ATCA-7470

AdvancedTCA Packet Processing Blade

Embedded Computing for Business-Critical Continuity™

An ideal solution for communications equipment requiring powerful data processing performance, flexible mass storage and network options

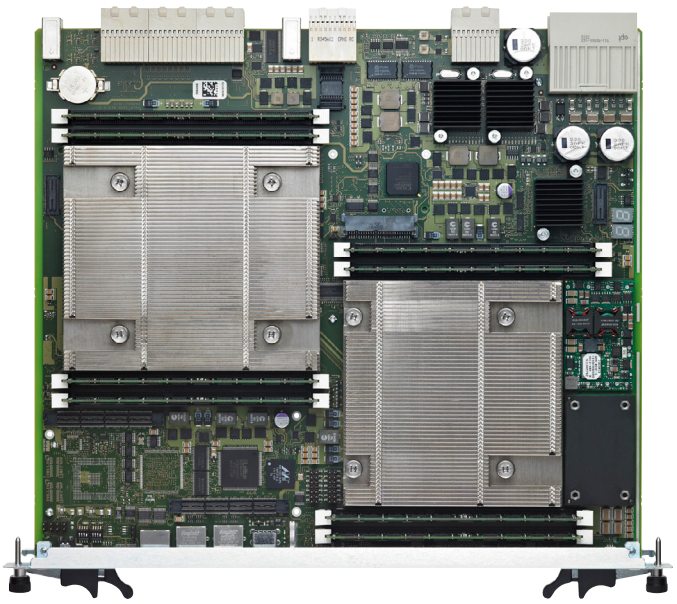
- High performance Intel® Architecture packet processing blade
- Two 8-core Intel® Xeon® processors, E5-2648L, 1.8 GHz
- Up to 128GB main memory
- Redundant 40G (KR4), 10G (KR) and PICMG(R) 3.1, Option 9, 1 ATCA fabric interface
- Powerful hardware off-loading functions for en/decryption, compression, pattern look-up, based on two Intel® Communications Chipset 8920 (optional)
- Multiple 1 and 10Gbps network and storage I/O connectivity options
- Hot-swappable hard disk with flexible choice of storage options
- RAID 0/1 support
- Multiple software packages including operating systems
- Designed for NEBS and ETSI compliance

The Emerson Network Power ATCA-7470 is a 40G AdvancedTCA® (ATCA®) packet processing blade that enables the highest packet processing performance and security features in an ATCA form factor. It allows you to consolidate packet, application and control processing functions in a single blade architecture and benefit from lower development costs and the use of common tool suites. This can get you to market faster and enable you to balance workloads efficiently across the available hardware resources.

The ATCA-7470 is designed to exploit the full capabilities of the two 8-core Intel® Xeon® processors E5-2600 family and Intel® Communications Chipset 89xx Series, with an optimized balance of processing, memory, I/O, data movement and interfaces.

The fabric interface provides redundant 40G (KR4) capabilities for applications requiring the highest network throughput in the backplane, with the ability to run both fabric interfaces at full speed. The optional crypto accelerator module features two Intel® Communications Chipset 8920 devices to off-load en/decryption, compression and pattern lookup tasks from the CPUs. Main memory configuration and mass storage options can be flexibly configured to provide a perfect fit to the needs of your application.

Multiple available rear transition modules provide a flexible combination of storage and I/O, with options for high capacity redundant storage or up to 6x10G Ethernet interfaces. This allows the ATCA-7470 to be easily integrated into different network infrastructures. The blade is optimized to work with Emerson Network Power's range of ATCA system platforms which cover two-slot, six-slot and 14-slot variants that are designed to meet the needs of both telecom central office and network data center environments.

