Low cost 1U µTCA Chassis with 2 AMC slots and integrated option for Dual 2.5” SATA/SAS Disk

VT846

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VT846KEY FEATURES

- Two full-height (or two mid-height) AMC slots
- Management can run as Shelf/MCMC (MicroTCA Carrier Management Controller) or MCMC
- AMC.1, AMC.2, AMC.3, AMC.4 compliant
- Direct connect across the two AMC slots on ports 4-7 and 8-11 (any protocol could run such as PCIe, SRIO, 10GbE, Aurora, etc.)
- GbE managed switch
- Removable dual 2.5” SATA/SAS disk with direct connect via SATA/SAS (port 2 or 3) or PCIe (port 4)
- RAID zero or one option
- Telco Alarm and Carrier Locator
- Cooling is front to back
- Removable Air Filter and Fan Trays
- Removable AC or DC input option
- IPMI 2.0 compliant
- RoHS compliant

The VT846 is a 1U µTCA chassis that provides two full-height or two mid-height slots with direct connection between the two slots on ports 4-7, 8-11 and 17-20. The ports 2-3 are routed directed between the two slots or to dual 2.5” disk. The AMC.2 (ports 0 and 1) are routed to the on board GbE switch.

The Air Filter and Fan Trays are hot swappable. The VT846 has option for AC or DC input. The power supply is removable for ease of service.

The VT846 has Dual 2.5” SATA/SAS disk that are removable from the rear. The dual disk could run as dual independent disk or as RAID zero/one. The Disk interfaces to the AMC slots via the PCIe Gen2 (Gne1) or direct connect via ports 2 and 3 of the AMC.

The VT846 runs VadaTech proven second generation Management software based on it’s VT002 product. The shelf manager implements IPMI management, FRU management, and shelf environment management for power, thermal, E-keying, etc. The VT002 can run as the Shelf/MCMC or MCMC.

The input power is universal AC (110-240VAC) or from DC (-36V to -75V).

µTCA™

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SPECIFICATIONS

Architecture		
		Height 1U
Physical	**Dimensions**	Width: 19" with extension to fit into a 23" Telco shelf
		Depth 13" (330 mm)
Type	**AMC Carrier**	Two AMC.0 mid-height single-width or double-width
Standards		
AMC	**Type**	AMC.1, AMC.2, AMC.3 and AMC.4
PCIe	**Lanes**	PCIe x1, x2, x4 or x8 lanes between the two slots
SRIO	**Lanes**	Dual x4 connection between the two slots
10GbE	**Lanes**	Dual XAUI interface between the two slots
GbE	**1000-BX**	Two GbE SerDes per slot routed to the GbE switch or to the front
SATA/SAS	**Lanes**	Routed point to point between the two slots or dual 2.5" disk
Fabric Clk	**HCSL**	Per AMC.1 100 MHz HCSL
Module Management	**IPMI**	IPMI Version 2.0
Configuration		
Power	**VT846**	300W AC supply, input 110-240VAC with frequency from 47-63Hz
		216W DC supply, input supply from -36 to -75V DC
Environmental	**Temperature**	Operating Temperature: -5° to 60° C
		Storage Temperature: -40° to +90° C
	Vibration	0.5Gs RMS, 20-2000Hz random (Operating): 6Gs RMS (non-operating)
	Shock	30Gs each axis
	Relative Humidity	5 to 90 percent RH, non-condensing
Conformal Coating		Humiseal 1A33 Polyurethane
		Humiseal 1B31 Acrylic
Other		
MTBF	MIL Hand book 217-F@ TBD Hrs.	
Certifications	Designed to meet FCC, CE and UL certifications where applicable	
Standards	VadaTech is certified to both the ISO9001:2000 and AS9100B:2004 standards	
Compliance	RoHS, GR63, GR1089 (NEBS Level 3)	
Warranty	Two (2) years	
Trademarks and Logos	The VadaTech logo is a registered trademark of VadaTech, Inc. Other registered trademarks are the property of their respective owners. AdvancedTCA™ and the AdvancedMC™ logo are trademarks of the PCI Industrial Computers Manufacturers Group. All rights reserved. Specification subject to change without notice.	

