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MMC Implementation for the MTCA Devices Used in X-FEL

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The MTCA electronics standard, except the high performance fast serial links on the backplane, provides also extensive management of the devices in crate.
Each AMC board must have MMC implemented to get power in the MTCA crate, which in many cases is barrier for new users to switch to MTCA.
This presentation/poster will show details and aspects of the MMC implementation developed at DESY for the X-FEL project, in which MTCA.4 will be used as the main standard for the electronic systems.

Summary

MTCA becomes more and more popular standard of electronic devices used in the experimental physics. In comparison with older multi-drop parallel buses used in such standards like VME or CompactPCI, it brings new level of performance and reliability by enabling modern fast serial interfaces such as PCI Express or Gigabit Ethernet directly on the backplane.
Except the higher performance, MTCA provides also extensive management based on the IPMI protocol. This covers such aspects like unit identification, hot-swap control, power management and interconnect management. Every AMC unit in the MTCA shelf must be equipped in Module Management Controller (MMC) which takes care of above issues. MMC is needed to put board into operational state and provide necessary information to the management unit (MCH) to enable power in the particular slot.
Implementation of the MMC is not trivial, because it has to follow the IPMI 1.5 specification, and extensions defined by PICMG
(consortium which defined the MTCA standard) has to be implemented as well.
MMC implementation seem to be a barrier for new users to switch to MTCA, especially for those who have used standards like VME,
where boards can be considered as “plug & play” in comparison with the MTCA.
The X-FEL project will use MTCA.4 as a main standard for electronic devices, and for this purpose own MMC implementation has been developed, this presentation/poster will show details and aspects of it.

Author: Dr SZEWINSKI, Jaroslaw (NCBJ Swierk)

Presenter: Dr SZEWINSKI, Jaroslaw (NCBJ Swierk)

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