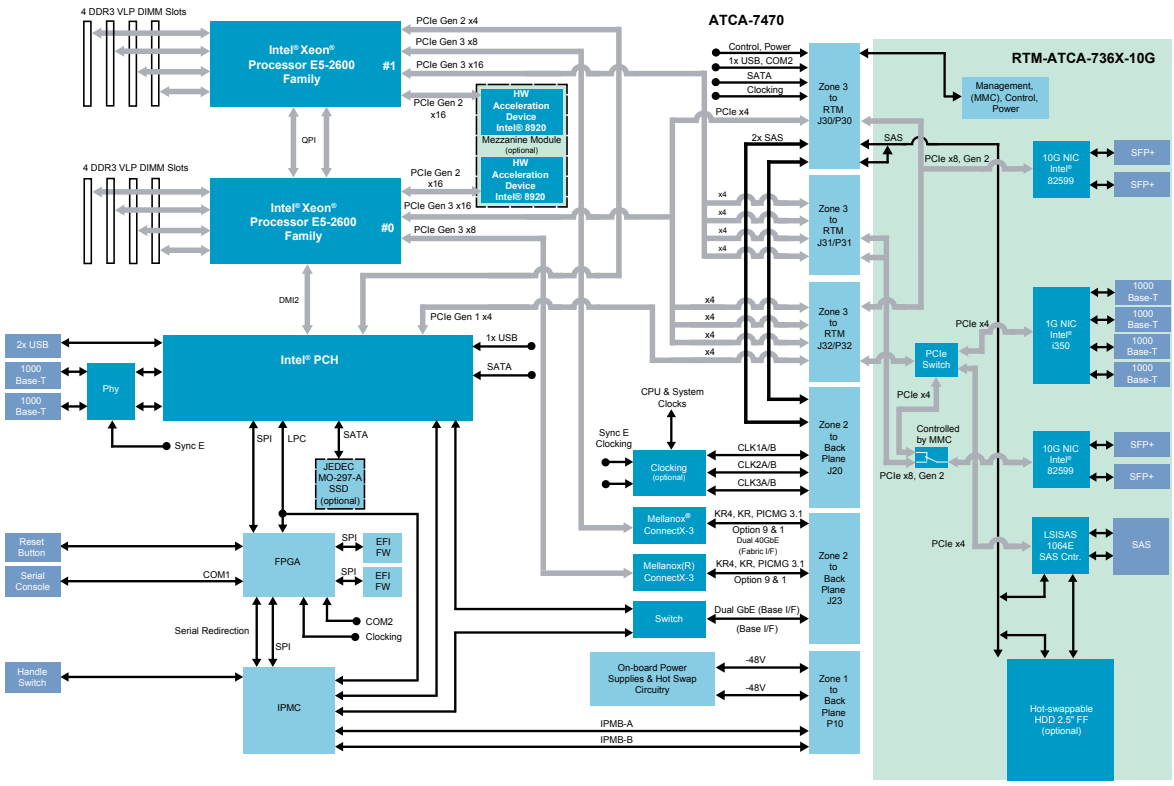


RoHS 6/6 COMPLIANT

AdvancedTCA®

EMERSON™ Network Power

ATCA-7470 Block Diagram



Standard Networking Support

The ATCA-7470 packet processing blade provides PICMG 3.0 base interface connectivity in a dual star configuration using standard Gigabit Ethernet (GbE) technology. The fabric interface features dual 40G (KR4), 10G (KR) and PICMG 3.1 dual 10Gbps (Option 9), 1Gbps (Option 1) Ethernet capability. External network connectivity includes dual 10/100/1000Base-T Ethernet via RJ-45 connector on the blade faceplate. The customer can select from a set of rear transition module (RTM) offerings providing flexible configurations such as up to six additional 10/100/1000Base-T connections or up to six 10Gb Ethernet SFP+ interfaces.

