Intel

Intel Xeon Platinum 8470 Processor (PK8071305072401)

Datasheet

Product Overview

- The Intel Xeon Platinum 8470 is a 4th Gen Intel Xeon Scalable processor for high-performance enterprise servers, virtualization, cloud infrastructure, and data-center workloads.
- It provides 52 cores and 104 threads, with a 2.00 GHz base frequency, up to 3.80 GHz Intel Turbo Boost frequency, 105 MB cache, and a 350 W TDP.
- The processor supports two-socket server platforms, 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, 2S scalability, and 16 GT/s UPI with four UPI links support dense compute, virtualization, storage, and data-processing workloads.
- Intel DSA provides one default device for supported data-movement acceleration, while Intel SGX with a 512 GB default maximum EPC size supports protected deployments.

Product Highlights

- **52-Core Platinum Compute:** 52 cores and 104 threads provide high parallel processing capacity for virtualization-dense enterprise servers, cloud platforms, and data-center workloads.
- **Two-Socket Server Interconnect:** 16 GT/s UPI and four UPI links support multi-processor platforms, while 80 PCIe 5.0 lanes connect accelerators, storage, Ethernet adapters, and other I/O devices.
- **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.
- **Data-Movement Acceleration:** Intel DSA provides one default device for supported data-movement workloads, reducing CPU overhead when the platform and software stack enable the accelerator.

Detailed Features



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Component	Specification
Processor	Intel Xeon Platinum 8470, 52 cores / 104 threads
Ordering Information	PK8071305072401, FC-LGA16A Tray, Spec Code SRM75
Frequency and Cache	2.00 GHz base, up to 3.80 GHz turbo, 105 MB cache
Memory	Up to DDR5-4800 MT/s 1DPC or DDR5-4400 MT/s 2DPC, 8 channels, ECC supported
Power and Expansion	350 W TDP, 2S scalability, PCIe 5.0 with 80 lanes, 16 GT/s UPI, 4 UPI links

High-Core-Count Platinum Performance

The 8470 combines 52 cores and 104 threads with a 2.00 GHz base frequency and up to 3.80 GHz Intel Turbo Boost frequency. This profile suits virtualization-dense servers, cloud services, analytics, and general-purpose data-center workloads.

Two-Socket Platform Design

Intel specifies 2S scalability, 16 GT/s UPI, and four UPI links. This enables the processor to participate in dual-socket platforms that require higher aggregate compute capacity and memory bandwidth.

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 DSA Acceleration

Intel documents one default Data Streaming Accelerator device. DSA can offload supported data-movement operations from general-purpose cores when enabled by the platform software.

High-Power Server Configuration

The 350 W TDP supports the processor's 52-core performance profile. Platform designs should account for the required socket, cooling, power-delivery, and chassis capacity.

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-8470
Intel ordering code	PK8071305072401
Intel Spec Code	SRM75
Processor model	Intel Xeon Platinum 8470 Processor
Product collection	4th Gen Intel Xeon Scalable Processors
Code name	Products formerly Sapphire Rapids
Vertical segment	Server
Processor number	8470
Lithography	Intel 7
Marketing status	Launched
Launch date	Q1 2023
Use conditions	Server / Enterprise
Total cores	52
Total threads	104

Feature	Value
Processor base frequency	2.00 GHz
Max turbo frequency	3.80 GHz
Cache	105 MB
Intel UPI speed	16 GT/s
Max UPI links	4
TDP	350 W
Scalability	2S
Sockets supported	FCLGA4677
Package carrier	E1A
Package size	77.5 mm x 56.5 mm
DTS max	98 °C
TCASE	79 °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 Data Streaming 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
Intel DL Boost	Yes
High Priority Cores	16
High Priority Core Frequency	2.20 GHz
Low Priority Cores	36
Low Priority Core Frequency	1.80 GHz

Feature	Value
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 8470 / PK8071305072401	Intel Xeon Platinum 8468	Intel Xeon Platinum 8468V
Processor family	4th Gen Intel Xeon Scalable	4th Gen Intel Xeon Scalable	4th Gen Intel Xeon Scalable
Product positioning	52-core, high-power, two-socket Platinum processor	48-core, high-power, two-socket Platinum processor	48-core Speed Select Platinum processor
Total cores	52	48	48
Total threads	104	96	96
Processor base frequency	2.00 GHz	2.10 GHz	2.40 GHz
Max turbo frequency	3.80 GHz	3.80 GHz	3.80 GHz
Cache	105 MB	105 MB	97.5 MB
TDP	350 W	350 W	330 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
Scalability	2S	2S	2S
UPI	16 GT/s, 4 links	16 GT/s, 4 links	16 GT/s, 3 links
Memory channels	8	8	8
PCI Express lanes	80	80	80
Intel AMX	Yes	Yes	Yes
Best-fit role	High-performance dual-socket enterprise and data-center compute	High-power two-socket server compute	Configurable two-socket enterprise and data-center compute

Accessories

Category	Accessories
Included Accessories	- Intel Xeon Platinum 8470 processor (tray shipping media)
Optional Accessories	-

Support & Warranty

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References

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