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Progress in the Localization of MTCA Platforms and Applications

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The Micro Telecommunications Computing Architecture (MTCA) chassis, as a carrier platform compliant with open standards, plays an essential role inhigh-end computing and communication systems. Notably, its domestic development is of great significance for achieving autonomy and controllability in China's critical sectors. In compliance with the MTCA.4 specification, a complete set of MTCA chassis components has been developed and mass-produced. The chassis, manufactured from high-strength aluminum alloy, is compatible with 19-inch standard racks and supports both 2U (6-slot) and 10U (12-slot) configurations, providing flexible deployment for various application scenarios. The backplane, in conjunction with a self-developed MicroTCA Carrier Hub (MCH), supports a differential data rate of 10.3125 Gbps and establishes a high-speed data exchange center, which enables both local and remote communication between Advanced Mezzanine Card (AMC) modules and processors. The processor employs the Hygon CFU to ensure full domestic compatibility. Inside the chassis, secondary power conversion modules deliver up to 2000 W, while a Power Management (PM) module ensures per-slot voltage and current allocation as well as fault monitoring. A management module, developed with domestic chips, supports the Intelligent Platform Management Interface (IPMI) protocol and enables real-time monitoring of key parameters such as temperature, voltage, and fan speed. In addition, a high-performance Advanced Integrated Mezzanine Carrier (AIMC) board has been developed, with a Zynq processor as its core. This board supports both EPICS deployment and the integration of AI models.

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