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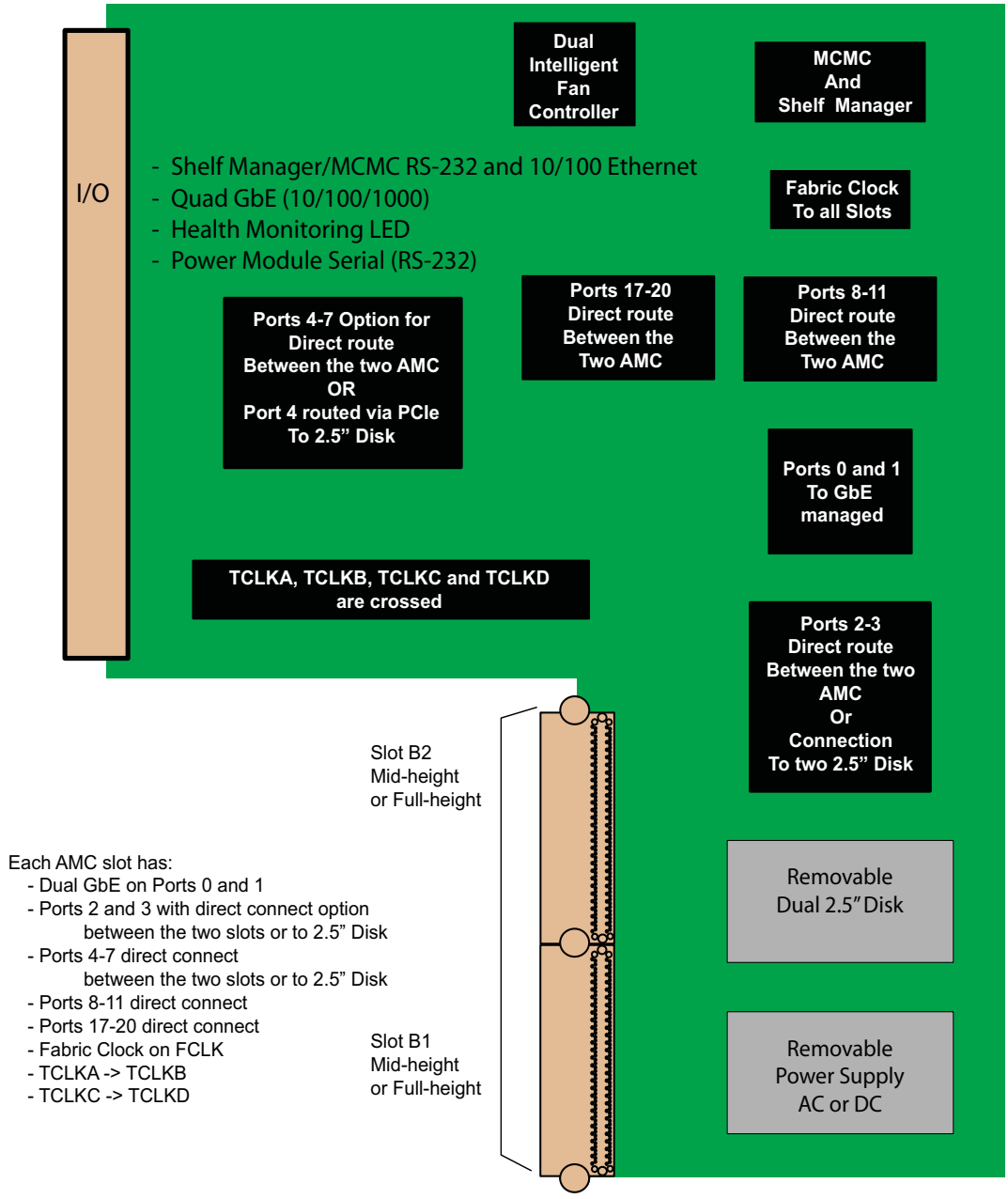

FIGURE 1. VT846 Functional Block Diagram

VadaTech can modify this product to meet special customer requirements without NRE (minimum order placement is required).

