Intel

Intel Xeon Platinum 8454H Processor (PK8071305074601)

Datasheet

Product Overview

- The Intel Xeon Platinum 8454H is a 4th Gen Intel Xeon Scalable processor for high-performance enterprise, cloud, and data-center servers.
- It provides 32 cores and 64 threads, with a 2.10 GHz base frequency, up to 3.40 GHz Intel Turbo Boost frequency, 82.5 MB cache, and a 270 W TDP.
- The processor supports scalable multi-socket server designs, eight DDR5 memory channels, and high-bandwidth PCI Express 5.0 expansion.
- Up to DDR5-4800 MT/s at 1DPC and DDR5-4400 MT/s at 2DPC support high-capacity server memory, with ECC support for platform reliability.
- Eighty PCIe 5.0 lanes, 16 GT/s UPI, Intel AMX, and four default devices each for QAT, DLB, DSA, and IAA support compute, accelerator, storage, and data-processing workloads.
- Intel SGX with a 512 GB default maximum EPC size, Total Memory Encryption, Boot Guard, Platform Firmware Resilience, and virtualization technologies strengthen protected deployments.

Product Highlights

- **32-Core Platinum Compute:** 32 cores and 64 threads provide high parallel processing capacity for enterprise servers, cloud platforms, virtualization, and data-center workloads.
- **Scalable Server Interconnect:** Eighty PCIe 5.0 lanes and four UPI links at 16 GT/s support multi-socket platform connectivity for accelerators, storage, and high-speed networking.
- **DDR5 Memory Flexibility:** Eight memory channels support up to DDR5-4800 MT/s at 1DPC and DDR5-4400 MT/s at 2DPC, with ECC support for server-class systems.
- **QAT and Accelerator Support:** Intel QAT, DLB, DSA, IAA, AMX, and Intel DL Boost provide hardware acceleration options for security, load balancing, data movement, analytics, and AI workloads.

Detailed Features



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Component	Specification
Processor	Intel Xeon Platinum 8454H, 32 cores / 64 threads
Ordering Information	PK8071305074601, FC-LGA16A Tray, Spec Code SRM7F
Frequency and Cache	2.10 GHz base, up to 3.40 GHz turbo, 82.5 MB cache
Memory	Up to DDR5-4800 MT/s 1DPC or DDR5-4400 MT/s 2DPC, 8 channels, ECC supported

Component	Specification
Power and Expansion	270 W TDP, S8S scalability, PCIe 5.0 with 80 lanes, 16 GT/s UPI

High-Core-Count Platinum Performance

The 8454H combines 32 cores and 64 threads with a 2.10 GHz base frequency and up to 3.40 GHz Intel Turbo Boost frequency. This profile suits virtualization, databases, cloud services, analytics, and general-purpose data-center workloads.

Scalable Multi-Socket Architecture

Intel specifies S8S scalability and four UPI links at 16 GT/s. The platform is built for systems that require coherent multi-socket processing and high inter-socket bandwidth for large server deployments.

PCIe 5.0 Expansion Capacity

Eighty PCIe 5.0 lanes provide high-speed connectivity for Ethernet adapters, storage controllers, accelerators, and other I/O devices. The lane budget helps balance high-throughput expansion across a server platform.

DDR5 Memory Bandwidth

Eight memory channels support up to DDR5-4800 MT/s with one DIMM per channel and up to DDR5-4400 MT/s with two DIMMs per channel. ECC support helps maintain data integrity in server environments.

Intel AMX Acceleration

Intel Advanced Matrix Extensions are supported alongside Intel DL Boost and AVX-512. These capabilities can accelerate selected AI, inference, analytics, and vectorized workloads when enabled by the software stack.

Integrated Accelerator Portfolio

Intel documents four default devices each for QAT, DLB, DSA, and IAA. These engines can offload supported security, load-balancing, data-movement, and in-memory analytics operations from general-purpose cores.

Speed Select and Core Priorities

Intel Speed Select Technology supports core power, turbo frequency, and base frequency controls. The 8454H also lists 12 high-priority cores at 2.20 GHz and 20 low-priority cores at 1.80 GHz.

