COMPUTING

ATCA-7475
40G Packet Processing/Server Blade

Data Sheet

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

- Two 10-core Intel® Xeon® processors, E5-2658 v2, 2.4 or E5-2648L v2, 1.9 GHz

- Up to 128GB main memory

- Redundant 40G (KR4), 10G (KR) and PICMG® 3.1, Option 9, Option 1 ATCA fabric interface

- Powerful hardware off-loading functions for en/decryption and compression, based on two Intel® Communications Chipset 8920 (optional)

- Multiple 1 and 10Gbps network and storage I/O connectivity options

- Hot-swappable hard disk on optional RTM with flexible choice of storage options and RAID 0/1 support

- Multiple software packages including operating systems

- Designed for NEBS and ETSI compliance

RoHS 6/6 COMPLIANT

Advanced TCA®

The Artesyn Embedded Technologies ATCA-7475 is designed to exploit the full capabilities of the two 10-core Intel® Xeon® processors E5-2600 v2 family and Intel® Communications Chipset 89xx Series, with an optimized balance of processing, memory, I/O, data movement and interfaces. Clock frequency options of 2.4 and 1.9 GHz allow scaling of performance versus cost.

It enables the highest packet processing performance and security features in an ATCA blade based on Intel® Architecture processors. You can 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.
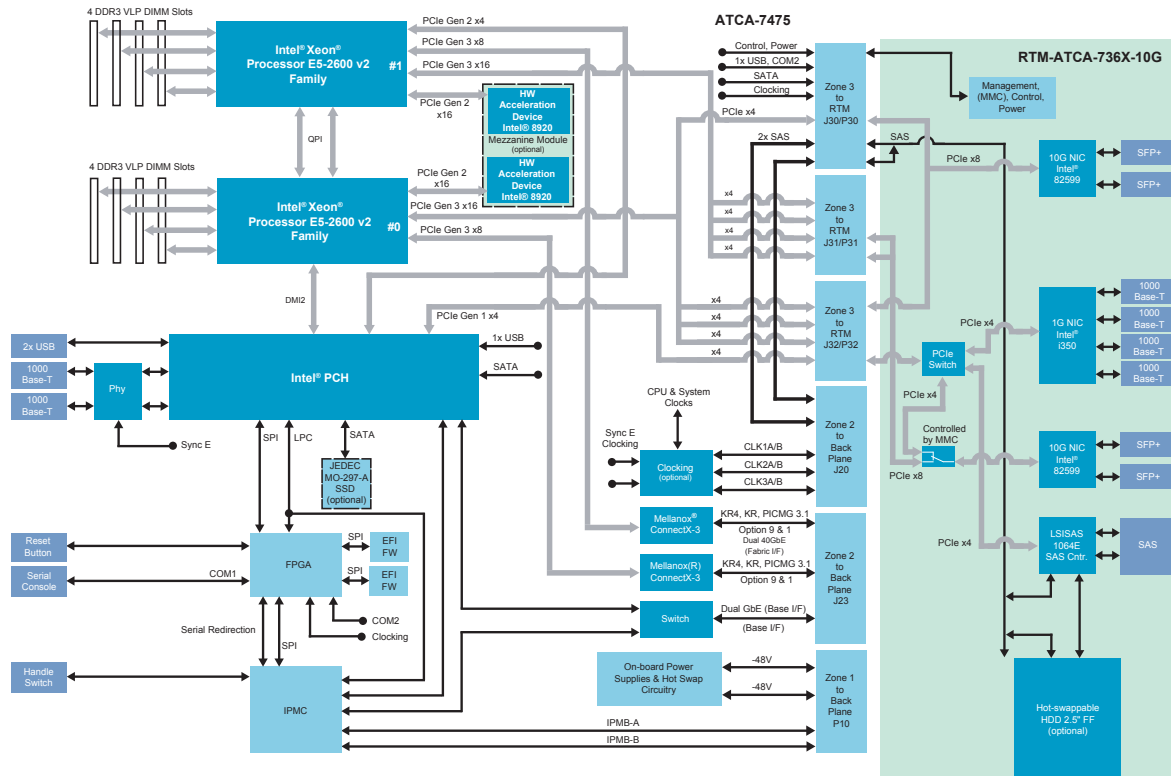
The fabric interface provides redundant 40G (KR4) capabilities for applications requiring the highest network throughput in the backplane, with the ability to run both fabric interfaces at full speed. The optional crypto accelerator module features two Intel® Communications Chipset 8920 devices to off-load en/decryption and compression from the CPUs. The blade's network interfaces and hardware acceleration units align with the Intel® Data Plane Development Kit (DPDK) providing optimized performance in packet processing applications.

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-7475 to be easily integrated into different network infrastructures.

The blade is optimized to work with Artesyn's range of application-ready Centellis® AdvancedTCA systems, which cover 2-slot, 6-slot and 14-slot variants that are designed to meet the needs of both telecom central office and network data center environments.