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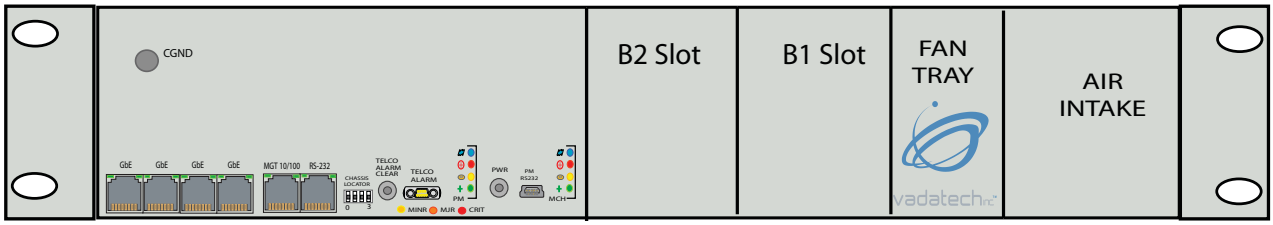
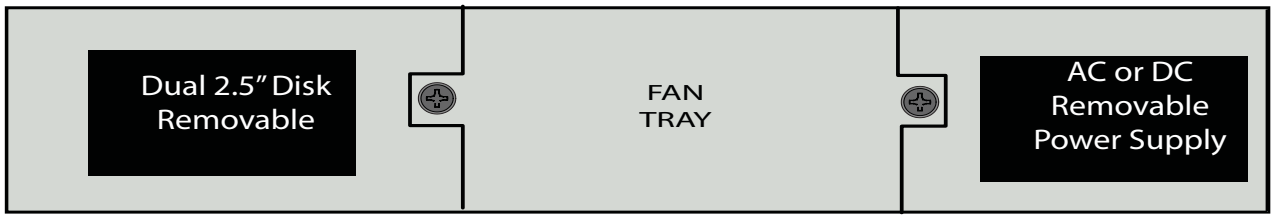
Front

The front I/O has an out of band 10/100 Ethernet which interfaces to the Shelf Manager/MCMC directly. Further the front also provide Serial interface (RS-232) to the Shelf Manger/MCMC, quad GbE link to the on board GbE Switch, Serial interface RS-232 to the power module, as well as provide status indication such as Telco Alarm, Health Monitoring LED, and Chassis locator.



Rear

The rear of the chassis has the AC/DC input supply, 2.5" hard drive, and the rear Fan Tray. All FRU in the back are removable for ease of serviceability.



Air flow

The air flow is from front to rear. The Air filter is removable from the front.

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Key Software Features

- Linux 2.6 embedded OS
- IPMI version 2.0
- Interface to Sensor Data Record repositories, System Event logs, FRU inventory storage devices
- Monitors temperature, voltage and current sensors
- Shelf cooling policy
- Shelf activation and power management
- Alarm controls
- Event notification and flexible alerting policies
- E-Keying
- CLI, SNMP, RMCP+, HTTP and HPI
- IPMI 1.5 compatibility
  - IPMI device global
  - Watchdog timer
  - Session management
  - Event management
  - PEF and alerting
  - Sensor device
  - FRU device access and update
  - SDR device access and update
  - SEL device access and management
  - LAN device configuration
- IPMI 2.0 extension
  - Enhanced encryption
  - Firmware firewall
  - Enhanced authentication

Carrier Manager Functions

- Cooling Management
- LED Controls
- AMC Management
  - Radial IPMB-L
  - Support for 12 AMCs
  - AMC Payload Control
  - Electronic Keying
- Power and Cooling Management

Shelf Manager Functions

- Sensor monitoring and alerting
  - Actively monitors local and remote temperature, voltage and current sensors on the shelf FRUs
  - Access to raw sensor readings
  - Logs all critical events reported by shelf FRUs
  - Events are processed using Platform Event Filtering (PEF)
  - Alerts using SNMP trap and PEF alert policy
  - Capability to reset major/minor alarms with timeout
  - Controls major/minor/critical alarm LEDs

- Shelf manager interface
  - Command Line Interface (CLI)
    - CLI connects to the Shelf Manager and the boards on the shelf
    - IPMI-based library of commands
    - Accessible via telnet, SSH or shelf serial port
    - Commands provide access to information such as the current state of the system, sensor values, events, health, fan speeds, FRU storage, etc.
  - SNMP
    - Supports v1 and v3 of the Simple Network Management Protocol (SNMP)
    - The Shelf Manager can support SNMP queries and send SNMP traps in either v1 or v3
    - Provides custom *Management Information Base (MIB)* tree accessed using SNMP
    - The MIB hierarchy is defined in a text file that describes the shelf and platform objects to be managed and can be used by a remote application such as an SNMP/MIB manager
  - HPI
    - Provides HPI interface to the shelf resources
    - Access to resource tables to enable applications to discover, manage, and monitor the resources in the system:
      - Reset state management
      - Power state management
      - Managed hot swap
      - Alarm management
      - Management instruments associated with entities
      - Event notifications
      - Configuration
      - System and resource event logs

Layer Two Managed GbE

The GbE layer two managed switch fabric routes GbE to each of the AMC slots. The GbE fabric has an interface to the onboard Carrier/Shelf manager. It also has a port routed to the front for uplink.

