ATCA-9405

AdvancedTCA 40G Packet Processing Blade

Embedded Computing for Business-Critical Continuity™

PRELIMINARY DATA SHEET

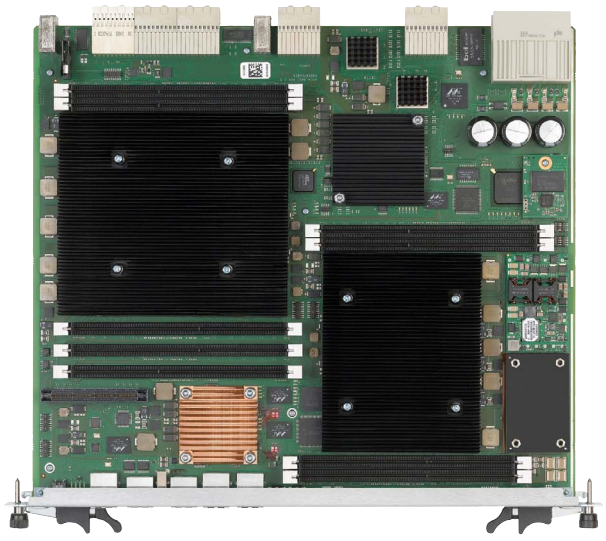
Ideal for high touch and high throughput packet processing applications to support the latest data-intensive network evolution

- PICMG® compliant single-slot AdvancedTCA® blade with 1/10G/40G Ethernet fabric ports
- Two Cavium OCTEON II CN6880 multi-core MIPS64 processors with up to 128GB DRAM
- Support for Wind River Linux 4 and Cavium SDK
- Ethernet switch connecting all rear I/O, backplane I/O and OCTEON processors with L2 and L3 switch management software
- Local Freescale QorIQ™ dual-core blade management processor
- Rear transition module with 8x 10GbE plus 2x 40GbE I/O connectivity
- Zone 3 PCI Express ports enable the design of custom RTMs for additional functionality
- Designed for NEBS and ETSI compliance in a CP-TA B.4 class enclosure

The ATCA-9405 from Emerson Network Power is a state-of-the-art AdvancedTCA® blade for high touch and high throughput packet processing applications to support the latest data-intensive network evolution. Packet processing is used widely in network security applications such as unified threat management and session border controllers; in the latest 4G LTE mobile networks for lawful interception and packet gateways; and in deep packet inspection applications for policy enforcement and quality of service control.

With a 40Gbps ATCA fabric, up to 160Gbps direct Ethernet terminations, a sophisticated on-board managed Ethernet switching infrastructure to support traffic flow to and from the MIPS64 cores and acceleration engines provided by two Cavium OCTEON II CN6880 multi-core processors, the ATCA-9405 represents a balanced 3x to 4x performance and throughput increase over previous generations. A local dual-core service processor is used to offload other blade functions in order to maximize the packet processing capability, including managing Layer 2 and 3 switching/routing functions on the local Ethernet switch.

Software support includes Wind River Linux 4 and Cavium's packet processing SDK for Octeon processors. The ATCA-9405 can operate with or without rear transition modules (RTMs) depending on system architecture, and is designed to support NEBS/ETSI requirements when used in conjunction with any of Emerson's CPTA-B.4 grade enclosures. To make most use of the 40Gb/s fabric, the blade should be paired with a 40Gb/s hub switch like the Emerson ATCA-F140.

