CANbus[1] and DCS working group

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Executive summary…

Suggestion to form a DCS working group between interested parties (Üli, Andrey @ Mainz, Adam, me @ RAL)

Remit along the lines of

- What are we trying to do with DCS
- Network topology and role of TCM
- Our DCS contribution to test beam

My initial preference on topology

[1] *(my spell checker thought CANbus should be cannabis…)*

What are we trying to do with DCS

Two modes of operation

Steady state (everything OK…)

- monitoring voltages and temperatures (currents?)
- watchdogs
- controlling crate power (fan speeds?)
- *in general central DCS not interested (only cares about overall state)*

Problems

- alarms and warnings in advance
- controlling crate power
- *central DCS needs to know before things start to smoke…*

Implementation

View from the top down is of CANopen nodes talking via OPCserver to PVSS

- steady state monitoring separate from alarm handling

Our CANbus topology

CANbus network can have up to 127 nodes

- possible to have our entire system as one network, with each module a node on that network
- see for example Andrey's talk at HD
- certainly OK for monitoring

But smaller networks could be more robust

- central DCS tests with ELMBs were with 6 networks of 32 ELMBs

For us a natural split would be at the TCMs

- TCM CANopen node on inter-crate network, server on intra-crate network
- see Adam's previous talks
- modules need not be CANopen nodes

We should choose soon

My preference

Smaller networks

- easier to localise catastrophic problems
- protect PVSS from floods of error messages by filtering at the TCM

Traffic model

Inter-crate

- TCM nodes send values when they change
- server polls TCM nodes as watchdog
- TCM nodes raise alarms

Intra-crate

- could be same (modules sending values),
  could be continuous round robin polling by TCM as master
- want to raise a global crate alarm as such rather than N module alarms
- when alarm arises, TCM checks other modules before raising alarm on inter-crate network