

Intel
Intel Xeon Gold 5403N
Processor
(PK8071305554700)
Datasheet

Product Overview

- The Intel Xeon Gold 5403N is a 4th Gen Intel Xeon Scalable processor designed for network, edge, communications, and server workloads.
- It provides 12 cores and 24 threads, with a 2.00 GHz base frequency, up to 3.90 GHz Intel Turbo Boost frequency, 22.5 MB cache, and a 115 W TDP.
- Built on Intel 7 process technology, the processor supports a single-socket platform, eight DDR5 memory channels, and up to 4 TB of memory.
- The processor supports DDR5-4000 memory with ECC and provides 48 PCI Express 4.0 lanes for network adapters, storage, and accelerator connectivity.
- Intel DL Boost, Intel vRAN Boost, AVX-512, two AVX-512 FMA units, and a default Intel DSA device support data-plane and communications 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

- **12-Core Network-Optimized Compute:** 12 cores and 24 threads provide a balanced compute profile for communications servers, edge nodes, and consolidated network functions.
- **2.00 to 3.90 GHz Frequency Range:** The processor combines a 2.00 GHz base frequency with up to 3.90 GHz Intel Turbo Boost frequency for responsive burst performance.
- **DDR5 and PCIe 4.0 Expansion:** Eight DDR5-4000 memory channels and 48 PCIe 4.0 lanes support high-throughput memory and I/O designs in single-socket servers.
- **vRAN and Security Acceleration:** Intel vRAN Boost, Intel DL Boost, SGX with Intel SPS, TME, Boot Guard, and VT-d support communications and protected workloads.

Detailed Features



Intel Xeon Gold 5403N Processor (PK8071305554700)

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Component	Specification
Processor	Intel Xeon Gold 5403N, 12 cores / 24 threads
Ordering Information	PK8071305554700, FC-LGA16A Tray, Spec Code SRN64
Frequency and Cache	2.00 GHz base, up to 3.90 GHz turbo, 22.5 MB cache
Memory	Up to 4 TB DDR5-4000, 8 channels, ECC supported
Power and Expansion	115 W TDP, 1S, PCIe 4.0 with 48 lanes



Balanced Edge-Server Compute

The 5403N combines 12 physical cores with 24 threads and a 115 W TDP. This balance is suitable for edge servers and communications appliances that need enough parallel compute for network services while maintaining a controlled thermal and power envelope.

Network-Optimized 4th Gen Xeon Design

As an N-series 4th Gen Intel Xeon Scalable processor, the 5403N is positioned for communications, 5G, vRAN, NFV, and edge infrastructure. Intel vRAN Boost and Intel DL Boost help accelerate selected network and machine-learning workloads.

Responsive Frequency and Cache Profile

The 2.00 GHz base frequency can reach up to 3.90 GHz with Intel Turbo Boost Technology 2.0. A 22.5 MB cache helps keep frequently accessed data close to the cores, supporting responsive control-plane and service workloads.

Single-Socket Platform Efficiency

The processor is specified for 1S scalability and uses the FCLGA4677 socket. A single-socket design can simplify platform topology and reduce system complexity in compact edge, security, storage, and network-function deployments.

High-Capacity ECC Memory

The processor supports up to 4 TB of DDR5-4000 memory across eight channels, with ECC support for server-class reliability. This gives single-socket systems room for virtualized network functions, caches, analytics, and service containers.

PCIe 4.0 I/O for Data-Plane Devices

Forty-eight PCIe 4.0 lanes provide direct expansion capacity for Ethernet adapters, storage controllers, accelerators, and other high-bandwidth devices. The lane budget helps designers build balanced I/O around a single processor socket.