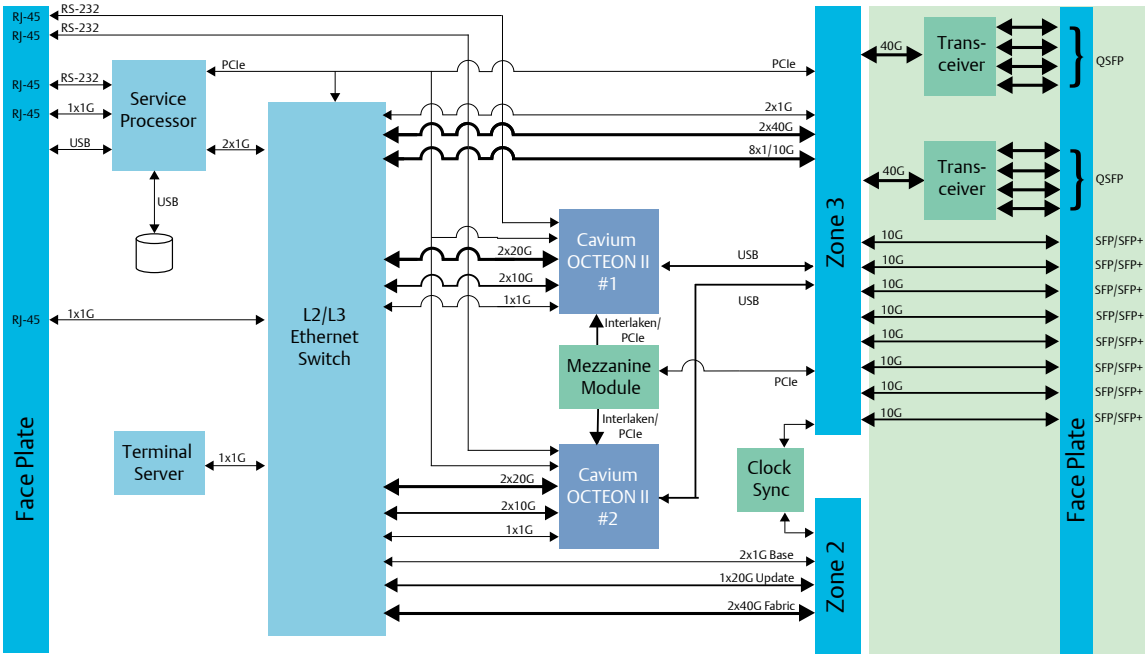


RoHS 6/6 COMPLIANT

AdvancedTCA®

EMERSON™ Network Power

ATCA-9405 Block Diagram



ATCA-9405 Overview

The ATCA-9405 packet processing blade has been developed for the most demanding applications in tomorrow's communication networks. With support for up to 160Gbps Gigabit Ethernet (GbE) I/O bandwidth and a redundant 40GbE fabric, it allows the design of compact application systems for the upcoming new IP data infrastructure.

Target applications are LTE transport and control plane functions, secure cloud services like application-aware switching, load balancers and security appliances like IDS and IPS.

Two Cavium OCTEON II CN6880 multi-core MIPS64 processor support each 32 cnMIPS64 v2 general purpose processing cores and more than 85 application acceleration engines like:

- Third generation Reg Ex Engine with Hyper Finite Automata (HFA) for up to 2x 15Gbps pattern matching per blade
- > 400Gbps DDR3 memory bandwidth per processor
- A new LZS storage compression mode with compression/decompression performance of up to 40Gbps per blade
- High bandwidth, low-latency I/O and coprocessor networks
- Hardware and software virtualization support with the ability to partition into multiple virtual SOCs
- Power Optimizer Technology with flexible, dynamic control of device core power consumption

NETWORKING CONNECTIVITY

The ATCA-9405 packet processing blade provides PICMG® 3.0 base interface connectivity in a dual star configuration using standard GbE technology with redundant fabric channel support.

- 1x 1000BASE-BX (PICMG 3.1 Option 1) or IEEE 802.3 1000BASE-KX
- 1x 10GBASE-BX4 (PICMG 3.1 Option 9) or IEEE 802.3 10GBASE-KX4
- 1/2/4x IEEE 802.3 10GBASE-KR
- 1x IEEE 802.3 40GBASE-KR4

PACKET PROCESSING COMPLEX

The ATCA-9405 contains two Cavium OCTEON II CN 6880 multi-core MIPS64 packet processors. The MIPS64 processor cores can be configured for up to 32-way SMP LINUX support or can run Cavium Simple Executives and run fast path packet processing software for time critical applications.

- Two Cavium OCTEON II CN6880 processor @ 1.2 GHz
- Four 240-pin DDR3 VLP DIMM sockets per processor, bus-width 64-bit plus 8-bit ECC
- Front panel connections
  - Serial consoles
  - 1x 1GbE

LOCAL MANAGEMENT COMPLEX

The ATCA-9405 contains a powerful dual-core Freescale QorIQ™ P2020 processor for basic board setup, general board management and high performance Ethernet switch management. The management processor has local mass storage support for uboot and user code. The boot code for the OCTEON II packet processors is provided via the management processor.

