ATCA-7540

Dual-Star 40G Server Blade

Data Sheet

Bladed networking platform with flexible I/O connectivity and ultimate processing performance

- Two Intel® Xeon® Scalable processors (codename Skylake)
- Scalable performance range/ core count
- Up to 384GB main memory DDR4 via 12 VLP DIMM sockets with speeds of 2400 MT/s
- Dual-star 40G Ethernet fabric
- Choice of compatible rear transition modules for I/O and storage options
- Dual on-board M.2 SSD sites
- Optional configuration with crypto offload
- Linux support
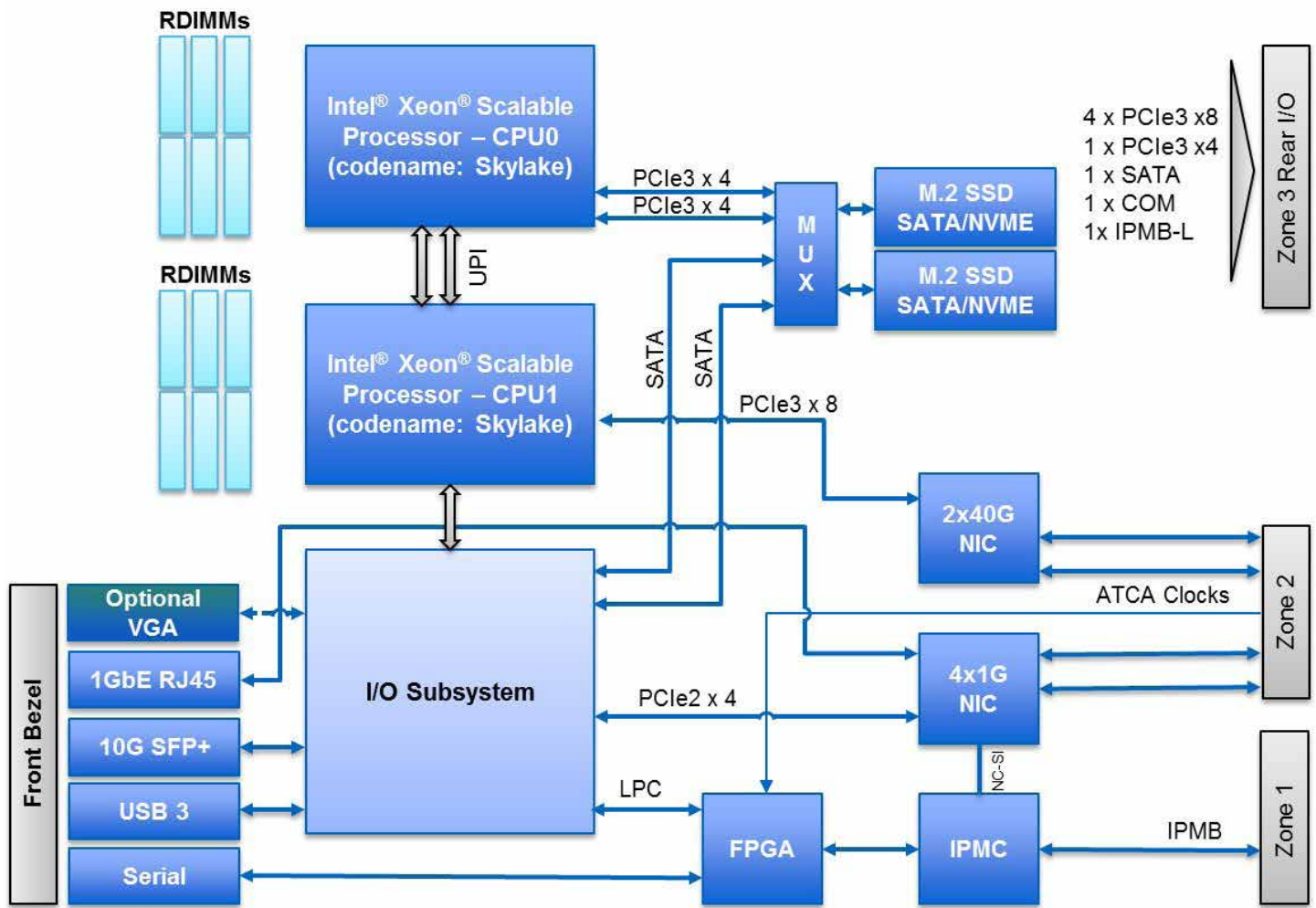- DPDK-ready

Advanced TCA®

ATCA® is an open standard under PICMG with a rich ecosystem of both blades and systems from many vendors. With its rugged design, 5-nines high availability (99.999%) and shallow footprint, ATCA has a strong history of deployment in both telecommunications central offices as well as shipborne and land-based defense applications. The Artesyn Embedded Technology ATCA-7540 server blade brings the Intel® Xeon® Scalable processors (codename Skylake) to ATCA, extending both performance and longevity over existing server blades.

