VT959

1U MTCA Chassis Platform with

VT959

Key Features

- MicroTCA 1U 19” rackmount chassis platform
- Supports up to six single module mid-size AMCs
- Full Layer 2 or 3 managed Ethernet switch
- Direct slot to slot connection for high speed module to module communication
- Management can run as Shelf/MCMC (MicroTCA Carrier Management Controller) or MCMC
- Removable Fan Tray and Power supply located in the rear of the chassis
- AMC.1, AMC.2, AMC.3 and AMC.4 compliant
- Front-to-back cooling
- Lightweight aluminum construction

Benefits

- 1U chassis in 19” rackmount
- High performance density with six AMC slots with front-to-rear cooling
- Scorpionware Shelf Management Software included at no additional cost
- Advanced GPS clocking/receiver options including IEEE 1588, SyncE, and NTP clocking
- AS9100 and ISO9001 certified company

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The VT959 is a 1U chassis used in applications that require direct high speed communication between the modules. The lightweight aluminium construction provides 6 single module, mid-size AMC slots. The chassis offers single removable fan tray and power module from the rear of the chassis.

The front-to-rear cooled chassis utilizes the VadaTech 3rd generation MCH (UTC004 product) for its shelf manager, crossbar clocking for low jitter, GPS/IEEE1588/SyncE/NTP, etc.

The VT959 allows ports 12-15 on slots B1/B3 to be routed as LVDS to the front panel or the ports to be connected to each other as point to point. The LVDS input/outputs signals are accessible through the front panel RJ-45 connectors.