- Freescale QorIQ P2020 communications processor @ 1.0 GHz
- One 240-pin DDR3 VLP DIMM socket, bus-width 64-bit plus 8-bit ECC
  - 1x 2GB DDR3 memory DIMM
  - 16GB USB flash memory disk
- Front panel connections
  - 1x COM,1x USB, 1x 1GbE

REMOTE MANAGEMENT

In addition to standard remote control features of Linux, including SNMP, the ATCA-9405 provides an on-board independent terminal server allowing remote network access to the serial consoles of all main processors on the blade.

REAR TRANSITION MODULE

The RTM for the ATCA-9405 blade provides a total of 160 Gigabit Ethernet I/O.

- 8x 10 Gigabit Ethernet via a SFP/SFP+ interface
- 2x 40 Gigabit Ethernet via a QSFP interface

RTMs with other Ethernet configurations or with mass storage support can be made available on customer request.

MEZZANINES

- A mezzanine module provides a cross connect data path between the two Octeon II processors
- Alternatively a TCAM mezzanine module can be made available on request.

MULTICORE CPU (CAVIUM OCTEON II)

The packet processors are supported with a development software environment (SDK) available from Cavium:

- Linux (Cavium SDK based or based on Wind River Linux 4) for management operations
- Simple Executive applications running in cores not configured for Linux
- Development tools and support from Cavium Networks
- Additional production quality development toolkits are available from Cavium Networks for TCP/IP, IPSec, SSL, SSL-VPN, DPI, and others

6WINDGate from 6WIND is also available on request.

MANAGEMENT PROCESSOR FIRMWARE/SOFTWARE

The board management processor provides the boot code for the OCTEON II processors, the basic blade management services and L2 and L3 switch management software. All firmware and software licenses are

- Boot firmware
- Emerson Basic Blade Services (BBS) with:
  - All necessary drivers for the ATCA-9405
  - Adaption software for the Cavium SDK
  - Firmware upgrade utility
  - IPMI support
  - Switch management software
    - Comprehensive L2 and selected L3 functionality
    - CLI and SNMP based user interfaces
  - Based on the Wind River Linux 4 distribution

Hardware Specifications

POWER REQUIREMENTS

- Redundant -48 to -60 VDC (TNV-2)
- Input range: 39 to 72 VDC
- Power consumption front blade: 300 Watts (estimated in full power mode)

THERMAL CHARACTERISTICS

- Operating range: -5 °C to 55 °C
- Cooling requirements at ETSI/NEBS conditions according to CP-TA B.4

BLADE SIZE

- PICMG 3.0: 8U form factor, 280 mm X 322.5 mm, single slot

Regulatory Compliance	
Item	Description
Designed to comply with NEBS, Level 3	Telcordia GR-63-CORE, NEBS Physical Protection
	Telcordia GR-1089-CORE, Electromagnetic Compatibility and Electrical Safety – Generic Criteria for Network Telecommunications Equipment. Equipment Type 2
Designed to comply with ETSI	ETSI Storage, EN 300 019-1-1, Class 1.2 equipment, Not Temperature Controlled Storage Locations
	ETSI Transportation, EN 300 019-1-2, Class 2.3 equipment, Public Transportation
	ETSI Operation, EN 300 019-1-3, Class 3.1(E) equipment, Temperature Controlled Locations
	ETSI EN 300 132-2 Environmental Engineering (EE); Power supply interface at the input to telecommunications equipment; Part 2: Operated by direct current (dc)
	ETSI ETS 300 753, Equipment Engineering (EE); Acoustic noise emitted by telecommunications equipment
EMC	ETSI EN 300 386 Electromagnetic compatibility and Radio spectrum Matters (ERM); telecommunication network equipment; ElectroMagnetic Compatibility (EMC) requirements, Telecommunication equipment room (attended)
	CFR 47 FCC Part 15 Subpart B, Class A (US); FCC Part 15 - Radio Frequency Devices; Subpart B: Unintentional Radiators
	AS/NZS CISPR 22 (Australia/New Zealand), Limits and Methods of Measurement of Radio Disturbance Characteristics of Information Technology Equipment
	VCCI Class A (Japan), Voluntary Control Council for Interference by Information Technology Equipment
	CISPR 22 Information technology equipment – Radio disturbance characteristics – Limits and methods of measurement
	CISPR 24 Information technology equipment – Immunity characteristics – Limits and methods of measurement
Safety	Certified to UL/CSA 60950-1, EN 60950-1 and IEC 60950-1 CB Scheme
	Safety of information technology equipment, including electrical business equipment
RoHS/WEEE compliance	DIRECTIVE 2002/95/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS)
	DIRECTIVE 2002/96/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on waste electrical and electronic equipment (WEEE)
Interoperability	Designed to operate within a CP-TA B.4 system environment at full performance

