



PE310G4DE4816BI-A Network Adapter

Quad Port 10GbE Broadwell DE In-Line System on NIC Network Adapter

Product Description

Silicom's Broadwell DE System On a NIC (SoNIC) is based on Intel BDW-DE System on a Chip (SoC) Xeon D-1500 Processor. The Silicom's BDW-DE SoNIC is targeted for network applications offload, such as multiservice Intrusion detection and prevention (IDS / IPS), unified threat management (UTM), Deep packet inspection, VPN/Firewall/IDS systems, and any other offload packet processing PCI Express adapter.



Key Features

- Based on Intel® Xeon® SoC Processor D-1500 Product family
- 14nm Intel Haswell Microarchitecture
- SoC One chip Solution, Integrated PCH technology, Intel Ethernet, BGA package
- HW and SW scalability, x86 architecture, 2C – 8C, Up to 45W TDP
- SoNIC mains SKUs
 - In-line, Ethernet 2x10G connection to the host server
- Two channels of 64bit DDR4 memory with ECC, 16GByte total, 1600-2400MT/s
- Quad SFP+ 10GbE IO port
- 1GbE Ethernet management port
- M.2 SSD SATA Card slot, 3 SATA Ports, SPI Flash, 128Mb
- On Board Micro-BMC Controller
- BIOS: Coreboot, Intel Firmware Support Package (FSP)
- OS: Fedora release 22, Kernel 4.1.3 on M2.SSD



- Form Factor, PCIe Standard height Long (9.84" x 4.2", 250mm x 106.7mm), x8G3, 1 slot wide, (with passive heatsnik)

Adapter Features:

- Programmable (x86) Intelligent Quad Port 10GBE PCI Express x8 Gen3.0 NIC
- Front End Packet Processing Offload
- Based BDW-DE SOC, 2- 8 Core Intel@ Xeon (14nm) CPUs
- Xeon Class Server Feaures
- X86, C-programmable, flexible
- SMBUS/NC-SI support
- Ability to SW reboot the device. SW power down/up the system
- On board based management, control fans, monitor temperature
- Remotely manageable
- The best industry performance per watt

Target Applications:

- Network application accelerator offload
- Data Center Accelerator offload
- Security / Compression Accelerator offload
- Storage Accelerator offload

Technical Specifications

Hardware

Processors

Intel Xeon Processors (embedded in Broadwell-DE SoC)

- 2 to 8 core devices supported
- 45W (and lower) SKUs supported
- 32KB Instruction and data caches, 256KB mid-level cache, and 1.5GB last level cache units per CPU core
- 46 bit virtual and physical address spaces per core
- Intel Hyper-Threading Technology supported (2 threads per core)

Processor Memory

- 2 Channels of 64 bit DDR4 memory with ECC
- 1600 to 2400 MT/s memory speeds supported

- Single rank per channel
- Nine 8 bit devices soldered directly to PCB (i.e. memory down) per channel

Network Interfaces

Quad SFP+ 10Gb Ethernet module slots

- Accessible on the front faceplate
- SFP+ MSA SFF-8431 compliant
- Power Level II modules (1.5W max) supported
- Link/activity LED per module slot (LED is located on the PCB, visible via holes in the metal bracket holder)

Dual 10Gb Ethernet virtual ports (In-line version only)

- 10GBASE-KR interface between controller and Broadwell-DE SoC

1Gb Ethernet Management port

- RJ45 (with integrated LEDs) accessible on front faceplate

Storage Interfaces and Devices

M.2 SSD SATA Card slot

- SATA revision 3 6Gb/s rates supported
- Type 2242 –D2-M-x form factor supported SATA Ports
- SATA revision 3 6Gb/s rates supported

SATA revision 3 6Gb/s rates supported

- Three 7 pin vertical data connectors located on PCB toward the rear of the card

SPI Flash, 128Mb

- For storing BIOS/BSP code
- 2x4 pin header and isolation circuitry provided for in circuit programming of the Flash device

Board Management

Two options for on board management: Nano-BMC or a Remote Thermal Monitor/Fan Controller IC

- Board management scheme selected through a jumper on board
- Control and monitoring of two on board fans
- Board thermal monitoring including access to Broadwell-DE SoC internal temperature data
- Voltage monitoring of various rails
- Ability to remotely reboot or power down the board
- Access to boards FRU EEPROM
- Slave SMBus interface for access from the PCIe card interface

- Monitoring of Broadwell-DE SoC power state and thermal status

Micro-BMC

- Low cost design based on the NXP LPC1768 microcontroller
- Access provided through a NC-SI interface to the 1Gb Ethernet controller
- Serial BMC and Intel console ports for debug (accessible through USB2.0 interface utilizing a 5-pin header on board as well as remotely through an IPMI client “serial over LAN console”)
- Slave SMBus interface for access from the PCIe card interface

Remote Thermal Monitor and Fan Controller (On Semi NCT7491 or equivalent)

- PECCI 3.0 Interface compatible
- On-chip Temperature Sensor

Peripheral Interfaces

3 USB 3.0 ports

- One accessible through the front faceplate (Type-A right angle connector)
- Two located on PCB toward the rear (Type-A vertical connectors)

Debug Interfaces

2 Extended Debug Ports (XDP)

- One for the CPU cores side of the Broadwell-DE SoC
- One for the PCH side of the Broadwell-DE SoC
- Samtec 60 pin BSH-030-01 series connector for each (not populated in production)

2 virtual serial ports via a USB2.0 Interface

- One serial port for Micro-BMC console and programming
- One serial port for an Intel console interface sourced from the Broadwell-DE SoC (this console port can also be connected to the Micro-BMC to be accessed across the Ethernet management port as selected through a jumper)
- Micro-B USB right angle connector located along the top board edge

Power	55W typical (75% utilization), 73W Thermal Design Power (max), 173W Peak <ul style="list-style-type: none"> • 12VDC through a 6 pin connector (Molex 45558-0003 or equivalent) located on rear edge of board
Form Factor	PCI Express Add-in Card, standard height, full length
Dimensions	9.84" x 4.2", 250mm x 106.7mm

PCIe	PCI Express x8 Gen 3.0
Operating Temps	0C to +50C (Passive heatsink used requiring 200CFM across the heatsink in the direction of the fins. two PCIe slots)
Storage Temps	-20C to +65C
Operating Humidity	0% to 90%, non-condensing

Operating Systems Support	
Operating system support:	Linux Fedora release 22 Kernel 4.1.3 on M2.SSD
BIOS	Coreboot, Intel Firmware Support Package (FSP)

Order Information

P/N	Description	Notes
PE310G4DE4816BI-A	Quad 10GbE BDW-DE In-Line System on a NIC	PCIe: X8 G3 Netowrk IO: 4x10G DE48: Broadwell DE D-1548, 8 Cores, TDP PE310G4DE4816BI-A Quad 10GbE BDW-DE In-Line System on a NIC 45W, Core Freq 2.0GHz. 8B: 16Giga Byte, DDR4, Speed grade B 2133 MT/S I: In-line

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