

SHARE YOUR VISION. WE'LL SHARE OUR INNOVATION.



Leading-Edge Embedded Computing Solutions

Full xTCA Ecosystem



KEK – VadaTech Introduction

April 8, 2014

CORPORATE FUNDAMENTALS

- VadaTech was incorporated in August 2004
- Privately held, well-funded, debt-free and profitable
- 25 years experience of product innovation
- Corporate HQ, R&D and manufacturing in Henderson Nevada
- State-of-the-art facilities, total of 92,000SF
- 6 SMT Lines
- AS 9100 Certified
- Worldwide distribution
- Subsidiaries in EMEA and APAC



CORPORATE QUALIFICATIONS

- The Industry xTCA leader - AdvancedTCA/MicroTCA/AMC
- VadaTech uniquely offers every key xTCA infrastructure component. This distinction demands that all products fully comply with xTCA specifications. Compliance is demonstrated in disciplined product design and interoperability with multiple industry vendors.
- VadaTech developed Shelf Management solution is proven, robust, reliable, and has flexibility to manage any ATCA or MicroTCA chassis. It is object oriented and has over 120,000 lines of code. It is widely deployed in Telco, Physics, Aerospace, Industrial, and Military applications.
- VadaTech offers Layer 2 & 3 Management Software utilizing IPInfusion stack
- VadaTech has created the industries' largest library of AMC products including Processors, Storage, IO, FPGA, Ethernet, and Graphics.
- VadaTech offers large selection of ATCA RTM modules for Storage and IO.
- VadaTech is an Executive Member of PICMG

ABOUT VADATECH

VadaTech provides innovative embedded computing solutions from board-level products, chassis-level platforms, to configurable application-ready systems.

With a focus on MicroTCA and AdvancedTCA solutions, we offer a wide range of unmatched product selection and expertise with a full line of 35+ Chassis and 300+ AMC Modules/ATCA board-level products.



CORE CAPABILITIES

- Product innovation
 - Broad product range with unique feature sets
- Rapid product introduction / modification
 - Design block re-use to maximize leverage
 - Complete control of design-prototype cycle
- Flexible business model
 - Semi-custom product without NRE (subject to minimum order requirements)
- Cost control through in-house manufacture
- Complete system provision



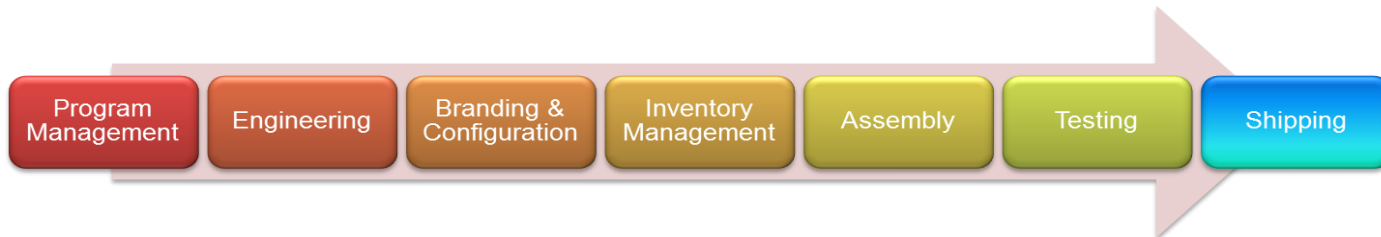
VALUE-ADD SERVICES

- Custom Product Development
 - Hardware and Software for xTCA products
- System Level Integration
- In-house Testing
 - Environmental (Vibration and Thermal Testing)
 - Burn-in
- Sustaining Engineering
- Product Compliance
 - NEBS, UL, MIL



ENGINEERING SERVICES

- Turn-key Designs
- Hardware and software design
- Quick Turn Designs
- Based of an existing design brought by the customer, customer provides Gerber files
- Schematic Capture, Board Layout & Design
- DFM (design for manufacturability), DFT (design for testability)
- Test Development
- Prototype Program