Ordering Information

Part Number	Product Description
ATCA-9405 blades	
ATCA-9405B-16GB	ATCA-9405 - 2X CN6880-1.2GHZ, 2X 8GB DDR3 MEMORY ON TWO LOCAL MEMORY CONTROLLERS - 1X P2020 WITH 2GB MEMORY - 16GB FLASH - BBS - SWITCH MGMT SW
ATCA-9405B-32GB	ATCA-9405 - 2X CN6880-1.2GHZ, 2X 16GB DDR3 MEMORY ON FOUR LOCAL MEMORY CONTROLLERS - 1X P2020 WITH 2GB MEMORY - 16GB FLASH - BBS - SWITCH MGMT SW
ATCA-9405B-64GB	ATCA-9405 - 2X CN6880-1.2GHZ, 2X 32GB DDR3 MEMORY ON FOUR LOCAL MEMORY CONTROLLERS - 1X P2020 WITH 2GB MEMORY - 16GB FLASH - BBS - SWITCH MGMT SW
ARTM-9405B-16X10GE	ARTM-9405 - 8X10G (SFP+) and 2x40G (QSFP)
ATCA-9405 Accessories	
RJ45-DSUB-ATCA	RJ45 DSUB CABLE FOR THE ATCA-7140, 7X50, 736X, 737X, 747X, 83XX, 940X ATCA BLADES (ROHS 6/6)
SFP-CO-RJ-45	1G COPPER SMALL FORM-FACTOR PLUGGABLE (SFP) TRANSCEIVER MODULE - RJ-45 CONNECTOR
SFP-MM-SX-LC	1G FIBER SMALL FORM-FACTOR PLUGGABLE (SFP) TRANSCEIVER MODULE - 850NM, SX, LC CONNECTOR
SFPP-CO-RJ-45-3M	10G COPPER SMALL FORM-FACTOR PLUGGABLE PLUS (SFP+) MODULES WITH MOLDED CABLE - 3 METERS
SFPP-SM-LR-LC	10G FIBER SMALL FORM-FACTOR PLUGGABLE PLUS (SFP+) TRANSCEIVER MODULE -1310NM, LR, LC CONNECTOR
SFPP-MM-SR-LC	10G FIBER SMALL FORM-FACTOR PLUGGABLE PLUS (SFP+) TRANSCEIVER MODULE - 850NM, SR, LC CONNECTOR
QSFPP-40G-SR4-MODULE	40G QSFP+ MODULE - 40GBASE-SR4 - 850NM - FOR MULTIMODE FIBER - MTP (MPO) CONNECTOR
CABLE-OPT-F102-5M	OPTICAL CABLE FOR MULTI-MODE, SFP AND SFPP CONNECTIONS (5M)
CABLE-COP-QSFPP-3M	40G QSFP+ DIRECT ATTACH, MOLDED CABLE - 3 METER
CABLE-OPT-QSFPP-5M	40G QSFP+ OPTICAL CABLE - MULTIMODE - MTP (MPO) CONNECTOR - 5 METER
CABLE-B-OPT-QSFPP-5M	40G QSFP+ OPTICAL BREAK-OUT CABLE - MULTIMODE - 1X MTP (MPO) CONNECTOR, 8X LC CONNECTORS - 5 METER

SOLUTION SERVICES

Emerson Network Power provides a portfolio of solution services optimized to meet your needs throughout the product lifecycle. Design services help speed time-to-market. Deployment services include global 24x7 technical support. Renewal services enable product longevity and technology refresh.

Emerson Network Power

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