L2 I/O Transfer
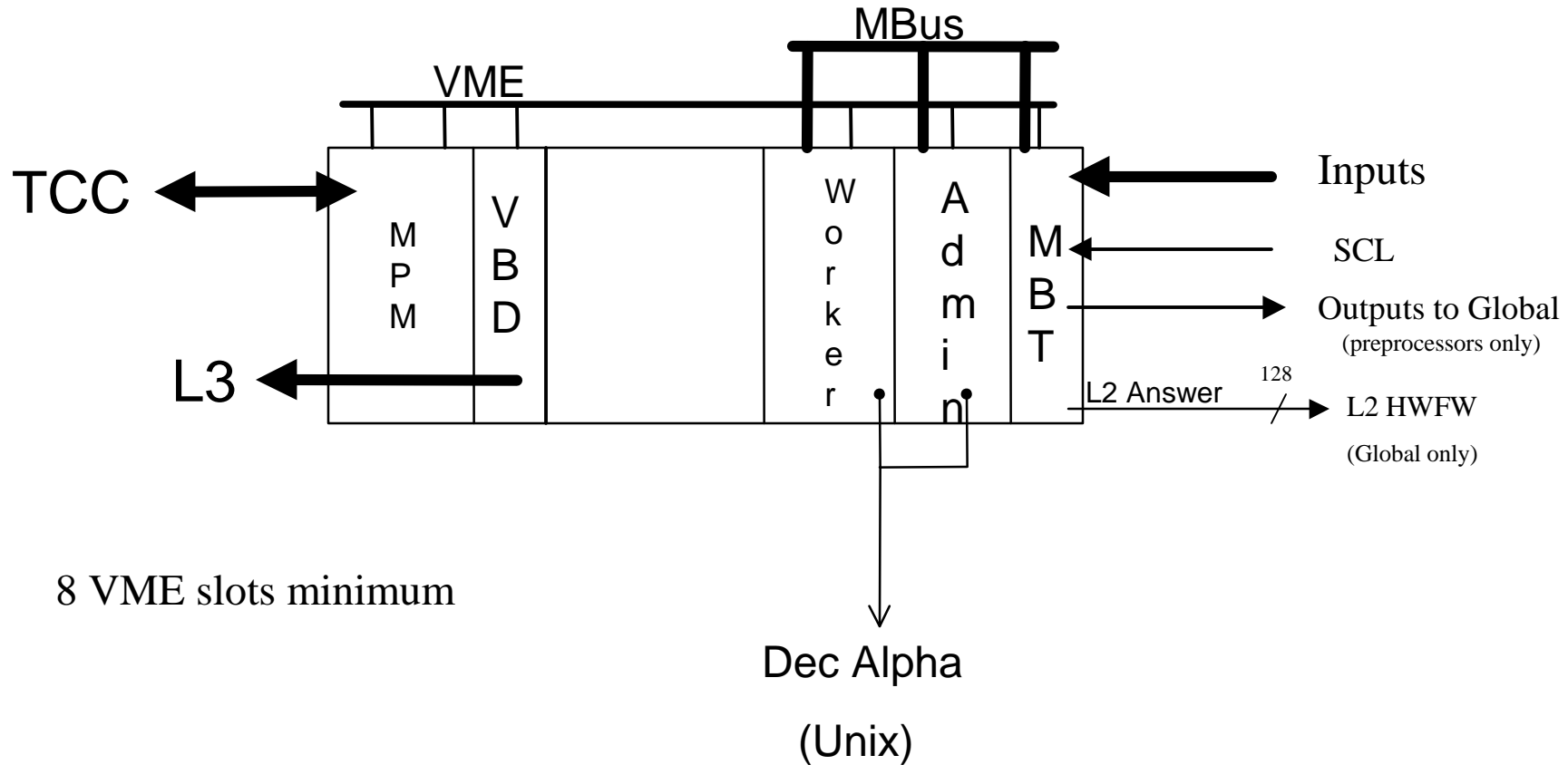
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Trigger Meeting

February 20, 1998

Current Status

MBus

VME

TCC ⬌

MPM | VBD | | Worker | Admin | MBT

L3 ⬅

Inputs

SCL

Outputs to Global
(preprocessors only)

L2 Answer $\quad$ 128

L2 HWFW

(Global only)

8 VME slots minimum

Dec Alpha

(Unix)

JTL, MSU 12/18/97

L2 Global Inputs

- L2 Global Inputs via MBT card
- MBT: propose Fiber 160 Mb/s
  - Requires SLIC have one Fiber output
  - Question: is SCL Fanout Fiber or Copper
- Advantages:
  - Simpler to set up than copper (balancer, transformer
  - Less fussy to make work
  - separation of grounds (if move out of MCH)

L2 Input Fiber, continued

- **Disadvantages of Fiber:**
  - FIC needs fiber to serve MBT, copper for SLIC
  - more expensive: $60/channel or so
    - including cable/fiber?
    - Cost for both ends or one?
  - beware of finger prints
  - patch panel more complex/costly
    - needed to re-cable if L2 in Fixed Counting House and MCH moves

Fiber Input Converter

- Inputs:

- only g-link transfer from L1 CFT/PS
  - assuming 8/10 or 16/20 encoding for integrity

- g-link:
  - Speed requirements of STT input
  - recycle engineering of VRB inputs (STT needs raw data)

- Outputs (Cypress)
  - 160 Fiber (MBT)
  - 160 Copper (SLIC)

L1 CFT Outputs to FIC

- Begin and End Event as g-link Symbols
  - not as values of data
- Not in Gray code
- Padded to 16 B
- 3B Crossing number (to match L1 accept)
- Header and Trailer consistent with L2G input specs
- PS data on fibers separate from CFT fibers
- Bytes produced so no swapping on FIC needed?

Byte (non-) swapping

- Source's responsibility; NONE on MBT card
- Send bytes to Cypress in order such that when assembled in Alpha, they have specified order (B1, B2, B3, B4)
- Will provide "final" spec so multi-byte quantities (3B crossing number, 2B eta, etc) come out right in Alpha
- Do L1CFT 2B quantities have fields crossing Byte boundaries?

L2G Header/trailer

- 12B Header, 4B Trailer
- Tradeoff:
  - 4B Header word fixed vs.
  - 4B Trailer = one 4B Header word
- Opinions?

L2G Header, Trailer Matched

- H1: Length (1B), Format # (2B), Object Length(1B)
- H2: Source(1B),Rotation(2B), Bunch(1B)
- H3: Status(1B),Version(1B),Switches(1B),Nobj(1B)

- Trailer = H2

L2G Header, Fixed Word

- H1: Length (1B), Format # (2B), Object Length(1B)

- H2: Nobj(1B),Rotation(2B), Bunch(1B)

- H3: Source(1B),Status(1B),Version(1B),Switches(1B)

- Trailer:Source(1B),Rotation(2B), Bunch(1B)

FIC for raw data?

- **More complex beast!**
  - Gray Code conversion required
  - Need to generate/resynch crossing number
    - bus to all channels
  - Need to generate header/trailer
  - need to pad to 16B?
  - REQUEST g-link start/end symbols
    - else recognition task needed to count events in buffers
- **Considerable Escalation over L1 FIC**
  - Defer design until proven to be needed