Content

The Advanced Telecommunications Computing Architecture (ATCA) specification implements important key features such as high reliability, high availability, redundancy and serviceability for control and data acquisition instrumentation fault condition, hardware malfunction, firmware updates and hardware reconfiguration. Red Hat Enterprise Linux and corresponding kernels already have built-in mechanisms and embedded software for Peripheral Component Interconnect Express (PCIe) hot-plug support that allows automatically remove of PCIe device nodes and associated device files from the system providing a fast replacement strategy for damaged cards without require an entire system shutdown. This paper describes handling of PCIe hot-plug events at a software middle level using the PCI Industrial Computer Manufacturers Group (PICMG) standard interrupt mechanism. The handling tasks can be accomplished by ATCA cards chipsets with support to PCIe hot-plug features, Linux hot-plug embedded controller and Red Hat built-in device manager module. The goal is to implement a fast hardware replacement solution without system shutdown providing high availability capabilities to ATCA control and data acquisition instrumentation specially directed for large fusion experiments such as International Thermonuclear Experiment Reactor (ITER).

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