Intel

Intel Xeon Gold 6416H Processor (PK8071305121101)

Datasheet

Product Overview

- The Intel Xeon Gold 6416H is a 4th Gen Intel Xeon Scalable processor designed for multi-socket enterprise, cloud, and general-purpose server platforms.
- It provides 18 cores and 36 threads, with a 2.20 GHz base frequency, up to 4.20 GHz Intel Turbo Boost frequency, 45 MB cache, and a 165 W TDP.
- Built on Intel 7 process technology, the processor supports S4S scalability and up to 4 TB of ECC memory.
- It supports DDR5-4800 at 1DPC or DDR5-4400 at 2DPC, with eight memory channels and 80 PCI Express 5.0 lanes for network adapters, storage, and accelerators.
- Intel AMX, Intel DL Boost, one default DSA device, one default IAA device, and AVX-512 support selected AI, analytics, data-movement, and compute workloads.
- Hardware security features include Intel SGX with Intel SPS, Total Memory Encryption, Boot Guard, Control-Flow Enforcement Technology, and Intel virtualization technologies.

Product Highlights

- **18-Core Multi-Socket Compute:** 18 cores and 36 threads provide parallel processing capacity for enterprise servers, cloud infrastructure, virtualization, and demanding general-purpose workloads.
- **2.20 to 4.20 GHz Frequency Range:** The processor combines a 2.20 GHz base frequency with up to 4.20 GHz Intel Turbo Boost frequency for responsive server performance.
- **High-Speed Memory and PCIe 5.0:** DDR5-4800 at 1DPC, DDR5-4400 at 2DPC, and 80 PCIe 5.0 lanes support high-throughput server designs.
- **AI and Data-Movement Acceleration:** Intel AMX, Intel DL Boost, one default Intel DSA device, and one default Intel IAA device support selected AI, inference, analytics, and data-movement workloads.

Detailed Features



Intel Xeon Gold 6416H Processor (PK8071305121101)

Quote | Help

Component	Specification
Processor	Intel Xeon Gold 6416H, 18 cores / 36 threads
Ordering Information	PK8071305121101, FC-LGA16A Tray, Spec Code SRMGU
Frequency and Cache	2.20 GHz base, up to 4.20 GHz turbo, 45 MB cache
Memory	Up to 4 TB ECC memory, DDR5-4800 1DPC or DDR5-4400 2DPC, 8 channels
Power and Expansion	165 W TDP, S4S scalability, PCIe 5.0 with 80 lanes, 16 GT/s UPI, 3 UPI links

Balanced Multi-Socket Compute

The 6416H combines 18 physical cores with 36 threads, a 2.20 GHz base frequency, and a 165 W TDP. Its compute profile suits enterprise servers, cloud infrastructure, virtualization, and general-purpose workloads.

S4S Platform Support

Intel specifies S4S scalability, 16 GT/s UPI, and three UPI links. This supports server platforms designed for multi-socket compute capacity and inter-socket bandwidth.

Speed Select Performance Profiles

Intel documents three SST-PP configurations: 18 active cores at 2.2 GHz and 165 W, 16 active cores at 2.3 GHz and 165 W, and 12 active cores at 2.7 GHz and 165 W.

PCIe 5.0 I/O Expansion

Eighty PCIe 5.0 lanes provide direct expansion capacity for Ethernet adapters, storage controllers, accelerators, and other high-bandwidth server devices.

Flexible ECC Memory Speeds

The processor supports up to 4 TB of ECC memory across eight channels, with DDR5-4800 at 1DPC and DDR5-4400 at 2DPC. This supports high-capacity server systems with different DIMM population requirements.

High-Bandwidth PCIe 5.0 Connectivity

Eighty PCIe 5.0 lanes provide direct expansion capacity for Ethernet adapters, storage controllers, accelerators, and other high-bandwidth devices. The lane budget supports balanced I/O across a multi-socket platform.