PRIMARY MARKETS

Cloud Computing



Telecomm



Industrial



Defence



MTCA.0

- Base specification
- Air-cooled

MTCA.1

- Rugged
- Air-cooled

MTCA.2

- Hardened
- Hybrid cooling

MTCA.3

- Hardened
- Conduction cooled

High Energy Physics



MTCA.4

- Rear I/O
- Precision timing

PRODUCTS AND SERVICES

Software



- Shelf Management
- ScorpionWare
- IPMC
- FPGA

Chassis & Application-Ready Platforms



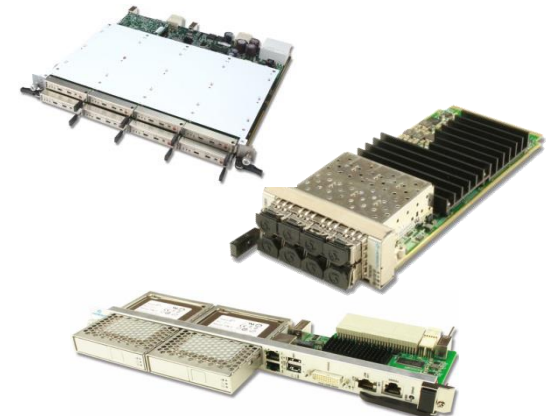
- MicroTCA
- AdvancedTCA
- Rugged/ATR
- Custom Solutions

Infrastructure



- Shelf Manager
- MCH
- Power Module
- Fan Controller
- Power Entry
- JSM

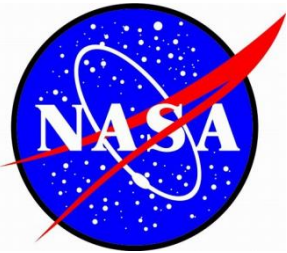
Board Level



- ADC/DAC
- Processors
- Graphics
- Ethernet
- Storage
- Telco/GPS Clocks
- Digital IO
- FPGA

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SAMPLE CUSTOMER LIST



GE imagination at work

LOCKHEED MARTIN



ERICSSON

BAE SYSTEMS



ARTESYN™
EMBEDDED TECHNOLOGIES

QUALCOMM®



SAAB

SPRING 8



ORACLE®



KRATOS
DEFENSE & SECURITY SOLUTIONS



MERCURY
COMPUTER SYSTEMS

NFRI

HARRIS



GENERAL DYNAMICS

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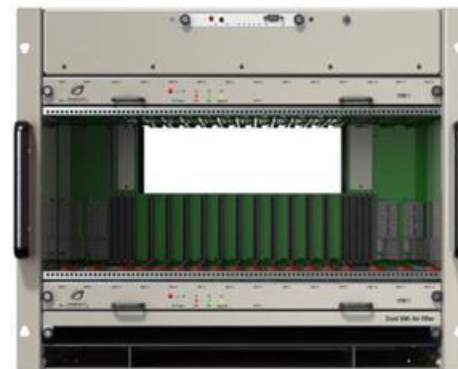
PARTNERS