Acceleration for Communications Workloads

Intel vRAN Boost targets virtualized radio access network processing, while Intel DSA provides one default device for data movement. Intel DL Boost and AVX-512 support selected inference, packet-processing, and 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-5403N
Intel ordering code	PK8071305554700
Intel Spec Code	SRN64
Processor model	Intel Xeon Gold 5403N Processor
Product collection	4th Gen Intel Xeon Scalable Processors
Code name	Products formerly Sapphire Rapids Edge Enhanced
Vertical segment	Server
Processor number	5403N
Lithography	Intel 7
Marketing status	Launched
Launch date	Q4 2023
Total cores	12
Total threads	24
Processor base frequency	2.00 GHz



Feature	Value
Max turbo frequency	3.90 GHz
Cache	22.5 MB
Intel UPI speed	0 GT/s
Max UPI links	0
TDP	115 W
Scalability	1S only
Sockets supported	FCLGA4677
Package carrier	E1B
Package size	77.5 mm x 56.5 mm
DTS max	97 °C
TCASE	85 °C
Max memory size	4 TB
Memory types	DDR5-4000
Maximum memory speed	4000 MHz
Max memory channels	8
ECC memory supported	Yes
Intel Optane persistent memory	Not supported
PCI Express revision	4.0
Max PCI Express lanes	48
Intel DL Boost	Yes
Intel vRAN Boost	Yes
Intel QuickAssist Technology	0 default devices
Intel Dynamic Load Balancer	0 default devices
Intel Data Streaming Accelerator	1 default device
Intel In-memory Analytics Accelerator	0 default devices
Intel Advanced Matrix Extensions	No
Intel Speed Select Technology - Core Power	Yes
Intel Speed Select Technology - Turbo Frequency	Yes
Intel Resource Director Technology	Yes
Intel Speed Shift Technology	Yes



Feature	Value
Intel Turbo Boost Technology	2.0
Intel Hyper-Threading Technology	Yes
Instruction set extensions	Intel SSE4.2, Intel AVX, Intel AVX2, Intel AVX-512
AVX-512 FMA units	2
Intel SGX	Yes with Intel SPS
Default maximum SGX EPC size	128 GB
Intel Total Memory Encryption	Yes
Intel AES New Instructions	Yes
Intel QuickAssist Software Acceleration	Yes
Intel Control-Flow Enforcement Technology	Yes
Intel Trusted Execution Technology	Yes
Intel Boot Guard	Yes
Intel Platform Firmware Resilience	Yes
Intel Run Sure Technology	Yes
Intel Virtualization Technology	VT-x, VT-d, and VT-x with EPT
Shipping media	Tray
Stepping	U1



Product Comparison

Feature	Intel Xeon Gold 5403N / PK8071305554700	Intel Xeon Gold 5415+ / PK8071305118701	Intel Xeon Gold 5433N / PK8071305321800
Processor family	4th Gen Intel Xeon Scalable	4th Gen Intel Xeon Scalable	4th Gen Intel Xeon Scalable
Network or edge positioning	N-series Edge Enhanced	General-purpose Sapphire Rapids	N-series Edge Enhanced
Total cores	12	8	20
Total threads	24	16	40
Processor base frequency	2.00 GHz	2.90 GHz	2.30 GHz
Max turbo frequency	3.90 GHz	4.10 GHz	4.10 GHz
Cache	22.5 MB	22.5 MB	37.5 MB
TDP	115 W	150 W	160 W
Scalability	1S only	2S	2S
Max memory size	4 TB	4 TB	4 TB
Memory channels	8	8	8
Memory support	DDR5-4000	DDR5 up to 4400 MT/s	DDR5-4000
ECC memory	Yes	Yes	Yes
PCI Express	4.0, 48 lanes	5.0, 80 lanes	5.0, 80 lanes
Intel DL Boost	Yes	Yes	Yes
Best-fit role	Single-socket network and edge server	Higher-frequency general-purpose server	Higher-core-count network and edge server

Accessories

Category	Accessories
Included Accessories	- Intel Xeon Gold 5403N processor - Tray shipping media



Category	Accessories
Optional Accessories	- FCLGA4677-compatible server board and CPU heatsink solution - DDR5 ECC memory and PCIe 4.0 network or storage adapters



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