ASMB-976
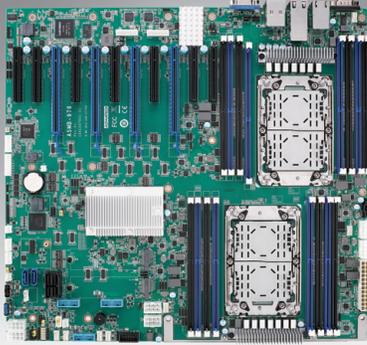
LGA 4189 Intel® Xeon® Scalable Proprietary Server Board with 16x DDR4, 4 x PCIe x16, 10 x SATA3, 8 x USB 3.2 (Gen 1), Dual 10GbE, and IPMI
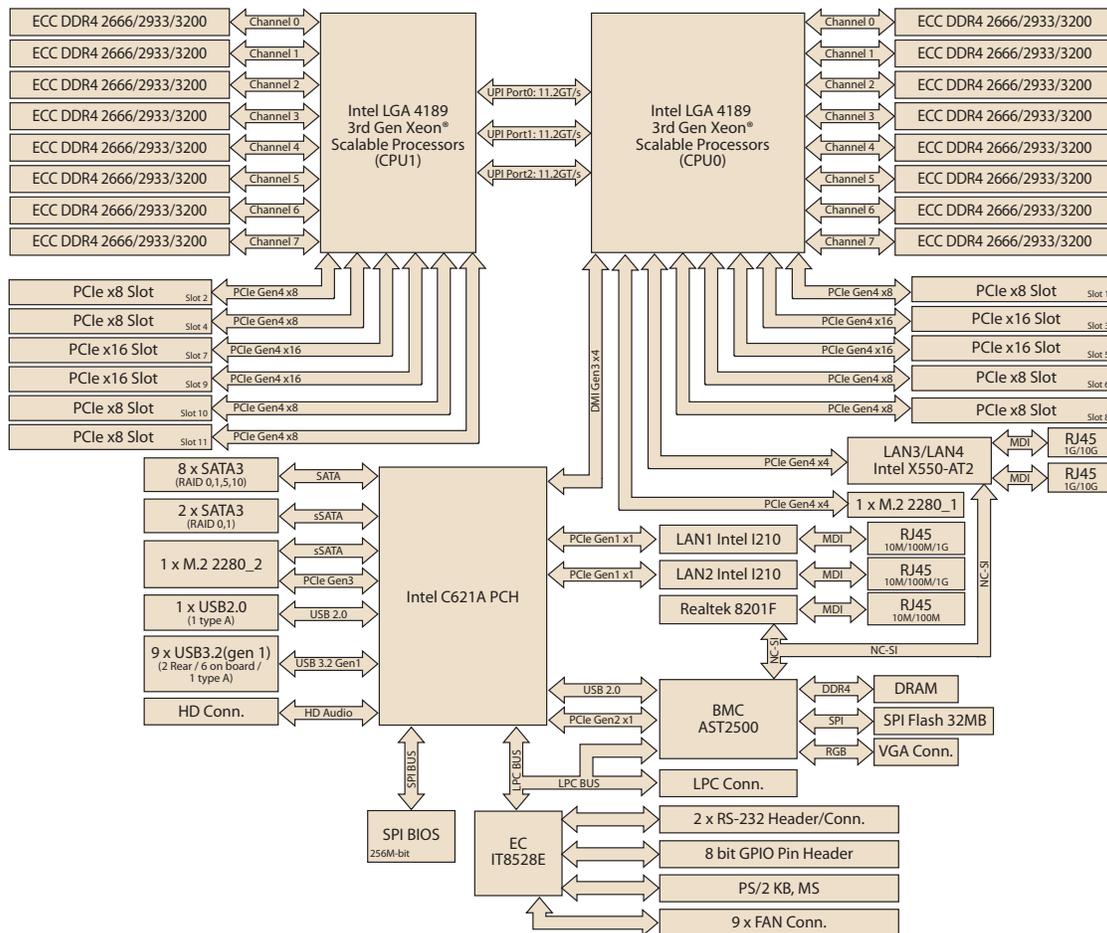

CE FCC

Features

- LGA4189 proprietary server board with 3rd Gen Intel® Xeon® scalable processor
- DDR4 3200 MHz RDIMM up to 2TB supports Intel® Optane™ Persistent Memory
- 4 x PCIe x16 and 7 x PCIe x8
- Intel® X550 dual 10GbE ports
- Ten SATA3 and two M.2 connectors (SATA/PCIe compatible)
- 0 ~ 40 °C (32 ~ 104 °F) ambient operating temperature range