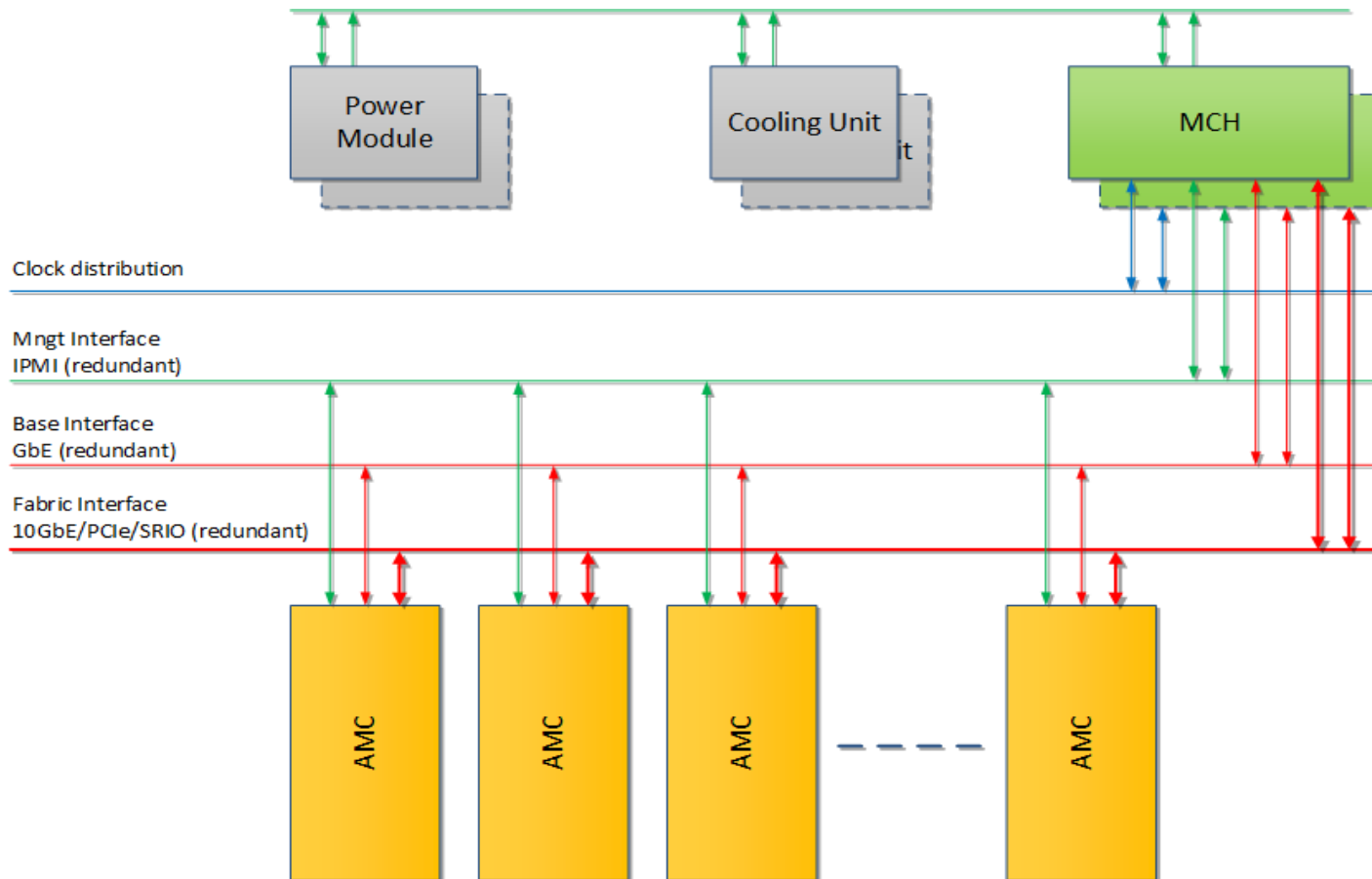
THE POWER OF VISION

VADATECH & MTCA .4

- Based on extensive MTCA.0 product range
 - 160+ AMCs
- Full infrastructure capability
 - Chassis, MCH, PM, CU, JSM
- Strong customer interaction
 - Multiple active global engagements
 - Committed to supporting MTCA.4
 - 3 FPGA products
 - 3 Chassis products
 - Supply Partnerships with DESY & University of Michigan



SIMPLIFIED MICROTCA ARCHITECTURE



MTCA .4 FPGA AMC PRODUCTS

AMC520

10-ch ADC
16-bit, 125MSPS
2-ch DAC
16-bit 250MSPS
Virtex-6

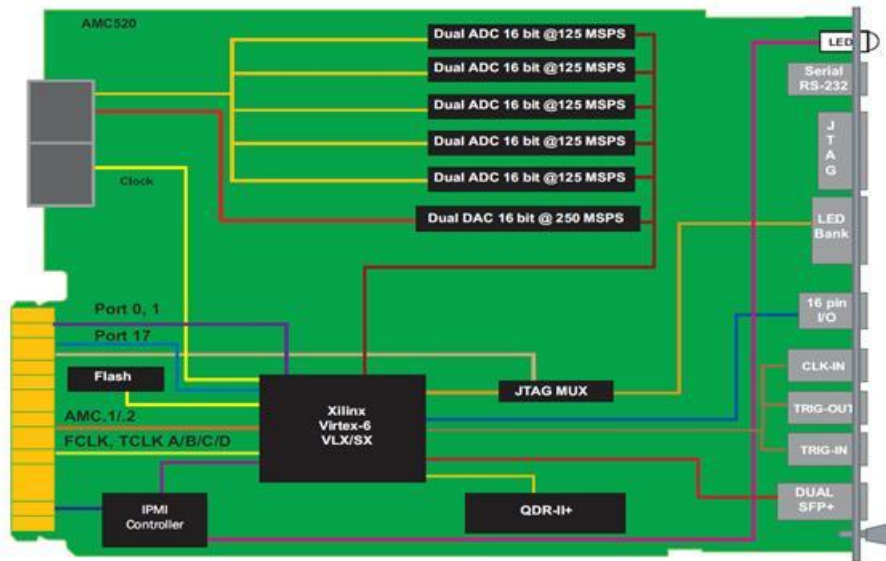
AMC521

10-ch ADC
16-bit, 125MSPS
2-ch DAC
16-bit, 250MSPS
Kintex-7
(front-panel DAC)