- Use of the next generation Intel® Xeon® Scalable processors (codename Skylake) provides a performance and longevity improvement over existing blades
- Adherence to the ATCA specification ensures compatibility with existing infrastructure
- I/O and crypto offload options future-proof designs
- OS & I/O options help ensure a seamless upgrade path from existing systems and provides the tools & flexibility necessary for new deployments

ARTESYN
EMBEDDED TECHNOLOGIES

ATCA-7540 Block Diagram

RDIMMs

Intel® Xeon® Scalable Processor – CPU0 (codename: Skylake)

UPI

Intel® Xeon® Scalable Processor – CPU1 (codename: Skylake)

RDIMMs

PCIe3 x 4
PCIe3 x 4

MUX

M.2 SSD SATA/NVME

M.2 SSD SATA/NVME

SATA
SATA

PCIe3 x 8

4 x PCIe3 x8
1 x PCIe3 x4
1 x SATA
1 x COM
1x IPMB-L

Zone 3 Rear I/O

2x40G NIC

ATCA Clocks

Zone 2

Front Bezel

Optional VGA

1GbE RJ45

10G SFP+

USB 3

Serial

I/O Subsystem

PCIe2 x 4

4x1G NIC

NC-SI

LPC

FPGA

IPMC

IPMB

Zone 1

Software Enablement

The ATCA-7540 blade can be configured with a variety of software offerings, from firmware-only to fully integrated and verified software operating environments.

FIRMWARE

The blade has a pre-installed BIOS and IPMC firmware that allows installing operating systems and integrating it into hardware platform management.

BIOS firmware includes support for:

- Unified Extensible Firmware Interface (UEFI)
- Power management
- Multiple boot options including:
  - Local and externally connected hard disks
  - On-board solid-state disks
  - External USB boot media
  - PXE boot via ATCA base and fabric interfaces as well as front panel network interface
- RAID 0/1 support via SAS BIOS extension (available on RTM options)
- 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-7540 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 2.0
- Firmware (BIOS, IPMC, FPGA) upgradable from IPMI interface (LAN, IPMB), PICMG HPM.1 support or via Basic Blade Services (BBS) firmware upgrade utility
- Firmware rollback capability
- Support for serial port redirection over LAN interface

SUPPORTED OPERATING SYSTEMS AND APPLIANCES

CentOS and DPDK have been ported to the blade but the ATCA-7540 is designed to operate with:

- Other open source operating systems
- Commercial operating systems
- VMware ESXi

Operating systems such a CentOS, Ubuntu, RedHawk and Red Hat 7.x can run on the blade. Linux derivatives can be combined with Basic Blade Services (BBS) provided by Artesyn. BBS provides services that help to integrate the blade into a system context and manage blade resources. The Basic Blade Services include:

- Hardware Platform Management including local IPMC, LED, E-Keying and blade extraction software
- Firmware upgrade utility
- Supervision of optical modules

The ATCA-7540 can be configured for virtualization using Linux KVM or VMware ESXi. Applications can benefit from the Intel Data Plane Development Kit (DPDK). DPDK enables ways for effectively handling packet processing capabilities by exploiting network silicon, processing resources and hardware off-load engines available to the blade.

RELEVANT STANDARDS

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

Hardware Specificiations

PROCESSOR & PCH

- Two Intel® Xeon® Gold or Silver embedded processors
  - Intel® Xeon® Gold 5119T with 14 cores at 1.9GHz
  - Intel® Xeon® Silver 4114T with 10 cores at 2.2GHz
- Optional PCH with Quick Assist Technology (QAT) adding hardware acceleration for network security, routing and storage
- Enhanced features (Intel AES-NI, AVX/SSE, VT, 64 bit, power management)
- SMP and HT support

MEMORY

- DDR4-2400 memory controllers integrated into processors
- Total of six independent memory channels per CPU socket
- Scalable memory capacity 96, 192 and 384GB
- Support for memory integrity (ECC)

MASS STORAGE

- Up to two on-board M.2 SATA/NVME solid state disks (80 or 110mm)
- Hot-swappable hard disk options on RTM

BASE AND FABRIC INTERFACES

- PICMG® 3.0 base interface compliant, Gigabit Ethernet (1Gbps)
- Dual star ATCA Fabric Interface with two 40 Gigabit Ethernet (KR4) channels, or PICMG 3.1, Option 9 (10Gbps), Option 1 (1Gbps)

COUNTERS/TIMERS

- Real-time clock
- Programmable watchdog timer

EXTERNAL INTERFACES

- Front panel
  - Single 1/10GbE Ethernet via SFP+
  - One 10/100/1000 Base-T Ethernet via RJ-45
  - Optional VGA via 15-pin connector
  - Single serial console via RJ-45
  - USB 3.0 (1)
- Rear transition module
  - See RTM section for product options

