ATCA- MTCA- Crates

Pre-Workshop MTCA
Real Time Conference
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Agenda

- ATCA Crate
- MTCA.0/MTCA.1 Crate
- MTCA.2 Crate
- MTCA.3 Crate
- MTCA.4
ATCA
ATCA Crate Components

Front View

Rear View

Cable Tray

Backplane

Front Card Cage

Fan Tray with Alarm Board

Slot for Shelf Manager 1

Slot for Shelf Manager 2

Serial Interfaces for shelf Managers

Air Filter

ESD Wrist Strap Terminal

Fan Tray

Rear Card Cage

Power Entry Module A (PEM)

Power Entry Module B

Cover PEM
ATCA Crate

Variations of crates depending on:

- Numbers of slots
- Cooling concept
- Heat dissipation

14U 14 Slot
Front-to-rear cooling
300W/slot

6U 6 Slots
Right-to-left cooling
450W/slot

3U 2 Slots
Front-to-rear cooling
450W/slot
MTCA.0
MTCA.0

• The basic idea of MTCA is to have a shelf that contains just AMC modules
• Backplane directly accepts AMC modules
• AMCs are interchangeable between ATCA and MTCA
• The infrastructure of a ATCA Carrier was adapted into the MTCA shelf (power, management, switching)
• No rear I/O, power input and all outputs to the front
MTCA.0

• As MicroTCA does not use a Carrier board, the power, management, clock distribution and switching functionality must be realized onto another device

• Management Module: MCH (MTCA Carrier Hub)
  • IPMI management
  • clock distribution / generation
  • Switching functionality
  • JTAG slave / master
  • Redundant MCHs

• Power Module
  • 12V Payload Power
  • 3.3V Management Power
  • Redundant power modules

• Dedicated Slots for these modules are located in the MTCA Shelf

• The position and the form factor of the cooling unit is depending on the cooling concept.
MTCA.0

ATCA Carrier

AMC
MMC

Clock distribution
Switching
Carrier IPMC
Power

MTCA Shelf

Zone 3

Zone 2

Zone 1

Redundancy added!

Current Limit
Current Limit

MTCA Shelf

Redundancy added!
MTCA.0

MicroTCA block diagram
The variation of MTCA crate are depending on:

- Numbers of slots
- Cooling concept
- Heat dissipation
- Request for redundancy
MTCA.2

MicroTCA.2 - Hardened air Cooled MicroTCA
- For Telecommunication outdoor and military air, land and sea applications
- Clamshell System for high shock & vibration requirements
- Retainer solution allows forced air flow through heat sinks
MTCA.3

MicroTCA.2 – Conduction Cooled MicroTCA
- For Telecommunication outdoor and military air, land and sea applications
- Standard AMC board in a clamshell provides a thermal conduction path to the Thermal Interface Surfaces of the Chassis Sidewall
MTCA.4
MicroTCA Specification Family Tree

MTCA.4
MicroTCA Enhancements for Rear I/O and Precision Timing

MTCA.0
Micro Telecommunications Computing Architecture Base Specification

MTCA.1
Air Cooled Rugged MicroTCA Specification

MTCA.2
Hardened Air Cooled MicroTCA Specification

MTCA.3
Hardened Conduction Cooled MicroTCA Specification

AMC.0
Advanced Mezzanine Card Base Specification
MTCA.4

Features of MTCA.4 shelf with MicroRTM, side view

- Safety keying, 8 positions
- 3-pair ZD connector (2 x 30 diff. pairs)
- AMC card edge connector
- Space for mounting mezzanine boards
  Could be used for clock and trigger distribution
- Retention device (defined in Rugged MicroTCA spec.)
- μRTM handle, is at the top of the μRTM
  (μRTM front panel appears up side down)
- Retention device (defined in Rugged MicroTCA spec.)

Front

REAR
MTCA.4 Chassis types

Various different MTCA.4 chassis available

- Fully redundant
- Compact sizes
- Small form factors
- Different cooling concepts
- Different backplane topologies
Thank You