AMC522

4-ch ADC
16-bit, 250MSPS
No DAC
Virtex-6

MTCA .4 FPGA AMC520



MTCA.4-compliant ADC/DAC

- 10-channel ADC w/ 2-channel DAC
- Double-wide AMC per MCTA.4
- Large Virtex-6 FPGA w/ buffer memory

Enhanced MTCA.4

- RTM capability
- Support fabric rates up to 40Gb/s
- Chassis for 2-12 bays in 1u – 8u height

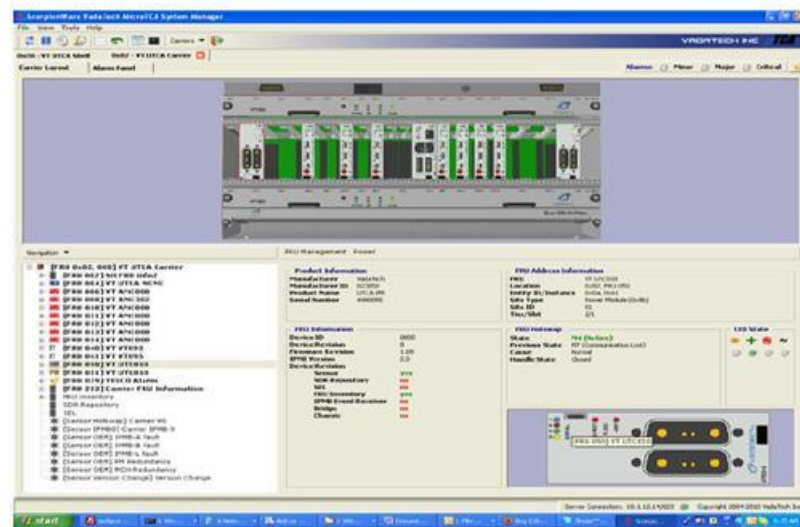
MTCA CARRIER HUB – UTC004

- CPU Design/Upgrade scheme – Single Quad Core
- Base/Fat Pipes Ethernet --1GbE + 40GbE
- Layer 2 and Layer 3 Ethernet Fabrics (Switching)
- Built-in GPS Receiver Option
- Clock Routing/Synthesis – CBS matrix/PLL Synthesis
- IEEE1588/NTP Grand Master Clock
- Synchronous Ethernet
- JTAG Master/Virtual Probe
- Single-Point Upgrade
- Non-blocking PCIe/SRIO and CBS
- Conduction-cooled versions



SHELF MANAGEMENT INTERFACE

- Challenges
 - Large distributed system
 - Hardware not readily accessible
 - Reliability is crucial
 - CLI interface is difficult
- Graphic User Interface Solution
 - Remote system mngt
 - GUI enables full IPMI functionality



MTCA. 4 CHASSIS

VT811

8u, 12-bay,
standard 19"

- 16 fans; even airflow
- fully passive backplane



VT812

8u, 6-bay,
compact

- 40% space saving over 19"
- retains full redundancy

VT813

8u, 12-bay,
high power

- >4000W total power
- 3+1 redundancy



VT814

2u, 4-bay,
horizontal

- dual MCH
- right-to-left cooling



MTCA .4 CHASSIS VT811



High-reliability design

- Redundant MCHs, PMs, CUs, FRU information devices and shelf locators
- Telco alarms

MTCA.4-compliant chassis

- 12 mid-ht double-width AMC bays w/ RTM
- 8u, 19" rack mount
- AC power, up to 1000W redundant
- JSM Slot
- Cavity for Cable routing from front to back
- 16 Fans in each tray
- Symmetric fan trays (bottom and top fan tray are identical)
- Aluminum construction vs. Steel to reduce weight

