Compact Muon Solenoid (CMS) Electromagnetic Calorimeter (ECAL) Detector Control System (DCS)

Re-integration and Consolidation of the Detector Control System for the Compact Muon Solenoid Electromagnetic Calorimeter

- CAN interface for low voltage supplies and front-end ELMBs (Embedded Local Monitor Boards)
- SYS TEC USB-CANmodul16
- Previous underuse of CAN ports
- New architecture enables more efficient layout with fewer modules
- All compatibility problems were removed
- Any combination of sub-applications was made possible
- Proposed merging minimized I/O interface complexity

Migration to new computers

- Old computers: DELL 1950/2950
- New computers: M610 blades
- Reduction to 3 servers
- Additional server available for load distribution (if necessary)

CAN interface consolidation

- CAN interface for low voltage supplies and front-end ELMBs
- SYSTEC USB-CANmodul16
- Previous underuse of CAN ports
- New architecture enables more efficient layout with fewer modules

Database schema merging

- Databases for application images (ConfDB) and historical data (CondDB)
- ConfDB merging simplifies deployment, maintenance and operations
- CondDB merging was essential due to WinCC OA design

Regression testing

- Frequent modifications to software and DBs required testing
- Validation of new WinCC OA and JCOP Framework versions
- Automatic test environment created using Python & Jenkins CI

Software application merging

- Incompatibilities: - Internal object names - I/O interface numbering
- All compatibility problems were removed
- Any combination of sub-applications was made possible
- Proposed merging minimized I/O interface complexity

Proposed merged architecture

- Server 1: Monitoring & safety system interfacing
- Server 2: Wiener power supply monitoring
- Server 3: CAEN power supply Monitoring

Conclusions

- Significant consolidation and merging achieved
- Automatic testing ensured smooth re-integration
- Working towards goal of all readout via Ethernet

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