Key features:

- Configuration
  - Ethernet/IEEE 802.3 Packet size (64 bytes to 1522 bytes)
  - Jumbo packets up to 9216 bytes
- L2 Switching
  - Supports up to 8K MAC address
  - Line rate switching for all packet sizes
  - Independent VLAN learning
  - VLAN flooding for broadcast and DLF packets
  - Hardware-based address learning
  - Six CPU-managed learning (CML) modes per port
  - Hardware-and-software-based aging
  - Software insertion/deletion/lookups of the L2 table
  - Same port bridging supported
  - Station movement control
- L2 Multicast
  - 4K VLANs
  - Protocol-based VLANs
  - IEEE 802.1p
  - IEEE 802.1Q
  - Independent VLAN learning (IVL)
  - Ingress filtering for IEEE 802.1Q VLAN security
  - VLAN-based packet filtering
  - MAC-based VLAN
- Source Port Filtering
  - Egress port block masks
  - Trunk group blocking masks
- Storm Control Per-Port:
  - Unknown unicast packet rate control
  - Broadcast packet rate control
  - Multicast packet rate control
- Spanning Tree:
  - IEEE 802.1D spanning tree protocol (single spanning tree per port)
  - IEEE 802.1s for multi spanning trees
  - IEEE 802.1w rapid spanning tree protocol-delete and/or replace per:
    - Port
    - VLAN
    - Port, per VLAN
  - Spanning tree protocol packets detected and sent to the CPU
- Double-Tagging:
  - Unqualified learning/forwarding
  - IEEE 802.1 Q-in-Q
- Mirroring
  - Ingress/egress mirroring support

- Mirror-to-port receives the unmodified packet for ingress mirroring
- Mirror-to-port receives the modified packet for egress mirroring

- Content Aware Filter Processing
  - Intelligent Protocol Aware processor with backward-compatible, byte-based classification option
  - Parses up to 128 bytes per packet
  - -512 ACL rules support
  - Multiple matches and actions per packet
  - ACL-based policing
  - Ingress/egress port based filtering
  - MAC destination address remarking
  - Traffic class definition based on the filter
  - Programmable meters allows policing of flows
  - Metering granularity from 64 Kbps to 1Gbps
  - Multiple look-ups per packet
  - Metering support on ingress ports and CPU queues
- QoS Features
  - Four CoS queues per port
  - Per-port, per CoS drop profiles
  - Port level shaping
  - Traffic shaping available on CPU queues
  - Programmable priority to CoS queue mapping
  - Provides two levels of drop precedence per queue
  - Strict Priority (SP), Weighted Round Robin (WRR), and Deficit round Robin (DRR) mechanisms for shaped queue selection
- DSCP
  - DSCP-based prioritization
  - Back pressure metering
  - DSCP to IEEE 802.1p mapping
- Port Security
  - Per port blocking
  - Supports IEEE 802.1x
  - MAC address blocking
- DoS Prevention
  - Denial of Service detection/prevention
- Management Information Base
  - SMON MIB, IETF RFC 2613
  - RMON statistics group, IETF RFC 2819
  - SNMP interface group, IETF RFC 1213, 2836
  - Ethernet-like MIB, IETF RFC 1643
  - Ethernet MIB, IEEE 802.3u
  - Bridge MIB, IETF RFC 1493

Ports 0 and 1

Port 0 and 1 of each AMC is routed to the on board GbE Fabric.

In addition the un-managed GbE has four ports routed to the front and one port routed to the Management processor.

Clock Routing

Fabric clock (FCLK, 100Mhz HCSL) is routed directly from the clock generator to each AMC. The TCLKA and TCLKB are crossed and TCLKC and TCLKD are crossed.