Processor Complex

Both Intel® Xeon® E5-2600 series processors are connected together via two QPI interconnects to share memory and I/O resources connected to either CPU at very high bandwidth. The processors can access the entire I/O subsystem via the on-chip PCI Express (PCIe) interfaces. Each processor is directly connected to one 40G Ethernet controller and acceleration device providing best in class processing and I/O capability. The I/O subsystem consists of:

- Intel® i350 quad Gigabit Ethernet controller
- Mellanox® ConnectX-3 40 Gigabit Ethernet controller
- Intel® PCH
- Intel® 82576 dual Gigabit Ethernet controller (on optional RTM)
- Intel® 82599 dual 10Gbit Ethernet controller (on optional RTM)
- LSI Logic LSISAS1064E SAS controller (on optional RTM)
- Dual Intel® Communications Chipset 8920 (on optional module)

Software Support

The ATCA-7470 blade can be configured with a variety of software offerings, from firmware-only to fully integrated and verified software operating environments.

FIRMWARE

Firmware-only blade-level support is offered for customers taking on the integration and verification responsibilities. It provides all the boot and IPMC firmware required for an ATCA blade. The BIOS firmware includes support for:

- Unified Extensible Firmware Interface (UEFI)
- Power management support, ACPI 4.0
- Multiple boot options including:
  - Local and externally connected hard disks
  - On-board solid state disk
  - External USB boot media
  - PXE boot via ATCA base interface
- RAID 0/1 support via LSI SAS BIOS extension
- Serial redirection of the BIOS console
- Serial over LAN of the BIOS console via ATCA base interface
- BIOS upgrade via local host

INTELLIGENT PLATFORM MANAGEMENT CONTROL

The ATCA-7470 features an intelligent platform management controller (IPMC). The IPMC is a management subsystem providing monitoring, event logging, and recovery control. The IPMC serves as the gateway for management applications to access the platform hardware. Features include:

- Compliance with PICMG 3.0 and IPMI 1.5
- Rollback capability if IPMC image upgrade failed
- Firmware (BIOS, IPMC, FPGA) upgradable from IPMI interface (LAN, IPMB), PICMG HPM.1 support or via Basic Blade Services (BBS) firmware upgrade utility
- Support for serial port redirection over LAN interface (IPMI 2.0 compliant)

SUPPORTED OPERATING SYSTEMS AND APPLIANCE SW

The ATCA-7470 is designed to operate with

- Wind River Linux 4.3
- Red Hat RHEL 6.3
- Intel Data Plane Development Kit (DPDK) supporting HW off-load functions and networking
- Wind River Network Acceleration Platform (NAP)
- Qosmos™ ixEngine.

The ATCA-7470 is designed to load operating systems offered by 3rd party including Red Hat Enterprise Linux and Wind River Linux. The ATCA-7470 can be configured with optional Wind River Linux 4.3 including Basic Blade Services provided by Emerson. This distribution comes with all Linux Support Packages (LSPs) to support Emerson ATCA blades as well as user applications. Basic Blades Services (BBS) software is provided to enable a set of ATCA hardware and software components into a fully integrated and verified telecom platform. Basic Blade Services include:

- Hardware Platform Management including local IPMC, LED, E-Keying and blade extraction software
- Firmware upgrade utility
- Local management access (CLI)
- Support for Intel DPDK

Appliance SW from 3rd party including Intel DPDK, Wind River NAP and Qosmos ixEngine enable extended packet processing capabilities by exploiting multiple cores and hardware off-load engines provided by the board.

RELEVANT STANDARDS

- Linux Foundation
- Service Availability Forum™ (SA Forum)
  - Hardware Platform Interface (HPI) – HPI-B.02

Rear Transition Modules

The ATCA-7470 is fully back ward compliant with the rear transition modules (RTMs) introduced with the successful ATCA-736x family. The main I/O interconnect from the processor complex to the ATCA Zone 3 is based on PCIe supporting multiple interconnect capabilities to meet bandwidth requirements of future RTM designs. Several RTM variants are available to support different I/O configurations at the RTM faceplate.