Block Diagram

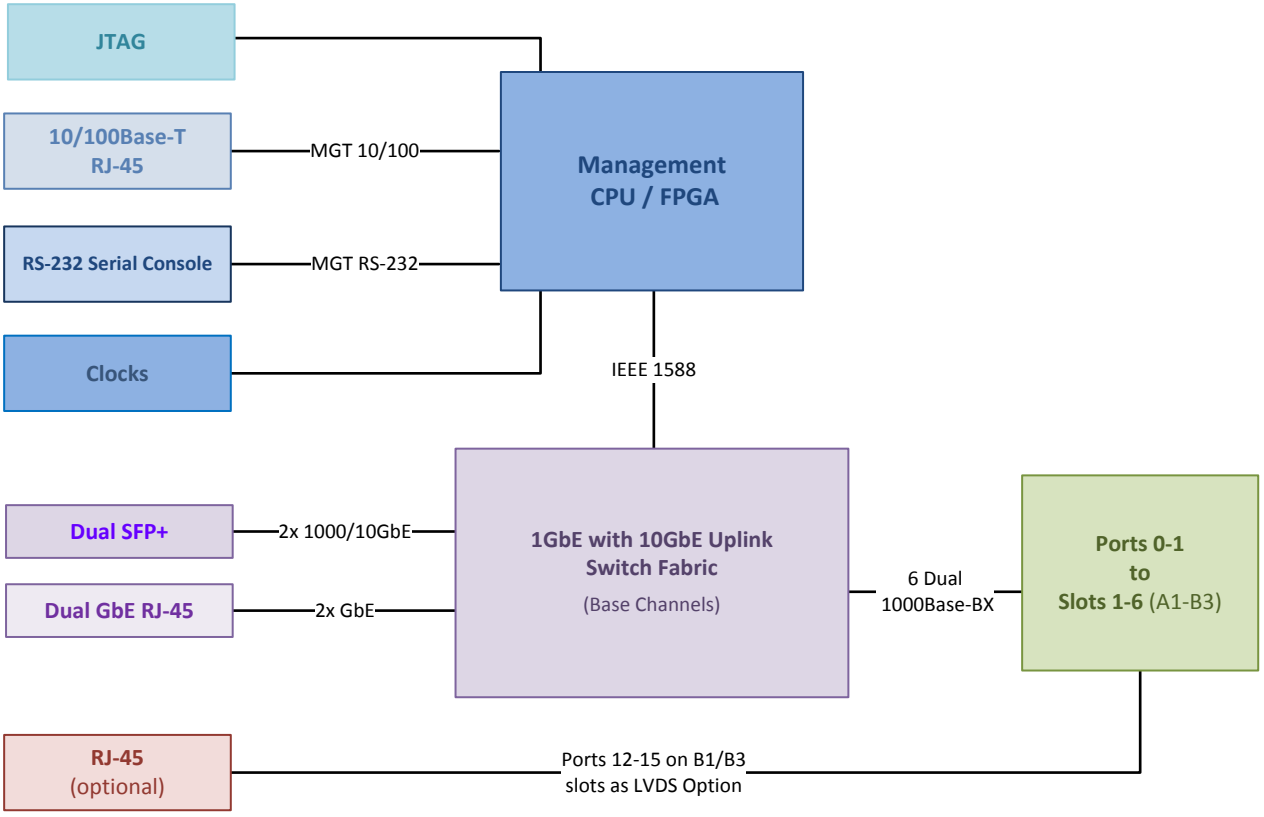

Figure 1: VT959 Block Diagram

Backplane Connections

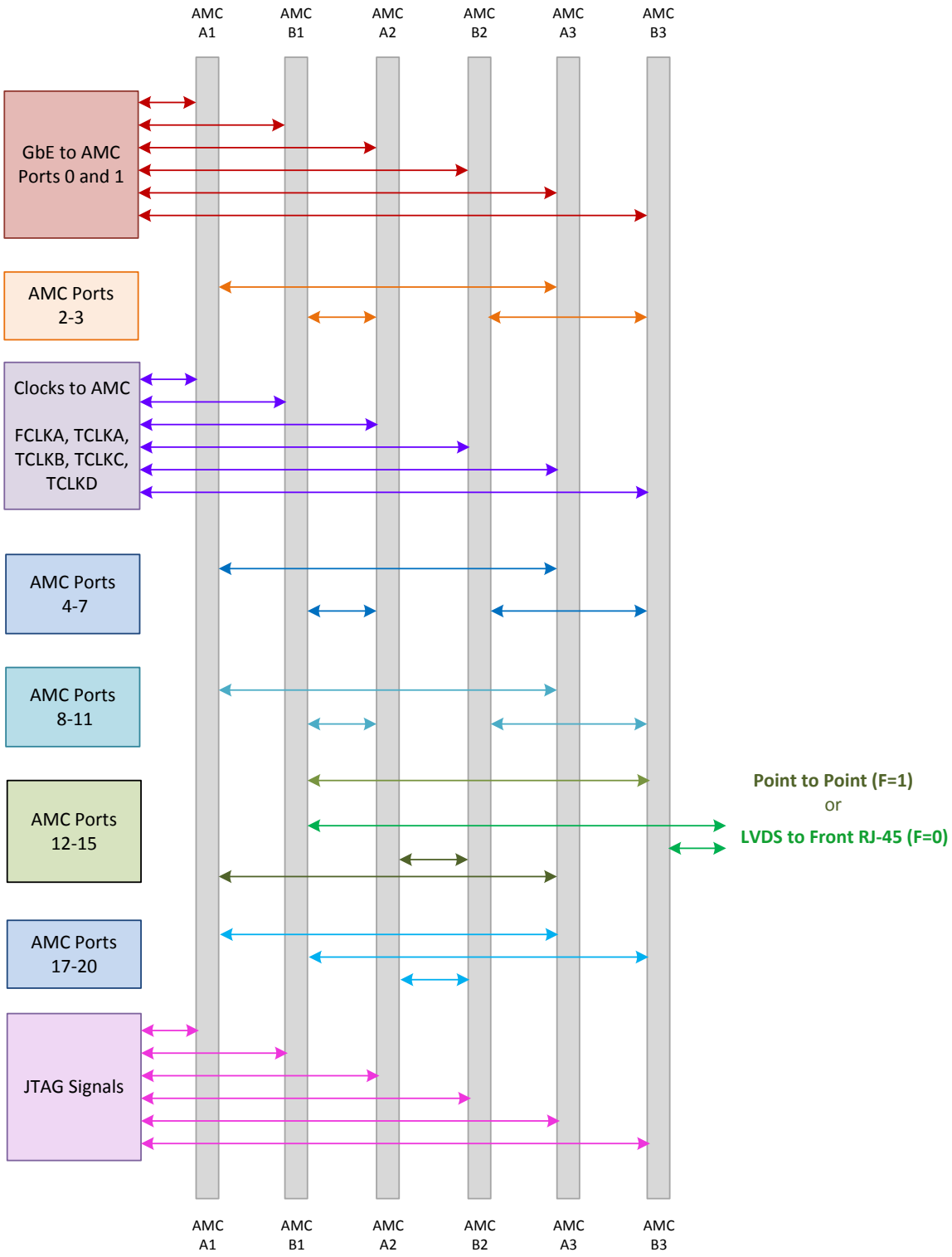

Figure 2: VT959 Backplane Connections

Chassis Features

Figure 3: VT959 Chassis Front View

Figure 4: VT959: Chassis Rear View

POWER SUPPLY

The VT959 offers single AC or DC power supply that is removable from the rear of the chassis.