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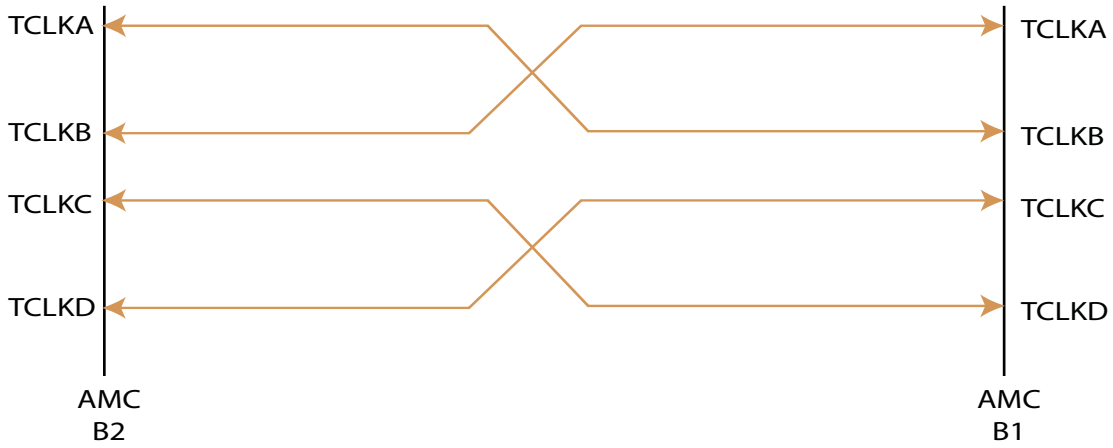

Ports 2 and 3

The mid-plane routes ports 2 and 3 with the following options:

Table 1:

Ordering option (option C)	B2 slot Ports 2 and 3	B1 slot Ports 2 and 3
0	Direct connect to B1 slot (ports 2-3)	Direct connect to B2 slot (ports 2-3)
1	Port 2 to the second 2.5” disk (port 3 to B1)	Port 2 to the first 2.5” disk (port 3 to B2)
2	No connect on ports 2 and 3	Port 2 and 3 to Dual 2.5” Disk

Ports 4 to 7

The Mid-plane routes ports 4-7 with the following options:

Table 2:

Ordering option (option D)	B2 slot Ports 4-7	B1 slot Ports 4-7
0	Direct connect to B1 slot (ports 4-7)	Direct connect to B2 slot (ports 4-7)
1	No connect on ports 4-7	Port 4 to the 2.5” Disk via PCIe (Gen1 or Gen2) (no connect on ports 5-7)
2	No connect on ports 4-7	Port 4 to 2.5” Disk via PCIe (Gen1 or Gen2) (no connect on ports 5-7). Dual independent disk
3	No connect on ports 4-7	Port 4 to 2.5” Disk via PCIe (Gen1 or Gen2) (no connect on ports 5-7). RAID 0
4	No connect on ports 4-7	Port 4 to 2.5” Disk via PCIe (Gen1 or Gen2) (no connect on ports 5-7). RAID 1
5	Port 4 to the second 2.5” Disk via PCIe (Gen1 or Gen2) (no connect on ports 5-7).	Port 4 to the first 2.5” Disk via PCIe (Gen1 or Gen2) (no connect on ports 5-7).

Ports 8 to 11

Ports 8 to 11 are routed point to point between the two AMC.

Ports 17 to 20

Ports 17 to 20 are routed point to point between the two AMC.

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ORDERING OPTIONS

VT846 - A0C - DE0 - GHJ

A = Management Software

1 = MCMC
2 = MCMC and Shelf Manager

C = Ports 2 and 3

0 = Per table 1
1 = Per table 1
2 = Per table 1

D = Ports 4-7

0 = Per table 2
1 = Per table 2
2 = Per table 2
3 = Per table 2
4 = Per table 2
5 = Per table 2

E = No. of Disks*

0 = None
1 = One
2 = Two

G = Disk Size* (Solid State Disk)

0 = None
1 = 32 GB
2 = 80 GB
3 = 160 GB
4 = 300GB
5 = 500GB
6 = Reserve

H = Power Supply

0 = DC -36 to -75V (216W)
1 = AC (300W)
2 = Reserved

J = Operating Temp and Conformal Coating

0 = Commercial Temp
1 = Industrial Temp
2 = Commercial Temp and Humiseal 1A33 Polyurethane
3 = Commercial Temp and Humiseal 1B31 Acrylic
4 = Industrial Temp and Humiseal 1A33 Polyurethane
5 = Industrial Temp and Humiseal 1B31 Acrylic

*If two disks are ordered, they will be identical.

Rear view with AC and DC power supply option

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