Specifications

Form Factor		Proprietary 380 x 346 mm (14.96" x 13.64")
Processor System	Socket	Intel® LGA4189
	CPU type	3rd Gen Intel® Xeon® Scalable processors(CPU cooler should be purchased separately and TDP up to 270W*)
Core Logic	Chipset	Intel® C621A chipset
Memory	Total slots	16 (1 DIMM per channel)
	Capacity	Maximum 2TB ECC LRDIMM Maximum 1TB ECC RDIMM
	Memory type	DDR4 ECC-REG 2666/2933/3200 MHz RDIMM/LRDIMM, support Intel® Optane™ Persistent Memory
	Memory size	8 GB, 16 GB, 32 GB, 64 GB, 128 GB (LRDIMM)
Expansion Slots	Total PCIe slots	11
	Slot location 1	PCIe x8 slot (x8 link), signal from CPU0
	Slot location 2	PCIe x8 slot (x8 link), signal from CPU1
	Slot location 3	PCIe x16 slot (x16 link), signal from CPU0
	Slot location 4	PCIe x8 slot (x8 link), signal from CPU1
	Slot location 5	PCIe x16 slot (x16 link), signal from CPU0
	Slot location 6	PCIe x8 slot (x8 link), signal from CPU0
	Slot location 7	PCIe x16 slot (x16 link), signal from CPU1
	Slot location 8	PCIe x8 slot (x8 link), signal from CPU0
	Slot location 9	PCIe x16 slot (x16 link), signal from CPU1
	Slot location 10	PCIe x8 slot (x8 link), signal from CPU1
	Slot location 11	PCIe x8 slot (x8 link), signal from CPU1
Graphics	VGA	Aspeed AST 2500
Storage	SATA controller	Intel C621A: 8 x SATA3.0 (6 Gb/s) via Mini SAS HD (SFF-8643), support software RAID 0,1,5,10 2 x SATA3.0 (6 Gb/s) support software RAID 0,1
	SAS controller	-
Networking	GbE/10GbE LAN	2 x Intel® I210AT / Intel® X550-AT2 (dual 10GbE ports)
Onboard I/O	PSU connector	24-pin SSI power connector + 6 x 8-pin SSI 12 V power connector
	USB connector	6 x USB 3.2 Gen 1 ports (three onboard headers) + 1 x Type-A USB 3.2 Gen 1 port + 1 x Type-A USB 2.0 port
	Fan header	9 x 4-pin (2 for CPU + 7 for system)
	M.2	1 x M.2 2280 B+M key (SATA and PCIe) + 1 x M.2 2280 B+M key (PCIe)
	SMBus	1
	Chassis intruder	1
	Front LAN LED	1
	Audio Header	1
	PS/2 Keyboard/Mouse header	1
	Serial port header	1
Rear I/O Connector	External serial port	1
	External USB port	2 (USB 3.2 Gen. 1)
	VGA port	1
	RJ-45	5 (1 port dedicated for IPMI function)
	PS/2 KB/mouse	-
	Infiniband	-
Management Solution	Software	-
	Out of band remote management	Yes
Monitoring	CPU temperature	Yes
	System monitoring	Yes
Watchdog Timer	Output	System reset
	Interval	Programmable 1 ~ 255 sec/min

Power Requirements		3.3V	5V	12V	5Vsb	-12V	8P_CPU0	8P_CPU1
	Power On (220W CPU@2.6GHz DDR4 2666 32G*16)	1.91A	2.94A	3.98A	0.28A	0.01A	22.79A	22.84A

Environment		Operating	Non-operating
	Temperature	0 ~ 40 °C (32 ~ 104 °F), depends on CPU speed and cooler solution	-40 ~ 85 °C (-40 ~ 185 °F)
	Humidity	10% ~ 95%	10% ~ 95% (Non condensing)
Physical Characteristics	Dimensions (L x H)	380 x 346 mm (14.96" x 13.64")	

*CPU power design supports up to 270W TDP. Please consider additional air thermal solution while using CPU > 205W TDP.

