RG1000

Rugged 1U COTS Rack Mountable Server

DATA SHEET

1U Rugged Server with flexible I/O connectivity and ultimate processing performance

- Two Intel® Xeon® scalable processors
- Scalable performance range/core count
- Twelve DDR4-2400 RDIMM sockets with the ability to support up to 1TB memory per processor (2TB total)
- Dual full-height, ¾-length PCIe slots
- Front access storage
- Optional configuration with crypto offload
- Linux support
- DPDK-ready

The SMART Embedded Computing RG1000 COTS rugged server brings the Intel® Xeon® Scalable processors to rugged servers providing high performance computing with configurability, data storage and longevity. Dual PCIe slots provide the option to install full height ¾ length PCIe cards, including the latest in GPU technology.

Rack mountable for defense and industrial applications ruggedized to meet challenging extended temperature, shock and vibration environments for mission critical applications.

- Use of the next generation Intel® Xeon® Scalable processors (codename Cascade Lake) provides performance and longevity
- Dual PCIe full height ¾ length slots
- Front access storage hot swappable short EDSFF (E1.S) storage modules
- Crypto offload option
- OS & I/O options help ensure a seamless upgrade path from existing systems and provides the tools & flexibility necessary for new deployments

DESIGNED & ASSEMBLED IN USA

SMART™ Embedded Computing

RG1000
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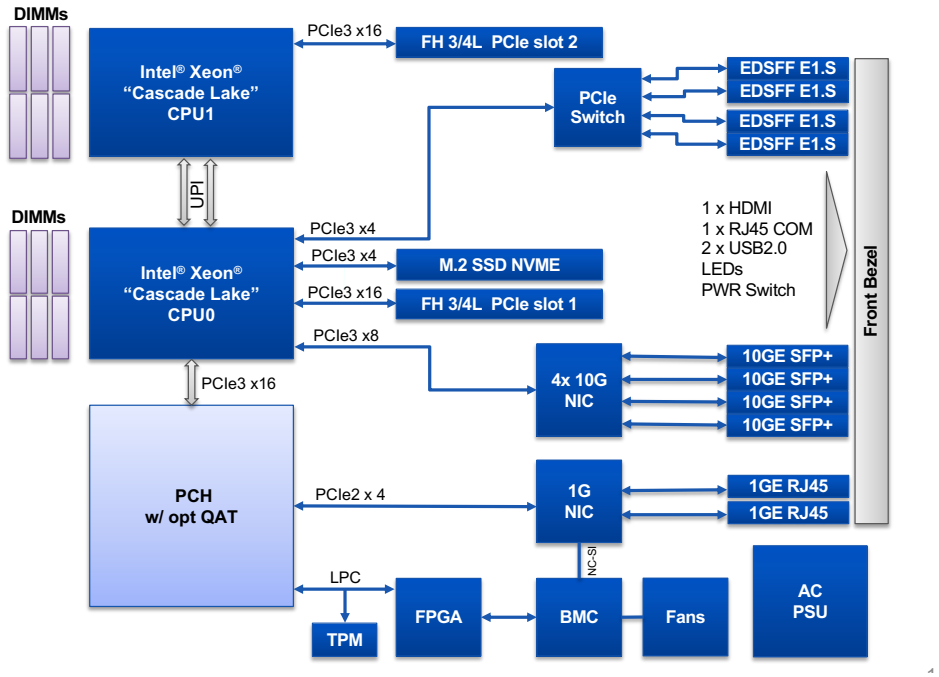
RG1000 Block Diagram



Software Enablement

The RG1000 can be configured with a variety of software offerings, from firmware-only to fully integrated and verified software operating environments.

FIRMWARE

The server has a pre-installed BIOS and BMC 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:
  - On-board solid-state M.2 boot disk
  - External USB boot media
  - PXE boot via Ethernet interfaces
- Serial over LAN of the BIOS console
- BIOS upgrade via local host

BOARD MANGEMENT CONTROLLER

The RG1000 features a board management controller (BMC). The BMC provides interfaces for hardware platform management that allow monitoring status, event logging, and recovery control of the server. Features include:

- Compliance with PICMG 3.0 and IPMI 2.0
- Firmware (BIOS, IPMC, FPGA) upgradable from BMC interface 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

The RG1000 is capable of running many different operating systems such as CentOS, Ubuntu, RedHawk, Red Hat Linux and Windows.

SMART EC provides a CentOS 7.x based operating system, DPDK and Basic Blade Services (BBS). The RG1000 can be certified with VMware ESXi 6.7 or 7.0.

BBS provides services that help to manage the RG1000 resources. The Basic Blade Services include:

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

The RG1000 can be configured for virtualization using Linux KVM. 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.

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Hardware Specifications

PROCESSOR & PCH

- Two Intel® Xeon® Gold or Silver embedded processors
  - Intel® Xeon® Gold 5218T with 16 cores at 2.1GHz
  - 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 with up to 1TB memory per processor (2TB total memory)
- Support for memory integrity (ECC)

MASS STORAGE

- Up to four hotswappable EDSFF E1.S solid state disks

COUNTERS/TIMERS

- Real-time clock
- Programmable watchdog timer

EXTERNAL INTERFACES

- Front panel
  - Four 10GbE Ethernet via SFP+
  - Two 10/100/1000 Base-T Ethernet RJ-45 for BMC or processor communication
  - One HDMI connector
  - Single serial console via RJ-45
  - Two USB 2.0 connectors
  - Power switch

POWER REQUIREMENTS

- AC Power 460W 120/240VAC 50/60Hz w/PFC

THERMAL CHARACTERISTICS

- Operating range:
  - 0 °C (32 °F) to+55 °C (131 °F)
- Storage range:
  - -40 °C (-40 °F) to +70 °C (158 °F)
- Temperature change:
  - ±0.5 °C/min
- Operating humidity:
  - 5% to 90% non-condensing
- Non-operating humidity:
  - None

OPERATIONAL SHOCK PULSES

- Front-to-back, side-to-side and vertical : 30.5G for 25ms half sine pulse in both directions
- Vertical shock: 40G for 5ms half sine pulse in both directions

VIBRATION

- Tested based on MIL-STD-167-1A

ALTITUDE

- 12,500ft operational, 40,000ft transport

DIMENSIONS

- 1U 19” rack-mount box - 44.5mm H x 432mm W x 500mm D (1.75” H x 17.01” W x 19.69” D)

* Available with sufficient customer demand

Regulatory Compliance	
Item	**Description**
CE Conformity	Directive 2004/108/EC, Directive 2006/95/EC
EMC	EN 55032 Class A (EU), Multimedia Equipment - Radio Disturbance Characteristics
	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
	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	RoHS Directive's 2011/65/EU / 2015/863 Hazardous Substance Restrictions
	DIRECTIVE 2012/19/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on waste electrical and electronic equipment (WEEE)

SOLUTION SERVICES

SMART Embedded Computing 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 worldwide technical support. Renewal services enable product longevity and technology refresh.

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