RTM-ATCA-736X-10G supports:

- Four (4) 10 Gigabit Ethernet interfaces, SFP+ / SFP
- Four (4) Gigabit Ethernet interfaces, 10/100/1000Base-T, RJ-45 connectors
- Two (2) SAS interfaces, SFF-8470 connector
- Disk bay for one (1) optional hot-swappable hard disk, 2.5”

RTM-ATCA-736X-10G-SP supports:

- Six (6) 10 Gigabit Ethernet interfaces, SFP+ / SFP
- Four (4) Gigabit Ethernet interfaces, 10/100/1000Base-T, RJ-45 connectors

RTM-ATCA-7360 includes:

- One (1) USB 2.0 interface
- Six (6) Gigabit Ethernet interfaces, 10/100/1000Base-T, RJ-45 connector
- Two (2) SAS interfaces, SFF-8470 connector
- Disk bay for one (1) hot-swappable hard disk, 2.5”

RTM-ATCA-7360-L includes:

- One (1) USB 2.0 interface
- Two (2) Gigabit Ethernet interfaces, 10/100/1000Base-T, RJ-45 connector
- Two (2) SAS interfaces, SFF-8470 connector
- Disk bay for one (1) hot-swappable hard disk, 2.5”

RTM-ATCA-736X-DD supports:

- Two (2) Gigabit Ethernet interfaces, 10/100/1000Base-T, RJ-45 connectors
- Two (2) disk bays for hot-swappable hard disks, 2.5" with RAID 0/1 support

Hardware

PROCESSOR

- Two 8-core Intel® Xeon® processors E5-2648L (1.8 GHz)
- Dual QuickPath Interface (QPI) – 8.0 GT/s
- 20MB L3 cache (per processor)
- Enhanced features (Intel AES-NI, AVX/SSE, VT, HT, 64 bit, power management)
- SMP support

MEMORY

- DDR3-800/1066/1333/1600 memory controllers integrated into processors
- Total of four independent memory channels per CPU socket
- From 2 to 128GB memory configurations supported
- Support for memory integrity (e.g., ECC, mirroring)

MASS STORAGE

- On-board solid state disk (JEDEC MO-297-A) at SATA up to 128GB (optional)
- Hot-swappable hard disks on RTM

Note 1: The number of interfaces depends on the RTM variant.

- Hard disk drive options including
  - Enterprise class disks (various capacity options)

BASE AND FABRIC INTERFACES

- Dual star configuration
- PICMG 3.0 base interface compliant, Gigabit Ethernet (1.0Gbps)
- Redundant 40 Gigabit (KR4), 10 Gigabit (KR) or PICMG3.1 Option 9 (10.0Gbps), 1 (1.0Gbps) fabric interface

HARDWARE OFF LOADING

- Dual Intel® Communications Chipset 8920 with integrated hardware off-load engines on optional mezzanine module

COUNTERS /TIMERS

- Real-time clock
- Programmable watchdog timer

EXTERNAL INTERFACES

- Front panel
  - 10/100/1000Base-T Ethernet (2), RJ-45
  - Serial console (1), RJ-45
  - USB 2.0 (2)
- Rear transition module
  - USB 2.0 (1)
  - Gigabit Ethernet interfaces (up to 6), optional, RJ-45. Note 1
  - 10 Gigabit Ethernet interfaces (4 or 6), optional, SFP+. Note 1
  - SAS interfaces (2), SFF-8470