Block Diagram

ECC DDR4 2666/2933/3200	Channel 0	
ECC DDR4 2666/2933/3200	Channel 1	
ECC DDR4 2666/2933/3200	Channel 2	
ECC DDR4 2666/2933/3200	Channel 3	
ECC DDR4 2666/2933/3200	Channel 4	
ECC DDR4 2666/2933/3200	Channel 5	
ECC DDR4 2666/2933/3200	Channel 6	
ECC DDR4 2666/2933/3200	Channel 7	

Intel LGA 4189 3rd Gen Xeon® Scalable Processors (CPU1)

UPI Port0: 11.2GT/s
UPI Port1: 11.2GT/s
UPI Port2: 11.2GT/s

Intel LGA 4189 3rd Gen Xeon® Scalable Processors (CPU0)

Channel 0	ECC DDR4 2666/2933/3200	
Channel 1	ECC DDR4 2666/2933/3200	
Channel 2	ECC DDR4 2666/2933/3200	
Channel 3	ECC DDR4 2666/2933/3200	
Channel 4	ECC DDR4 2666/2933/3200	
Channel 5	ECC DDR4 2666/2933/3200	
Channel 6	ECC DDR4 2666/2933/3200	
Channel 7	ECC DDR4 2666/2933/3200	

PCIe x8 Slot — Slot 2 — PCIe Gen4 x8
PCIe x8 Slot — Slot 4 — PCIe Gen4 x8
PCIe x16 Slot — Slot 7 — PCIe Gen4 x16
PCIe x16 Slot — Slot 9 — PCIe Gen4 x16
PCIe x8 Slot — Slot 10 — PCIe Gen4 x8
PCIe x8 Slot — Slot 11 — PCIe Gen4 x8

PCIe Gen4 x8 — PCIe x8 Slot — Slot 1
PCIe Gen4 x16 — PCIe x16 Slot — Slot 3
PCIe Gen4 x16 — PCIe x16 Slot — Slot 5
PCIe Gen4 x8 — PCIe x8 Slot — Slot 6
PCIe Gen4 x8 — PCIe x8 Slot — Slot 8

DMI Gen3 x4

8 x SATA3 (RAID 0,1,5,10) — SATA
2 x SATA3 (RAID 0,1) — sSATA
1 x M.2 2280_2 — sSATA / PCIe Gen3
1 x USB2.0 (1 type A) — USB 2.0
9 x USB3.2(gen 1) (2 Rear / 6 on board / 1 type A) — USB 3.2 Gen1
HD Conn. — HD Audio

Intel C621A PCH

PCIe Gen4 x4 — LAN3/LAN4 Intel X550-AT2 — MDI — RJ45 1G/10G
— MDI — RJ45 1G/10G
PCIe Gen4 x4 — 1 x M.2 2280_1

PCIe Gen1 x1 — LAN1 Intel I210 — MDI — RJ45 10M/100M/1G
PCIe Gen1 x1 — LAN2 Intel I210 — MDI — RJ45 10M/100M/1G
— Realtek 8201F — MDI — RJ45 10M/100M

NC-SI

USB 2.0
PCIe Gen2 x1 — BMC AST2500 — DDR4 — DRAM
— SPI — SPI Flash 32MB
— RGB — VGA Conn.

SPI BUS
LPC BUS — LPC Conn.

SPI BIOS 256M-bit

EC IT8528E

2 x RS-232 Header/Conn.
8 bit GPIO Pin Header
PS/2 KB, MS
9 x FAN Conn.

Ordering Information

Part Number	Chipset	Memory	GbE/10GbE LAN	IPMI	Graphics
ASMB-976-00A1	C621A	16 x DDR4 RDIMM/LRDIMM	2/-	-	AST 2510
ASMB-976T2-00A1	C621A	16 x DDR4 RDIMM/LRDIMM	2/2	Yes	AST 2500

Packing List

Part Number	Description	Quantity
2041097600	Startup manual	x 1
1700003194	SATA data cables	x 2
1700022749-11	SATA power cables	x 2
1700019748	CPU power cable	x 2
1930008089	Screw for M.2 device	x 2
1960093947T002	I/O shield	x 1
1651003476-01	LGA4189 CPU carrier	x 2

Optional Accessories

Part Number	Description
PCA-AUDIO-HDB1E	HD Audio-card
PCA-TPM-00B1E	TPM 2.0 Module by LPC
1970004902T000	LGA-4189 narrow CPU cooler for 2U/4U chassis (205W)
1700028024-01	Dual port USB USB 3.2 (Gen1) cable (45 cm) with bracket
1701090401	COM port cable (40 cm) with bracket
1700019268-11	PS/2 port cable (35 cm)
1960063434N000	Cable bracket for 1700019268-11

Note:
1. PCA-AUDIO-HDB1E is not compatible with Advantech 3U chassis.
2. Select SATA cable (SFF-8643) from HPC chassis datasheet or contact sales representative.

I/O View

ASMB-976-00A1

ASMB-976T2-00A1