Acceleration for AI and Data Movement

Intel AMX and DL Boost support selected AI and inference workloads. One default DSA device supports data movement, while one default IAA device supports in-memory analytics operations.

Security and Virtualization Foundation

The processor includes Intel SGX with Intel SPS, Total Memory Encryption, Boot Guard, Control-Flow Enforcement Technology, AES instructions, VT-x, VT-d, and Extended Page Tables. These capabilities help protect workloads and support virtualized server platforms.

Technical Specifications

Product Specifications

Feature	Value
User SKU	INTL-6416H
Intel ordering code	PK8071305121101
Intel Spec Code	SRMGU
Processor model	Intel Xeon Gold 6416H Processor
Product collection	4th Gen Intel Xeon Scalable Processors
Code name	Products formerly Sapphire Rapids
Vertical segment	Server
Processor number	6416H
Lithography	Intel 7
Marketing status	Launched
Launch date	Q1 2023
Embedded Options Available	No
Use conditions	Server/Enterprise
Total cores	18

Feature	Value
Total threads	36
Processor base frequency	2.20 GHz
Max turbo frequency	4.20 GHz
Cache	45 MB
Intel UPI speed	16 GT/s
Max UPI links	3
TDP	165 W
Intel DL Boost	Yes
SST-PP 6416H(0)	18 active cores, 2.2 GHz base, 165 W
SST-PP 6416H(1)	16 active cores, 2.3 GHz base, 165 W
SST-PP 6416H(2)	12 active cores, 2.7 GHz base, 165 W
Scalability	S4S
Memory types	Up to DDR5-4800 MT/s 1DPC; up to DDR5-4400 MT/s 2DPC
Max memory size	4 TB
Max memory channels	8
ECC memory supported	Yes
PCI Express revision	5.0
Max PCI Express lanes	80
Sockets supported	FCLGA4677
Package carrier	E1B
Package size	77.5 mm x 56.5 mm
DTS max	95 °C
TCASE	82 °C
Intel On Demand Activation Model	No
Intel Data Streaming Accelerator	1 default device
Intel In-memory Analytics Accelerator	1 default device
Intel Advanced Matrix Extensions	Yes
Intel Speed Select Technology - Core Power	Yes
Intel Speed Select Technology - Turbo Frequency	Yes
Intel Speed Select Technology - Base Frequency	Yes

Feature	Value
Intel Speed Select Technology - Performance Profile	Yes
High Priority Cores	6
High Priority Core Frequency	2.40 GHz
Low Priority Cores	12
Low Priority Core Frequency	2.00 GHz
Intel Resource Director Technology	Yes
Intel Speed Shift Technology	Yes
Intel Turbo Boost Technology	2.0
Intel Hyper-Threading Technology	Yes
Intel Transactional Synchronization Extensions	Yes
Intel 64	Yes
Instruction set extensions	Intel AMX, Intel SSE4.2, Intel AVX, Intel AVX2, Intel AVX-512
AVX-512 FMA units	2
Intel QuickAssist Software Acceleration	Yes
Intel Control-Flow Enforcement Technology	Yes
Intel Total Memory Encryption	Yes
Intel AES New Instructions	Yes
Intel Software Guard Extensions	Yes with Intel SPS
Default maximum SGX EPC size	512 GB
Intel Trusted Execution Technology	Yes
Intel OS Guard	Yes
Execute Disable Bit	Yes
Intel Boot Guard	Yes
Intel Platform Firmware Resilience	Yes
Intel Run Sure Technology	Yes
Mode-based Execute Control	Yes
Intel Crypto Acceleration	Yes
Intel Virtualization Technology	VT-x, VT-d, and VT-x with EPT
Shipping media	Tray
Stepping	S3

