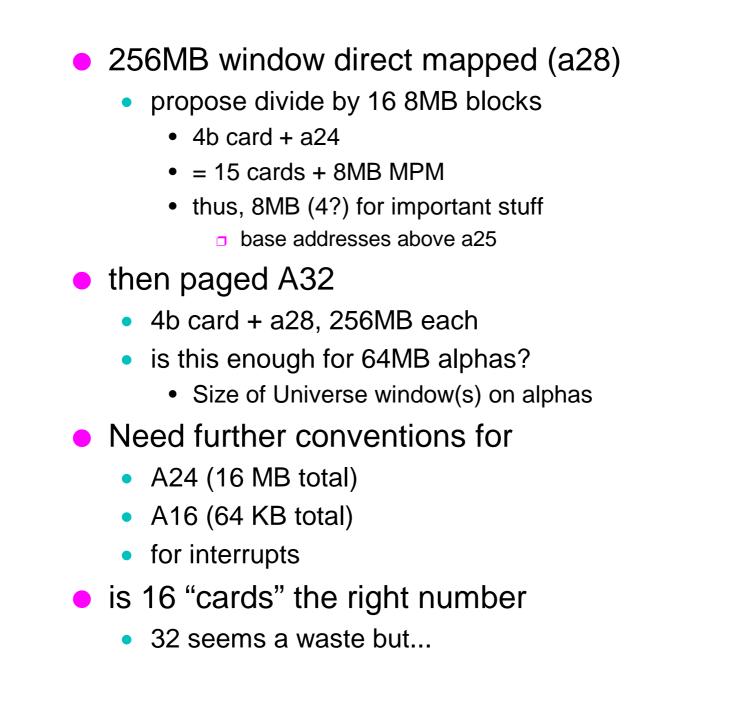
• 16 windows (1 per L2 crate)

- enough for 7L2 (no STT?) + L1, L2 FW
- addr 28-31 define window
- each window 4GB/16 = 1/4 GB = 256 MB
- upper 8MB = reserve for MPM of 412
- set up with jumpers, NOT SOFTWARE

#### DIRECT MAPPING: only A32

- A16, A24 by <u>paged</u> mode
  - write base address to 412
- Interrupts also by mapping in 412
- So, Use A32 when possible?

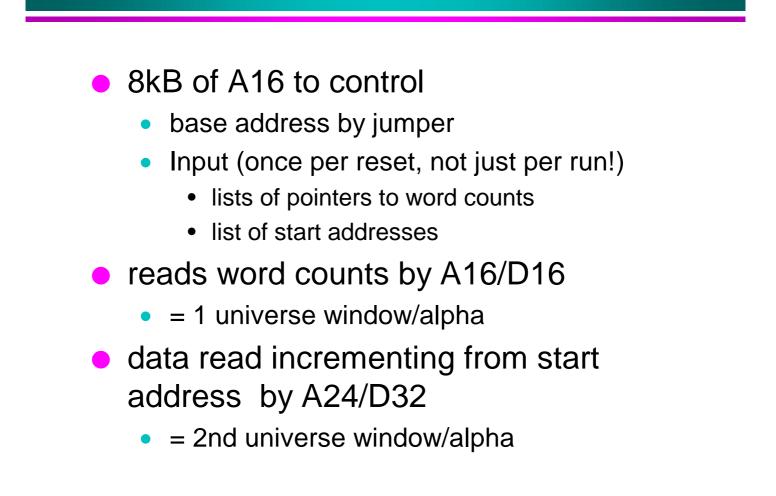
#### Proposal for L2 crate



#### VME Census

- Card Name
- Master or Slave only?
- Uses of A32
- Uses of A24
- Uses of A16
- Interrupts generated
- Interrupts recognized/handled
- Base address by jumper, geographic, or software?

#### VBD



### Fast Monitoring and ECL Scalers

- ECL Scalers in Framework:
  - Always there, even if card crashed
  - Reliable for diagnosis, "stale" only if hung
- ECL in Alphas
  - Alpha Administrator (6 X 32 bits/crate)
    - State
    - Buffer Count
  - Alpha Worker (10 or so X 8 bits/worker)
    - State (simpler)
  - Note: LOTS of other info available by VME but only if Admin or TCC forcibly extract
- ECL in FIC (about 6 in system)
  - keep interface simple (no VME)
  - Buffer count X 4 channels
  - Proposal: 8 bits/FIC
    - jumper select: channel 0:3 or worst of 4
    - 0, 1, 2, 3-6,7-10,11-14,15, 16

#### Fast Monitoring via VME

- Replicate function of ECL scalers on VME board:
- Define scaler gates, sample these at some reasonable frequency
  - 132 ns not necessary
  - read out at .2 Hz or so
    - 1000 samples =>200 Hz; try 1 KHz or so
    - pick convenient down-scaled from clock
- Appear in monitoring by Administrator copying to TCC DPM
- Applies to:
  - MBT
  - SLIC

#### VME Scalers: MBT?

- 8 scalers per card
  - same definition as FIC
- OR 17 scalers per card
  - 0, 1, 2, .... 17
- Select Channel: 0...7
- Define buffer count as number of events with SOME information
- OR worst of 8 (including L1 SCL)
  - always arrives first, pushes up apparent occupancy
- OR worst of 7 (excluding L1 SCL)
- Question: How to enforce timeconsistent copy-before-read of scalers

#### VME Scalers: SLIC

- Same definition as for MBT (0:15) for buffer occupancy
- Add State information for
  - Master DSP
  - DSP 0:3
  - How many bits?
- Master DSP copies counters to readout area on receipt of Collect Status
- Similar questions on getting consistent counts.