Correlator Monitor & Control System

(CMCS)

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Correlator Monitor & Control

General Overview

- Topology

CMIB Hardware

- Requirements
- COTS Module Evaluation Candidates
- Pricing

CMIB Software

- Requirements
- Evaluation Candidates

Other M&C Hardware/Software

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Hardware Topology

- 300+ Correlator Monitor Interface Boards (CMIB)
- 1 Master Correlator Control Computer (MCCC) (possible hot standbys)
- 1 Correlator Power Control Computer (CPCC) independent of MCCC
- Copper based networking between MCCC and CMIBS
- Network switches/hubs to isolate traffic

Software Topology

- Virtual Correlator Interface (VCI)
- CMCS Test Software

CMIB Hardware Requirements

- Use industry standard COTS modules
  - PC/104, PC/104+, PCMCIA
  - What about the Antenna MIB?
- Ethernet for communication channel
  - 10/100BaseT, use switches and hubs to isolate traffic.
- Self contained (Flash) boot code and correlator firmware
  - Ability to update over network.
- Watchdog and external boot/resync capability

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CMIB Hardware Candidates & Pricing

- Embedded Planet Lite850

  PPC based

  PCMCIA Bus

  16M RAM 16M Flash

  About $300/ea. in quantity

- JUMPtec MOPS 520

  x86 based

  PC/104+ bus

  16M RAM 16M Flash Disk

  $289/ea. in quantity

CMIB Software Requirements

- Provide nominal predictability (real time) for 10ms interrupt rate

  Need to “feed” the hardware periodically, but we have no hard timing requirements
- Provide versatile network connectivity and “user” capability

  Allow for various flavors of network protocols and data channels

  (i.e. TCP, UDP, sockets, RPC, etc.)

  Allow for remote “logins” for testing and configuration changes
- Portable for both target and host architectures

  Target hardware will probably remain fixed but development hosts and higher level M&C should allow for technology upgrades.

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CMIB Software Candidates

- TimeSys Linux (Preemptible Kernel / Low Latency)

  Ported to Lite850

  “Free” version probably is plenty predictable for our needs

  RT version is available for an initial and per target fee
- WhiteDwarf Linux (Embedded / Small Footprint)

  Ported to MOPS520.

  Probably would be good test platform for RTAI or other “real time” Linux kernel patches.
- Commercial RTOS?

  Could probably share RTOS selection with Antenna MIB for the price of an additional target license.

  Development should really end upon deployment

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Other M&C Hardware/Software

- Conventional SBCs or other high availability platform (VME, CPCI, etc.)
- MCCC expected to have rather high networking loads
- CPCC expected to be rather bored but needs to be vigilant.
- OS should lend itself to high reliability, programmability, and maintainability

  Linux?

  Solaris?

  Windoze?

  VxWorks?