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SAMPLE VADATECH INNOVATIONS

ATCA SLOT-SAVER PLATFORM

AdvancedTCA 6-Slot Shelf

- Dual Switching Shelf Managers – GbE/10G/40G
- Saves 2 slots (that were used as switches), now can be used as payload slots. 50% increase in computing density
- Full redundancy & swappability, excellent cooling to 375W/slot



ATCA/MTCA HYBRID

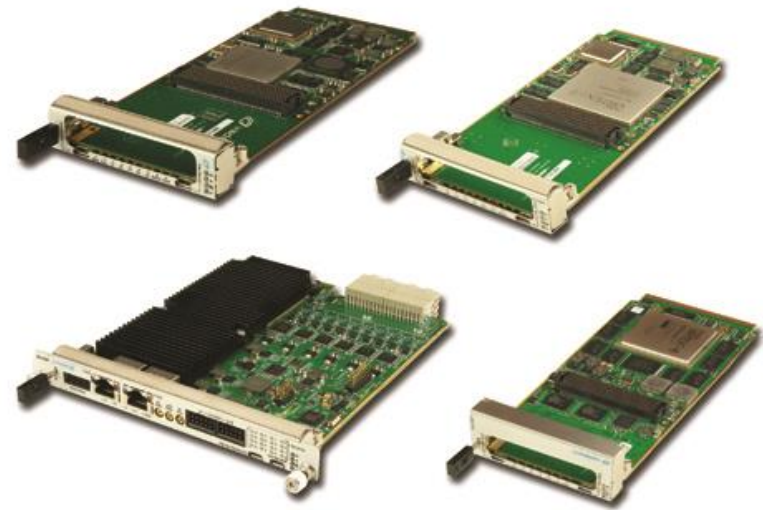
VT835

- Combines MTCA IO with ATCA Processing power
- Unique integrated design allows 8 mid-sized AMCs (ATCA Carriers have max of 4 mid-sized AMCs)
- 1 ATCA slot, 8 mid-height AMC slots in 3U chassis
- Haswell ATCA processor
- Power and cooling for ATCA, facilitates MTCA
- x16 PCIe Gen 3 version piping through to each AMC



NEW LEVEL OF PERFORMANCE – FPGA SUITE

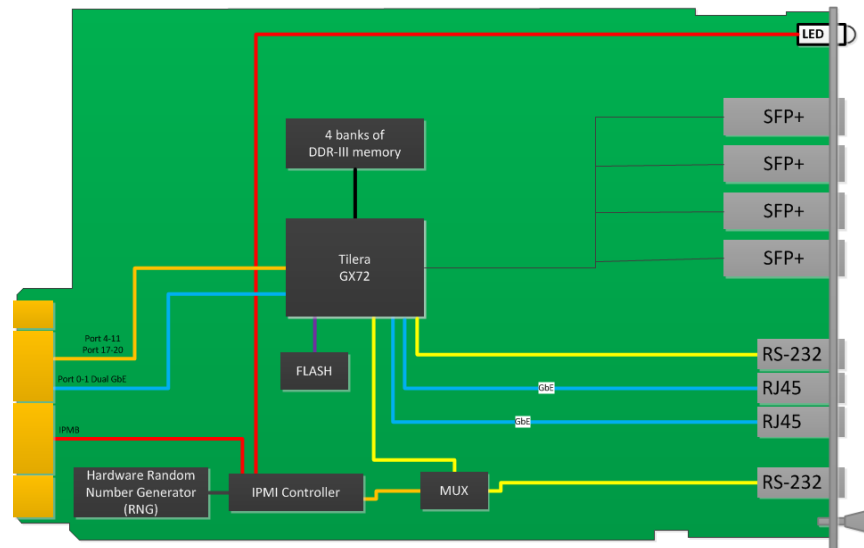
- **Xilinx FPGA Carriers for FMC**
- Includes Virtex-5, Virtex-6, Virtex-7, Artix-7, Zynq-7000, Kintex-7
- Distributed processing with on-board QorIQ P2040
- Banks of DDR3 memory for buffering and queuing during processing
- Low power consumption, special clocking features (cleaner, crossbar/PLL)



TILERA LINE CARD (Q2)