POWER REQUIREMENTS

- Dual-redundant –48 / –60 VDC (TNV-2) rail
- Input range: –39 to –72 VDC

THERMAL CHARACTERISTICS

- Operating range: –5 °C to 55 °C
- Airflow requirements according to CP-TA B.4

RELEVANT BLADE SIZE

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

RELEVANT STANDARDS

- PICMG 3.0 (form factor, IPMI, base interface, hot swap, RTM)
- PICMG 3.1

Ordering Information

Part Number	Description
ATCA-7470-0GB	ATCA packet processing blade with dual 8-core Intel® Xeon® processors, E5-2648L (1.8GHz), 8X DIMM sockets, 0GB, 40G support. See Note 1
ATCA-7470-32GB	ATCA packet processing blade with dual 8-core Intel® Xeon® processors, E5-2648L (1.8GHz), 8x 4GB DDR3-1600, 40G support
ATCA-7470-ACCEL-MOD	Hardware acceleration module for the ATCA-7470 blade (optional)
ATCA-7XMEM-1600-4G	4GB DDR3-1600 VLP memory module for ATCA-737X and ATCA-747X product series
ATCA-7XMEM-1600-8G	8GB DDR3-1600 VLP memory module for ATCA-737X and ATCA-747X product series
ATCA-7XMEM-1600-16G	16GB DDR3-1600 VLP memory module for ATCA-737X and ATCA-747X product series
RTM-ATCA-736X-10G	RTM for the ATCA-7365, ATCA-737X and ATCA-747X product series, 4x 10GbE (SFP+), 4x GbE, 1x slot for optional HDD
ATCA736X-HDD1-SAS	300GB SAS HDD kit for the RTM-ATCA-736X-10G
ATCA736X-HDD2-SAS	600GB SAS HDD kit for the RTM-ATCA-736X-10G
RTM-ATCA-736X-10G-SP	RTM for the ATCA-7365, ATCA-737X and ATCA-747X product series, 6x 10GbE, 4x GbE
RTM-ATCA-7360	RTM for the ATCA-736X, ATCA-737X and ATCA-747X product series, 6x GbE, 2x SAS,1x slot for optional HDD
RTM-ATCA-7360-L	RTM for the ATCA-736X , ATCA-737X and ATCA-747X product series, 2x GbE, 2x SAS,1x slot for optional HDD
ATCA7360-HDD1-SAS	147GB SAS HDD kit for the RTM-ATCA-7360 and RTM-ATCA-7360-L
ATCA7360-HDD2-SAS	300GB SAS HDD kit for the RTM-ATCA-7360 and RTM-ATCA-7360-L
ATCA7360-HDD4-SAS	600GB SAS HDD kit for the RTM-ATCA-7360 and RTM-ATCA-7360-L
RTM-ATCA-7360-HDDKIT	Carrier and mounting kit for HDD or SSD devices used with RTM-ATCA-7360 or RTM-ATCA-7360-L (no disk included)
RTM-ATCA-736X-DD	RTM for the ATCA-736X , ATCA-737X and ATCA-747X product series, 2x GbE, 2x slot for optional HDD
RTM-ATCA-736X-DD-300	RTM for the ATCA-736X , ATCA-737X and ATCA-747X product series, 2x GbE, 2x 147GB SAS HDD included
RTM-ATCA-736X-DD-600	RTM for the ATCA-736X , ATCA-737X and ATCA-747X product series, 2x GbE, 2x 300GB SAS HDD included
RTM-ATCA-736X-DD-1K2	RTM for the ATCA-736X , ATCA-737X and ATCA-747X product series, 2x GbE, 2x 600GB SAS HDD included
ATCA-7XMMOD-SATA1	32GB Slim SATA (MO-297) SLC Module for ATCA-737X and ATCA-747X product series
ATCA-7XMMOD-SATA2	64GB Slim SATA (MO-297) SLC Module for ATCA-737X and ATCA-747X product series
RJ45-DSUB-ATCA	RJ-45 DSUB cable for the ATCA-7140, 7X50, 736X, 737X, 747X blades
SA-BBS-WR43-7470	DVD - BBS SW and WR Linux 4.3 for ATCA-747X. See Note 2

Note 1: No memory installed
Note 2: License for a single blade

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
CE Conformity	Directive 2004/108/EC, Directive 2006/95/EC
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

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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