POWER REQUIREMENTS

- Dual-redundant –48 VDC
- Input range: –39 to –60 VDC

THERMAL CHARACTERISTICS

- Blade variants designed for NEBS L3
  - Operating range: –5 °C to 55 °C
  - Airflow requirements: CP-TA B.4 or higher depending on configuration options
- Airflow cooling requirements: CP-TA B.4 or higher depending on configuration options

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 R2 (fabric interface)

Supported Rear Transition Modules

Rear Transition Module	Networking Capabilities			Storage	I/O	
	40Gbps Ethernet (QSFP+)	10 Gbps Ethernet (SFP+)	1Gbps Ethernet 1000-base-T, RJ-45	Disk bay for hot-swap hard disk, 2.5"	SAS I/F on SFF-8470 connector	USB 2.0 interface
RTM-ATCA-7360	-	-	6	1	2 SAS	1
RTM-ATCA-7360-L	-	-	2	1	2 SAS	1
RTM-ATCA-736X-DD	-	-	2	2, RAID 0/1 Support	-	-
SanBlaze RTM454[1]						
SanBlaze RTM451[1]						
RTM-ATCA-747X-10G-SP[2]	-	6	4	-	-	-
RTM-ATCA-747X-10G-D[2]	-	4	4	1	2 SAS	-

[1] Third party RTM
[2] Supported on customer demand

Ordering Information

Part Number	Description
ATCA-7540-0GB	ATCA packet processing blade, dual Intel® Xeon® server 5119T Gold, 14-core (85W), 1.9 GHz, 12x DIMM sockets, 0GB, 40G, B.4
ATCA-7540-C06	ATCA packet processing blade, dual Intel® Xeon® server 5119T Gold, 14-core (85W), 1.9 GHz 12x DIMM sockets, 192GB, 40G, B.4, fastener
ATCA-7540-D	ATCA packet processing blade, dual Intel® Xeon® server 5119T Gold, 14-core (85W), 1.9 GHz 12x DIMM sockets, 192GB, 40G, B.4, fastener
ATCA-7540-64GB-L	ATCA PACKET PROCESSING BLADE, DUAL INTEL® XEON® SERVER 4114T SILVER, 10-CORE (85W), 2.2 GHZ, 8 X 8GB DIMMS, 40G, B.4
ATCA-7540-384GB	ATCA PACKET PROCESSING BLADE, DUAL INTEL® XEON® SERVER 5119T GOLD, 14-CORE (85W), 1.9 GHZ, 12X DIMM SOCKETS, 384GB, 40G Fabric, B.4
ATCA-7540-0GB-QE40	ATCA PACKET PROCESSING BLADE, DUAL INTEL® XEON® SERVER 5119T GOLD, 14-CORE (85W), 1.9 GHZ, 12X DIMM SOCKETS, 0GB, 40G, 40G QAT ENABLED
ATCA-7540-0GB-HC[1]	ATCA packet processing blade, dual Intel® Xeon® server 5120T Gold, 14-core (105W), 2.2 GHz, 12x DIMM sockets, 0GB, 40G, B.4
ATCA-7XMEM-2400-8G	8GB DDR4-2400 VLP memory module
ATCA-7XMEM-2400-16G	16GB DDR4-2400 VLP memory module
ATCA-7XMEM-2400-32G	32GB DDR4-2400 VLP memory module
ATCA-75XX-KIT-M2	ATCA-75XX M.2 Riser kit
ATCA-75XX-Kit-M2-1T	ATCA-75XXX M.2 Kit, 1TB M.2 SSD
NVME-M.2-1TB	1TB NVME M.2 Media
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
RTM-ATCA-736X-DD	RTM with 2x GbE, 2x slot for optional HDD
RTM-ATCA-747X-10G-SP[1]	RTM with 6x 10GbE, 4x GbE. See Note 2
RTM-ATCA-747X-10G-D[1]	RTM with 4x 10GbE (SFP+), 4x GbE, 1x slot for optional HDD. See Note 2

[1] To be released with sufficient customer demand
[2] Optical modules are not included

Regulatory Compliance

Item	Description
Designed to comply with NEBS, Level 3 (for product variants that are designed for NEBS L3 and ETSI compliance)	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 (for product variants that are designed for NEBS L3 and ETSI compliance)	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	EN 55022 Information technology equipment - Radio disturbance characteristics - Limits and methods of measurement (for product variants that are designed for datacenter environments)
	EN 55024 Information technology equipment - Immunity characteristics - Limits and methods of measurement (for product variants that are designed for datacenter environments)
	ETSI EN 300 386 Electromagnetic compatibility and Radio spectrum Matters (ERM); telecommunication network equipment; ElectroMagnetic Compatibility (EMC) requirements, Telecommunication equipment room (attended) (for product variants that are designed for NEBS L3 and ETSI compliance)
	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 2011/65/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS).
	DIRECTIVE 2012/19/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on waste electrical and electronic equipment (WEEE)

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.

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