COOLING AND TEMPERATURE SENSORS

The VT959 has intelligent Cooling Units that are built into the removable power supply trays. The cooling airflow is from front to back. There are Temperature sensors throughout the chassis that monitors the intake and the outtake air temperature.

BASE CHANNEL ETHERNET SWITCH

The VT959 provides a standard a GbE base channel switch which includes two 10GbE uplink 100/1000/10G RJ45 ports. This switch is fully managed Layer 2 or Layer 3 enabling a comprehensive enterprise-grade routing and switching feature set. It supports Synchronous Ethernet (SyncE) and IEEE1588.

SCORPIONWARE™ SOFTWARE

VadaTech's Scorpionware software can be used to access information about the current state of the Shelf or the Carrier, obtain information such as the FRU population, or monitor alarms, power management, current sensor values, and the overall health of the Shelf. The software GUI is very powerful, providing a Virtual Carrier and FRU construct for a simple, effective interface.

GPS AND GENERAL PURPOSE CLOCKS

The MTCA specification defines a set of clocks for telecom and non-telecom applications. The VadaTech VT959 has the most sophisticated clocking distribution in the market to meet the most stringent requirements such as wireless infrastructure, high speed A/D, etc. The VT959 supports the following GPS and general-purpose clocking features:

- Low-jitter/low-skew backplane crossbar clock routing matrix for TCLKA(CLK1)/TCLKB(CLK2)/TCLKC/TCLKD for all AMCs
- FCLKA is provided as a 100 MHz HCSL clock
- Clock disciplining with arbitrary clock frequency output and holdover (Stratum-3 option) including 1PPS regeneration and holdover
- Flexible integration and synchronization between GPS, IEEE1588 / SyncE, and NTP clocking enabling Grand Master clock functionality

- ‘Any Frequency’ high-quality clock generation/jitter cleaning for up to two user clocks
- Supports hitless automatic clock failover for improved reliability
- Optional built-in GPS receiver enables direct time/clock synchronization to the GPS satellite constellation
- The VT959 supports flexible front panel clock port ordering options:
- Two DC-coupled LVCMOS Inputs/Outputs, or two AC-coupled Sine-wave Inputs, or one of each
- Built-in GPS receiver for time/location/clock synchronization plus a DC-coupled LVCMOS Input/Output

GPS RECEIVER ENABLED FEATURES

The VT959 can be ordered with a GPS Receiver option. The receiver disciplines an on-board high-quality DPLL which is phase/frequency aligned to the atomic clocks in the GPS satellite constellation. The on-board clock synthesis/jitter cleaning capability can be utilized to convert this frequency into any frequency desired while still remaining locked to the GPS atomic clocks.

When the GPS Receiver option is purchased the VT959 has the capability to re-transmit the incoming GPS data via Ethernet to other nodes in the network in the Trimble TSIP binary protocol format. This GPS data is also sent out the front panel GPS RS-232 serial port in the standard NMEA format for use by external equipment.

IEEE1588 PTP AND NTP GRAND MASTER CLOCK

The VT959 can provide Ethernet time services to the chassis networks on both the GbE fabric. It can be subordinate to an external PTP or NTP master server or when the GPS receiver option is purchased can act as a Grand Master clock utilizing the precision timing information provided via the GPS receiver and on-board disciplined oscillator.

SYNCHRONOUS ETHERNET

The VT959 provides a Synchronous Ethernet (SyncE) on the GbE fabric port. With this feature, ports on the 1G Ethernet switch can be designated as master or slave ports and the Ethernet fabrics within the chassis can be synchronized from end-to-end with external equipment. This feature utilizes advanced telecom-grade network synchronization PLLs to provide exceptional SyncE performance.

JTAG MASTER / JTAG VIA ETHERNET VIRTUAL PROBE

The VT959 provides JTAG Master Capability to send out configuration data streams via the chassis JTAG Switch Module (JSM) to configure arbitrary JTAG Slave devices on AMC cards. Virtual Probe services are also available to provide JTAG via Ethernet for specific vendors such as Xilinx and Altera.