AMC740

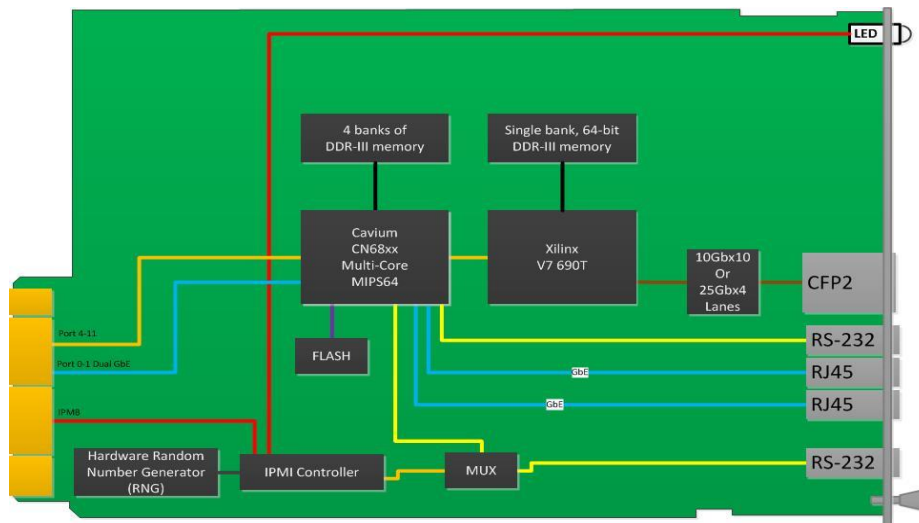
- Based on Tileria 72 Core
- Three 10Gb via the back
- Four SFP+ via the front
- 64GBytes of DDR3 with ECC



100G LINE CARDS

AMC738

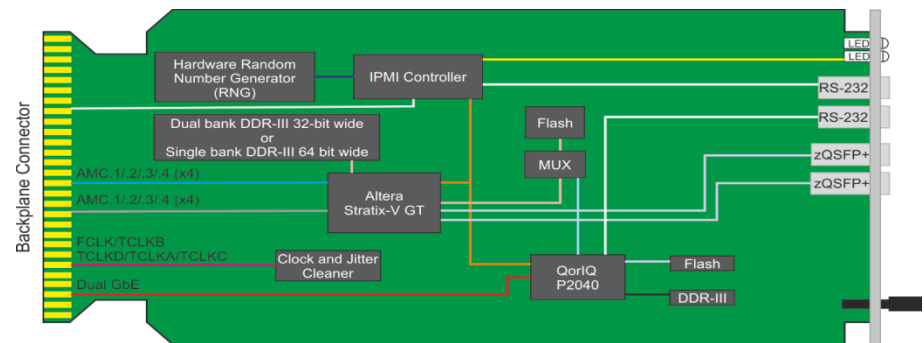
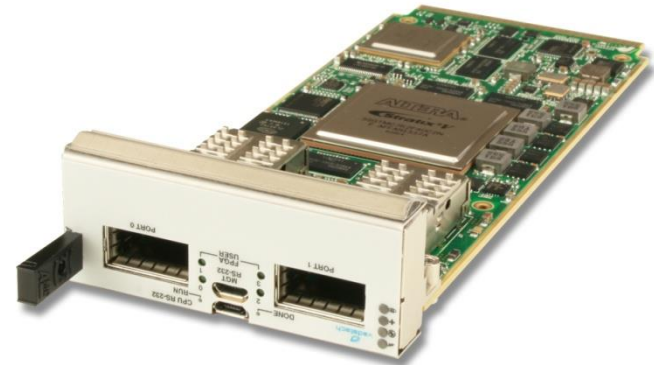
- 100G Processor AMC with Cavium Octeon II
- Virtex-7 FPGA
- 32GBytes of DDR3 with ECC



100G LINE CARDS (CON'T)

AMC534

- 100G FPGA, Altera Stratix-V GT
- Banks of DDR3 memory for buffering and queuing during processing
- Option for distributed processing with on-board QorIQ P2040



40GbE MicroTCA



VT866

- 40GbE backplane, Meg-6, via back-drilled
- Full redundancy, Dual Star, radial IPMB
- Dual 1000W AC or 1400W DC PSUs
- Easy-glide strips provide smooth insertion/extraction