

More Flexibility with ATCA using AMCs

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Kontron at a glance

- largest ECT company worldwide
(ECT = embedded computer technology)
- 230 mio EURO Revenue in '03
- publicly traded on TecDax
- operationally profitable
- ~ 1800 employees worldwide
- German Company
Hqs near Munich



Kontron's approach to

Advanced TCA™



Computer
blades &
modules

I/O
blades &
modules



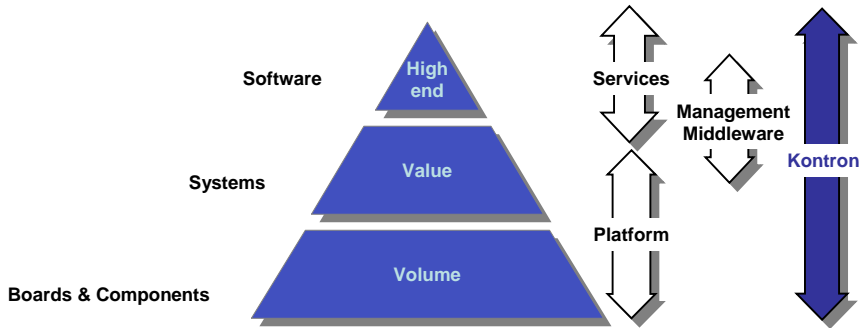
Chassis

Software/
Middleware



Kontron as Platform Provider

...and value chain manager



Kontron partners Delivering entire application-ready solutions



- ▶ Carrier Grade Linux
- ▶ Open Source Solution
- ▶ FCNC i.a (MCA platform) support



GOAHEAD

- ▶ Leverages iSCSI for use NFS providing 99.999% high availability
- ▶ Deployed in commercial networks worldwide
- ▶ Comprehensive solutions for distributed messaging and extended systems management



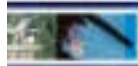
- ▶ Layer 2 and Layer 3 switching and routing
- ▶ CarrierClass™ high availability, DoS, and load balancing
- ▶ Open standard, Linux™ based solution



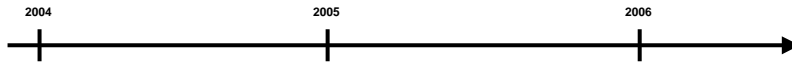
- ▶ PPL - Packet Programming Language for fast, intuitive programming of 10GbE 300000
- ▶ Virtual machines - Flexible, offload user-space applications directed by PPL
- ▶ Build potential IP networking applications - easy python, C/C++/C#, Java, Perl, shell, etc. integration, remote board control, IPv6/IPv4 inter-working



- ▶ Embedded database management, zero administration
- ▶ Proven edge of software licenses in relation to their individual use applications including: VNF, Network Switches, Media Servers, Gateways, and more
- ▶ Quality factor: Best to market and lowest total cost of ownership



Product Evolution



Components:
ATCA Boards
AMC- Modules
NPU-products

Integration:
Boards, Modules
Enclosure incl. Power Supplies
Operating Systems

Appl. Ready Platforms:
Boards, AMC-Modules
Chassis, Platform Management
Middleware, Switches, Line Cards



Kontron's Value Proposition

- **World market leader**
in cPCI & Modules
 - ETX, SOM, ETXexpress ...
- the world's first AMC-
supporting ATCA
blade (AT8001)



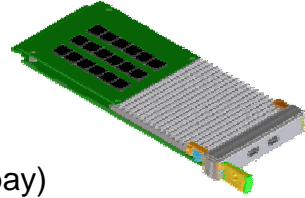
PLUS ... **AMCs**



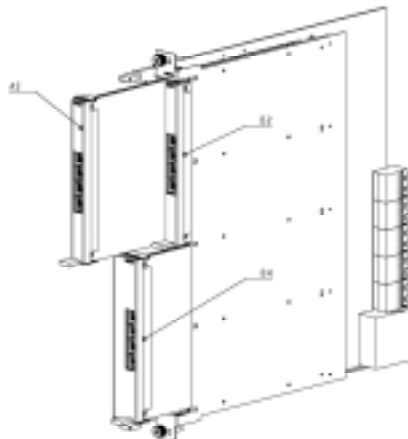
Advanced Mezzanine Cards

Advantages

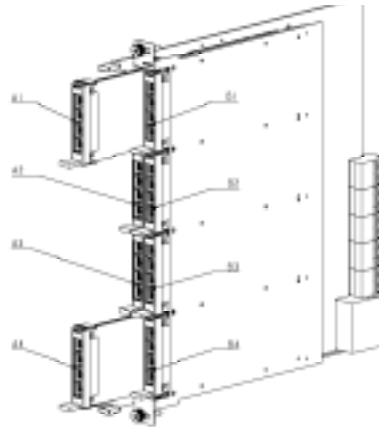
- Hot swappable, field-replaceable units
- High real estate
- High power envelope (up to 60W per bay)
- High speed serial interconnect based on LVDS
- Guaranteed interoperability (electronic keying)
- ATCA compliant manageability
- Open Standard (PICMG AMC.x.)