This allows for standard development tools such as Xilinx iMPACT/ChipScope and Altera Programmer/SignalTap to treat the MCH/JSM combination as if it was a standard JTAG probe. This approach frees the developer from having to attach JTAG probes directly to the AMC or JSM which can be difficult when systems are already fully assembled. It also allows for remote debugging across long distances when required without the need to install additional JTAG equipment on-site. The Master test/configuration port is easily accessible via the front panel header.

Specifications

Architecture		
Physical	**Dimensions**	Width: 19”
		Depth: 16.5” (419 mm)
		Height: 1U
Type	**MTCA Chassis**	Six AMC.0 single module, mid-size
Standards		
AMC	**Type**	AMC.0, AMC.1, AMC.2, AMC.3 and AMC.4
MTCA	**Type**	MicroTCA.0
Configuration		
Power	**VT959**	500 W (Universal AC power input) or 460 W DC (-36V to -75V or +18V to +36V)
Environmental	**Temperature**	Operating temperature: -5° to 70° C, industrial versions also available (See environmental spec sheet)
		Storage Temperature: –40° to +85°C
	Altitude	10, 000 ft operating
		40, 000 ft non-operating
	Relative Humidity	5 to 95 per cent, non-condensing
Front Panel	**LEDs**	IPMI Management and Activity
	Interface	MGT 10/100, MGT RS-232, JTAG, Clocks, GbE/10 GbE via Dual SFP+, dual GbE and LVDS via quad RJ-45
Software Support	**Operating System**	Linux (Consult VadaTech for other options)
Conformal Coating		Humiseal 1A33 Polyurethane (Optional)
		Humiseal 1B31 Acrylic (Optional)
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	
Warranty	Two (2) years	

INTEGRATION SERVICES AND APPLICATION-READY PLATFORMS

VadaTech has a full ecosystem of ATCA and µTCA products including chassis platforms, shelf managers, AMC modules, Switch and Payload Boards, Rear Transition Modules (RTM), Power Modules, and more. The company also offers integration services as well as pre-configured Application-Ready Platforms. Please contact VadaTech Sales for more information.

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Ordering Options

VT959 – ABC-DEF-G0J

A = Power Module	D = Clock Holdover Stability	G = SFP+ Transceivers
0 = AC Universal 500W 1 = DC -36 to -75V 460W 2 = Reserved	0 = Standard (XO) 1 = Stratum-3 (TCXO)	0 – None 1 – Fibre SX 2 – Fibre LX 3 – Copper 10000-BaseT 4 – Copper 1000-BaseT
B = JTAG Switch Module (JSM)	**E = JTAG Virtual Probe**	
0 = Without JSM 1 = With JSM	0 = None 1 = Included	
C = Front Panel Clocking	**F = Ports 12-15 on Slots B1/B3**	**J = Temperature Range and Coating**
0 = None (Backplane clocking only) 1 = Dual LVCMOS Clock In/Out 2 = Sine Wave In + LVCMOS In/Out 3 = Built-in GPS receiver + LVCMOS In/Out 4 = Dual Sine Wave In 5 = GPS receiver + Sine Wave In	0 = As LVDS to Front RJ-45 1 = Point to Point between the slots	0 = Commercial, No coating 1 = Commercial, Humiseal 1A33 Polyurethane 2 = Commercial, Humiseal 1B31 Acrylic 3 = Industrial, No coating 4 = Industrial, Humiseal 1A33 Polyurethane 5 = Industrial, Humiseal 1B31 Acrylic

Related Products

AMC592

- AMC FPGA carrier for FMC per VITA-57
- Xilinx UltraScale™ XCKU115 FPGA
- Supported by DAQ Series™ data acquisition software

AMC754

- Processor AMC Intel® 5th Gen Xeon D-1520, D-1548 or D-1577 (Broadwell) SoC
- PCIe Gen3 x4 options on ports 4-7 and 8-11 option or Single PCIe x8 on ports 4-11 (AMC.1)
- GbE to ports 0 and 1 (AMC.2)

VT950

- MicroTCA rugged 1U 19” rackmount chassis platform
- Meets MIL-STD-810F, MIL-STD-901D for shock/vibration
- Meets MIL-STD-461E for EMI

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