Form Factors
ATCA-AMC-MTCA

Pre-Workshop MTCA
Real Time Conference
June, 2018
Agenda

- What is xTCA?
- Specifications Overview ATCA
  - ATCA
  - AMC
  - MTCA.0
  - MTCA.1
  - MTCA.2
  - MTCA.3
  - MTCA.4
What is xTCA?

xtCA

ATCA
Advanced Telecom Computing Architecture

AMC
Advanced Mezzanine Card

MTCA
Micro Telecom Computing Architecture
ATCA Specification Family

PICMG 3.1
Ethernet/Fibre Channel Over PICMG 3.0

PICMG 3.2
InfiniBand Over PICMG 3.0

PICMG 3.3
StarFabric/Advanced Switching for AdvancedTCA Systems

PICMG 3.4
PCI Express and Advanced Switching for AdvancedTCA Systems

PICMG 3.5
Serial RapidIO for AdvancedTCA Systems

PICMG 3.8
AdvancedTCA Rear Transition Module Zone 3A

IRTM.0
Intelligent Rear Transition Module (IRTM) Base

AMC.0
Advanced Mezzanine Card Base Specification
ATCA Boards

Board size and connectors

- Front board size 8U x 280
- Rear board (RTM) size 8U x 70 mm
  - Connects directly to front board
- Board width 6HP (1.2”)
- Alignment/Key pins
- Zone 1: Management and Power
- Zone 2: Base Interface and Fabric Interface
- Zone 3: Interface to RTM
ATCA Crate

The dimensions of an ATCA crate is 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
AMC
AMC Modules

• Initially developed as function extension for ATCA Boards
• Fully integrated into the ATCA IPMI management structure
• Plugged into a so called ATCA Carrier
• Hot Swap capability
AMC Modules

AMC Module Sizes

6 Standard Sizes

- Single
  - 3HP Compact
  - 4HP Mid-size
  - 6HP Full-size
- Double
  - 3HP Compact
  - 4HP Mid-size
  - 6HP Full-size
## AMC Modules

### AMC Module Sizes

<table>
<thead>
<tr>
<th></th>
<th>Compact-Size (3HP)</th>
<th>Mid-Size (4HP)</th>
<th>Full-Size (6HP)</th>
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</thead>
<tbody>
<tr>
<td><strong>Single modules</strong></td>
<td><img src="image1.png" alt="Image" /></td>
<td><img src="image2.png" alt="Image" /></td>
<td><img src="image3.png" alt="Image" /></td>
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<td>73.8x13.88x181.5mm</td>
<td>73.8x18.96x181.5mm</td>
<td>73.8x28.95x181.5mm</td>
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<tr>
<td><strong>Double modules</strong></td>
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<td><img src="image5.png" alt="Image" /></td>
<td><img src="image6.png" alt="Image" /></td>
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<tr>
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<td>148.8x13.88x181.5mm</td>
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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 Subrack

Basic dimensions of a MTCA subrack
The dimension of a MTCA crate is depending on:
- Numbers and sizes of slots
- Cooling concept
- Heat dissipation
- Request for redundancy
AdvancedMC front panel has to be fastened (screwed) to the subrack

MTCA.1 modules (XR2)

Front panel with flange
Additional retention screw

MTCA.1 front panel (XR2)

AdvancedMC.0 front panel

W1 95,0 mm Single width
    170,0 mm Double width

W2 84,0 mm Single width
    159,0 mm Double width
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

- Dimensions
  - Clamshell for single wide module: width 98,0 mm, length 212,7 mm w/o handle
  - Clamshell for double wide module: width 173,0 mm, length 212,70 mm w/o handle
MTCA.3

MicroTCA.3 – 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

- Dimensions
  - Clamshell for single wide module: width 98.0 mm, length 212.7 mm w/o handle
  - Clamshell for double wide module: width 173.0 mm, length 212.7, 0 mm w/o handle
MTCA.4
MTCA Spec Family Tree:

- **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

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

- **AMC.0**
  Advanced Mezzanine Card Base Specification
MTCA.4

Module Sizes

AMC
Side 2

μRTM
Side 2

(180.85 +/- 0.4) (Rugged uTCA Spec. Figure 2-7)

188.15 +/- 0.4
MTCA.4 Chassis dimension

The dimension of a MTCA crate is depending on:
• Numbers and sizes of slots
• Cooling concept
• Heat dissipation
• Request for redundancy

But: The depth of the chassis is defined by the combination of AMC- and RTM modules.
Thank You