Product Comparison

Feature	Intel Xeon Gold 6416H / PK8071305121101	Intel Xeon Gold 6414U / PK8071305072001	Intel Xeon Gold 6430 / PK8071305072902
Processor family	4th Gen Intel Xeon Scalable	4th Gen Intel Xeon Scalable	4th Gen Intel Xeon Scalable
Positioning in this comparison	18-core high-frequency multi-socket processor	32-core single-socket processor	32-core two-socket enterprise processor
Total cores	18	32	32
Total threads	36	64	64
Processor base frequency	2.20 GHz	2.00 GHz	2.10 GHz
Max turbo frequency	4.20 GHz	3.40 GHz	3.40 GHz
Cache	45 MB	60 MB	60 MB
TDP	165 W	250 W	270 W
Scalability	S4S	1S Only	2S
Intel UPI	16 GT/s; 3 links	0 GT/s; 0 links	16 GT/s; 3 links
Max memory size	4 TB	4 TB	4 TB
Memory channels	8	8	8
Memory support	DDR5-4800 1DPC; DDR5-4400 2DPC	DDR5-4800 1DPC; DDR5-4400 2DPC	DDR5-4400 1DPC and 2DPC
ECC memory	Yes	Yes	Yes
PCI Express	5.0, 80 lanes	5, 80 lanes	5.0, 80 lanes
Default accelerator devices	DSA: 1; IAA: 1	DSA: 1	DSA: 1
Intel AMX	Yes	Yes	Yes
Intel DL Boost	Yes	Yes	Yes
Best-fit role	High-frequency multi-socket server compute	High-density single-socket enterprise and cloud server	High-capacity two-socket enterprise and cloud server

Accessories

Category	Accessories
Included Accessories	- Intel Xeon Gold 6416H processor - Tray shipping media
Optional Accessories	- FCLGA4677-compatible server board and CPU heatsink solution - DDR5 ECC memory and PCIe 5.0 network or storage adapters

Support & Warranty

- 24/7 Online Service
- 3-Year Premium Warranty
- Professional Technical Support
- 100% Low Price Guarantee
- 100% Quality Assurance
- 100% Money Back Guarantee

About Us



Router-switch.com, headquartered in Hong Kong since 2002, has been a trusted global leader in ICT distribution for 20+ years. We provide cutting-edge networking, cybersecurity, data center, and AI solutions to meet evolving business needs. Our wide range includes products from top brands like Cisco, Arista, Aruba, Fortinet, Mellanox, and Huawei, ensuring access to the latest technology and innovations.

21,500+ global customers	**600,000+** end-users	**200+** countries & regions	**20+** years experience
500+ global vendors	**100,000+** SKUs available	**700+** local sales experts	**50-98%** off global list prices

Contact Us

Email

Sales Inquiries: sales@router-switch.com
Expert Technical Support: ccie-support@router-switch.com
Cooperative Partnerships: partner@router-switch.com

Follow Us

Facebook: @Routerswitchdotcom
LinkedIn: Router-switch.com
X: @routerswitchcom
Instagram: @routerswitchdotcom

Phone

USA: +1-626-655-0998
Hong Kong: +852-25925389 / +852-25925411

Global Footprint

Global Warehouses & Service Centers Across Continents.



Global Branches

Hong Kong Branch

Rm 605, 6/F, Fa Yuen Comm Bldg, 75-77 Fa Yuen St, Mongkok, Kowloon, Hong Kong, China

Shenzhen Branch

Jingfeng Building, 1001 Shangbu South Road, Futian District, Shenzhen, China

USA Branch

35 E Horizon Ridge Pkwy, Ste 110 #30131, Henderson, NV 89002, USA

UK Branch

Third Floor, 207 Regent Street, London W1B 3HH, UK

References

[1] Intel. (2026). Intel Xeon Gold 6416H Processor Specifications. https://www.intel.com/content/www/us/en/products/sku/232389/intel-xeon-gold-6416h-processor-45m-cache-2-20-ghz/specifications.html

[2] Intel. (2026). Intel Xeon Gold 6416H Processor Ordering and Spec Information. https://www.intel.com/content/www/us/en/products/sku/232389/intel-xeon-gold-6416h-processor-45m-cache-2-20-ghz/ordering.html