Protected Server Execution

Intel SGX with a 512 GB default maximum EPC size, Total Memory Encryption, AES instructions, Boot Guard, and Control-Flow Enforcement Technology help protect data and workloads across the server lifecycle.

Technical Specifications

Product Specifications

Feature	Value
User SKU	INTL-Platinum-8454H
Intel ordering code	PK8071305074601
Intel Spec Code	SRM7F
Processor model	Intel Xeon Platinum 8454H Processor
Product collection	4th Gen Intel Xeon Scalable Processors
Code name	Products formerly Sapphire Rapids
Vertical segment	Server
Processor number	8454H
Lithography	Intel 7
Marketing status	Launched
Launch date	Q1 2023
Use conditions	Server / Enterprise
Total cores	32
Total threads	64

Feature	Value
Processor base frequency	2.10 GHz
Max turbo frequency	3.40 GHz
Cache	82.5 MB
Intel UPI speed	16 GT/s
Max UPI links	4
TDP	270 W
Scalability	S8S
Sockets supported	FCLGA4677
Package carrier	E1A
Package size	77.5 mm x 56.5 mm
DTS max	97 °C
TCASE	71 °C
Max memory size	Up to 4 TB, depending on memory type and platform configuration
Memory types	Up to DDR5-4800 MT/s 1DPC; up to DDR5-4400 MT/s 2DPC
Max memory channels	8
ECC memory supported	Yes
PCI Express revision	5.0
Max PCI Express lanes	80
Intel On Demand Activation Model	No
Intel QuickAssist Technology	4 default devices
Intel Dynamic Load Balancer	4 default devices
Intel Data Streaming Accelerator	4 default devices
Intel In-memory Analytics Accelerator	4 default devices
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
Intel DL Boost	Yes
High Priority Cores	12

Feature	Value
High Priority Core Frequency	2.20 GHz
Low Priority Cores	20
Low Priority Core Frequency	1.80 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 Crypto Acceleration	Yes
Intel QuickAssist Software Acceleration	Yes
Intel Platform Firmware Resilience	Yes
Intel Control-Flow Enforcement Technology	Yes
Intel Total Memory Encryption	Yes
Intel AES New Instructions	Yes
Intel SGX	Yes with Intel SPS
Default maximum SGX EPC size	512 GB
Intel OS Guard	Yes
Intel Trusted Execution Technology	Yes
Execute Disable Bit	Yes
Intel Boot Guard	Yes
Intel Run Sure Technology	Yes
Mode-based Execute Control	Yes
Intel Virtualization Technology	VT-x, VT-d, and VT-x with EPT
Shipping media	Tray
Stepping	E5

Product Comparison

Feature	Intel Xeon Platinum 8454H / PK8071305074601	Intel Xeon Platinum 8452Y	Intel Xeon Platinum 8450H
Processor family	4th Gen Intel Xeon Scalable	4th Gen Intel Xeon Scalable	4th Gen Intel Xeon Scalable
Product positioning	32-core Platinum server processor	36-core Platinum server processor	High-core-count Platinum server processor
Total cores	32	36	28
Total threads	64	72	56
Processor base frequency	2.10 GHz	2.00 GHz	2.00 GHz
Max turbo frequency	3.40 GHz	3.20 GHz	3.50 GHz
Cache	82.5 MB	67.5 MB	75 MB
TDP	270 W	300 W	250 W
Max memory size	Up to 4 TB, depending on memory type	Up to 4 TB, depending on memory type	Up to 4 TB, depending on memory type
Memory channels	8	8	8
PCI Express lanes	80	80	80
Intel AMX	Yes	Yes	Yes
Best-fit role	32-core balanced enterprise and data-center server	36-core compute and memory-intensive server	Balanced high-core-count enterprise and data-center server

Accessories

Category	Accessories
Included Accessories	- Intel Xeon Platinum 8454H processor (tray shipping media)
Optional Accessories	- FCLGA4677-compatible server board and CPU cooling solution - DDR5 ECC memory and PCIe 5.0 network, storage, or accelerator adapters

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