Double width, half/full height

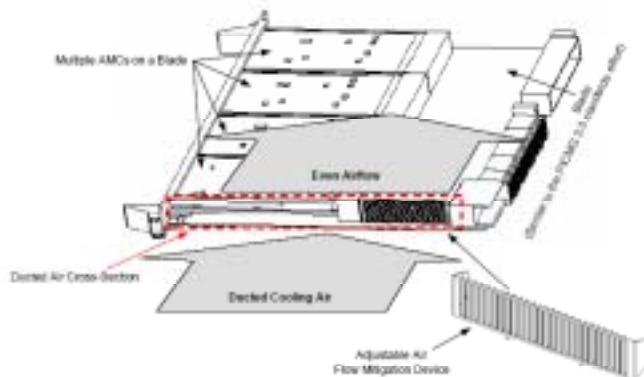


Single width, half height



Airflow on Blade

Using an airflow mitigation device for more even cooling



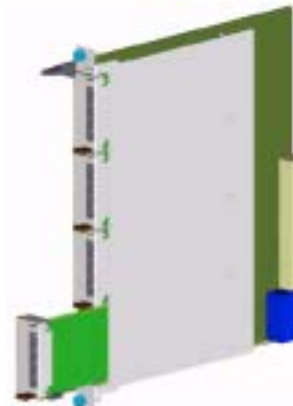
AMC – PMC comparison

| Technology | AMC | PMC |
|----------------------------------|---|---|
| Form Factor | single or double width, half or full size | single or double width |
| Module Interconnect | - PCI Express - n x 1 GE up to 10GE - XAUI, FC | - PCI or PCI-X - 1 GE |
| Interconnect Speed | up to 21 x 12.5 Gbps LVDS | up to 4 Gbps (PCI) up to 1 Gbps (GE) |
| High Availability Support | Front loadable, Hot swappable, full ATCA RAS support | none |
| Module Types | I/O, CPU, NPU, storage, SETS | I/O, CPU |
| Management | dedicated IPMI interface | In-band management |
| Power | up to 60W per bay | up to 20W per module |



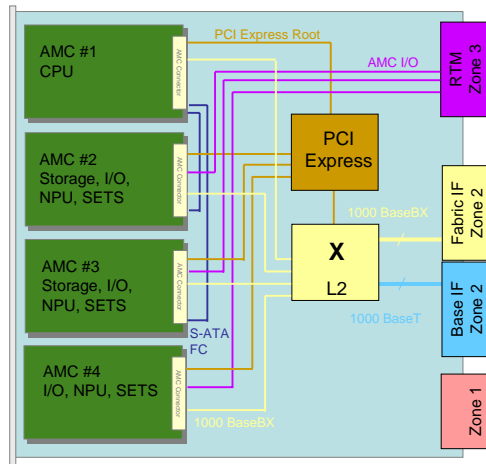
AMCs: extending ATCA capabilities

- Tailored to the needs of the Telecom Industry
- Multiple, field-replaceable AMC units supportable per ATCA carrier board
- Wide range of AMC applications
 - I/O modules (ATM/POS, E1/T1, FE/GE,...)
 - SETS (Synchronous Equipment Timing Source) modules
 - General purpose processor modules
 - Network communication processor modules
 - Mass storage modules
- Fully compatible with ATCA RAS concept



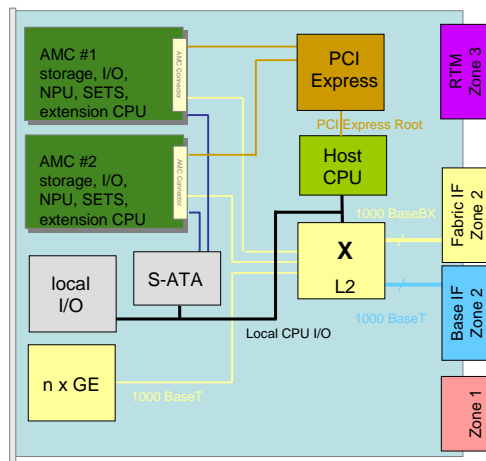
Example for implementation (I)

- Simple carrier
(carrier node blade)
- Intelligent AMC
 - General purpose CPU
 - Mass storage
 - SETS
 - NPU / Communications Processor
 - Intelligent I/O



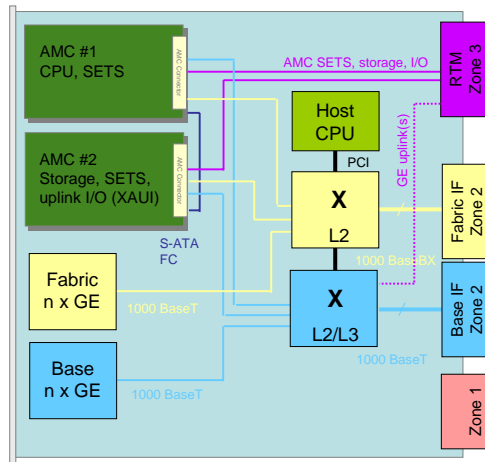
Example for implementation (II)

- Intelligent carrier
(processor node blade)
- Intelligent AMC
 - Mass storage
 - I/O
 - NPU / Communications Processor
 - SETS
 - (General purpose CPU)



Example for implementation (III)

- Intelligent carrier
(hub blade)
- Intelligent AMC
 - General purpose CPU
 - Mass storage
 - SETS
 - Uplink I/O
(inter-chassis link)



AMC Advantages

- significantly increase the flexibility of ATCA compliant system configurations
- enable highest density system architectures
- provide a new level of port granularity & variety
- support 'Carrier Grade' features on module level
- one step up in configurability of Telecom systems



Summary

- **AdvancedTCA market is growing strongly**
 - CPU Blades
 - ATCA-Carrier Blades
 - ATCA Switch Blade
 - chassis technology
- **AMCs are adding level of flexibility**
 - PrAMC
 - Line Cards
 - StAMC
 - even beyond ATCA blades ...



kontron
... always a Jump ahead!