ARTESYN
EMBEDDED TECHNOLOGIES

ATCA-7475 Block Diagram

Standard Networking Support
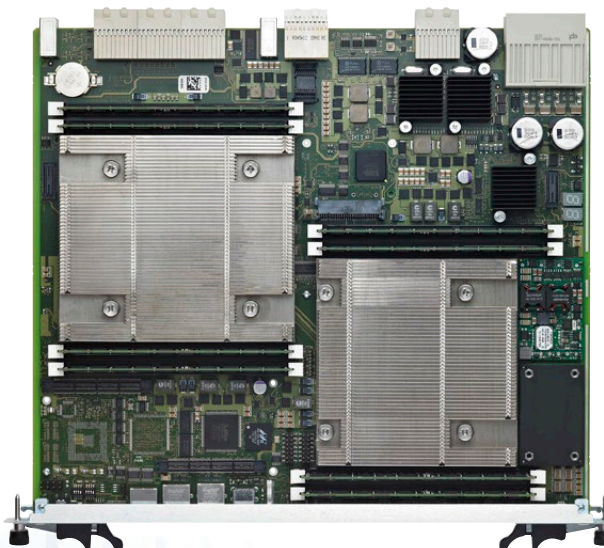
The ATCA-7475 packet processing blade provides PICMG 3.0 base interface connectivity in a dual star configuration using standard Gigabit Ethernet (GbE) technology. The fabric interface features dual 40G (KR4), 10G (KR) and PICMG 3.1 dual 10Gbps (Option 9), 1Gbps (Option 1) Ethernet capability. External 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 v2 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:

- Mellanox® ConnectX-3 40 Gigabit Ethernet controller
- Intel® Communications Chipset 8900 DH8900CC
- 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)
- Intel® i350 quad Gigabit Ethernet controller (on optional RTM)

Software Support

The ATCA-7475 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 and fabric 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-7475 features an intelligent platform management controller (IPMC). The IPMC provides interfaces for hardware platform management that allow monitoring status, event logging, and recovery control of the blade. 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-7475 is designed to operate with

- Wind River Linux 4.3
- Red Hat RHEL 6.4
- Intel Data Plane Development Kit (DPDK) supporting HW off-load functions and networking
- Qosmos™ ixEngine.

The ATCA-7475 is designed to load operating systems offered by 3rd party including Red Hat Enterprise Linux and Wind River Linux. The ATCA-7475 can be configured with optional Wind River Linux 4.3 including Basic Blade Services provided by Artesyn. This distribution comes with all Linux Support Packages (LSPs) to support Artesyn 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
- Supervision of optical modules
- Firmware upgrade utility
- Local management access (CLI)
- Support for Intel DPDK

Appliance SW from 3rd party including Intel DPDK 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-7475 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-747X-10G-D 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-747X-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 10-core Intel® Xeon® processors (ATCA-7475: E5-2648L v2, 1.9 GHz), (ATCA-7475-CE: E5-2658 v2, 2.4 GHz)
- Dual QuickPath Interface (QPI) – 8.0 GT/s
- 25MB L3 cache (per processor)
- Enhanced features (Intel AES-NI, AVX/SSE, VT, HT, 64 bit, power management)
- SMP support

MEMORY

- DDR3-1600/1866 memory controllers integrated into processors
- Total of four independent memory channels per CPU socket
- From 32 to 128 GB memory configurations supported
- Support for memory integrity (ECC)

MASS STORAGE

- On-board solid state disk (JEDEC MO-297-A) at SATA up to 256 GB (optional)
- Hot-swappable hard disks on RTM
- 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

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

Ordering Information

Part Number	Description
ATCA-7475-0GB	ATCA packet processing blade with dual 10-core Intel® Xeon®processors, E5-2648L v2 (1.9GHz), 8X DIMM sockets, 0GB, 40G support. See Note 1
ATCA-7475-64GB	ATCA packet processing blade with dual 10-core Intel® Xeon® processors, E5-2648L v2 (1.9GHz), 8 x 8GB, 40G support
ATCA-7475-128GB	ATCA packet processing blade with dual 10-core Intel® Xeon® processors, E5-2648L v2 (1.9GHz), 8x 16GB DDR3-1600, 40G support
ATCA-7475-0GB-CE	ATCA packet processing blade with dual 10-core Intel® Xeon® processors, E5-2658 v2 (2.4 GHz), 8X DIMM sockets, 0GB, 40G support. See Note 1
ATCA-7470-ACCEL-MOD	Hardware acceleration module for the ATCA-7475 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
ATCA-7XMEM-1866-8G	8GB DDR3-1866 VLP memory module for ATCA-737X and ATCA-747X product series
RTM-ATCA-747X-10G-D	RTM for the ATCA-747X product series, 4x 10GbE (SFP+), 4x GbE, 1x slot for optional HDD. See Note 3
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
ATCA736X-SSD1-SATA	480GB SATA SSD kit for the RTM-ATCA-736X-10G
RTM-ATCA-747X-10G-SP	RTM for the ATCA-747X product series, 6x 10GbE, 4x GbE. See Note 3
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-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
ATCA7360-HDD5-SAS	900GB 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-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-SATA3	128GB Slim SATA (MO-297) MLC Module for ATCA-737X and ATCA-747X product series
ATCA-7XMMOD-SATA4	256GB Slim SATA (MO-297) MLC 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

Note 3: SFP/SFP+ modules not included

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

Artesyn Embedded Technologies 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.

WORLDWIDE OFFICES

United States	+1 888 412 7832	**China**	+86 400 8888 183
Germany	+49 89 9608 2552	**Japan**	+81 3 5403 2730
Hong Kong	+852 2176 3540	**Korea**	+82 2 6004 3268

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