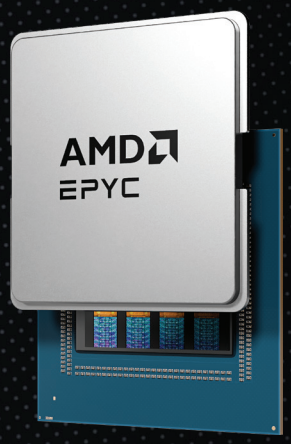
AMD EPYC™ 9006 SP7 SERIES SERVER CPUs

ADVANCE YOUR DATA CENTER FOR AGENTIC AI: HIGHEST MULTITHREADED CORE COUNT.[1] HIGHEST PERFORMANCE.[2]

Three CPU roles. One platform. Built for the AI data center.



Agentic AI is changing what the data center asks of the CPU. AMD EPYC™ 9006 SP7 Series Server CPUs enable customers to choose the right CPU role for their workloads: scale agentic workflows, keep GPU accelerators productive, and get more jobs done with fewer servers, at exceptional TCO.

AGENT SANDBOX CPU

RUN MORE AGENTS. PER WATT. PER DOLLAR. PER RACK.

BEST FOR: Maximizing agentic capacity: running more agents and services concurrently across sandboxes, tool execution, and high-concurrency services

256
CORES

512 threads per socket, the highest thread density and multithreaded core density of server CPUs in production[3]

PER WATT
2.6x
Agentic operations per CPU watt vs. AMD EPYC™ 9745

PER DOLLAR
1.87x
Est. agents per CPU dollar vs. Intel® Xeon® 6980P

PER RACK
Most
Est. agents per rack within a 100 kW power envelope

AI HOST NODE CPU

GET MORE FROM GPU ACCELERATORS WITH AMD EPYC SERVER CPUs

BEST FOR: Maximizing GPU utilization and token generation in AI training and inference platforms

5.3
GHz

Max boost frequency for the highest performance per core in GPU platforms[4,5,6]

GPU OUTPUT
2x
LLM inference output throughput vs. Intel Xeon 6960P host node

CPU-TO-GPU I/O
2x
PCIe® I/O bandwidth vs. AMD EPYC 9005 Series with PCIe Gen 6

MEMORY
1.6 TB/s
Per-socket memory bandwidth for large-context agentic AI[7]

GENERAL-PURPOSE CPU

MORE JOBS DONE. FASTER INSIGHTS. FEWER SERVERS.

BEST FOR: Performance and efficiency for databases, storage, virtualization, CPU inference, HPC, and agentic orchestration

12:1
CONSOLIDATION

~92% fewer servers, ~77% less power, and ~40% lower 5-year TCO vs. 2P Xeon 6258R (2nd Gen Xeon Scalable)[8]

MORE JOBS DONE
#1
Highest-performing server CPU on SPECrate® 2017_int_base[9]

FASTER INSIGHTS
Up to 3.2x
HPC performance vs. Intel Xeon 6980P in life sciences, chemistry, and weather[10, 11, 12, 13]

MORE PER SERVER
2x
Generational performance vs. AMD EPYC 9965[14]

EVERY SP7 PLATFORM SUPPORTS

16
DDR5 MEMORY CHANNELS
33% more than Intel Xeon 6

12,800
MT/S MRDIMM SUPPORT
Fast memory to keep every core fed[15]

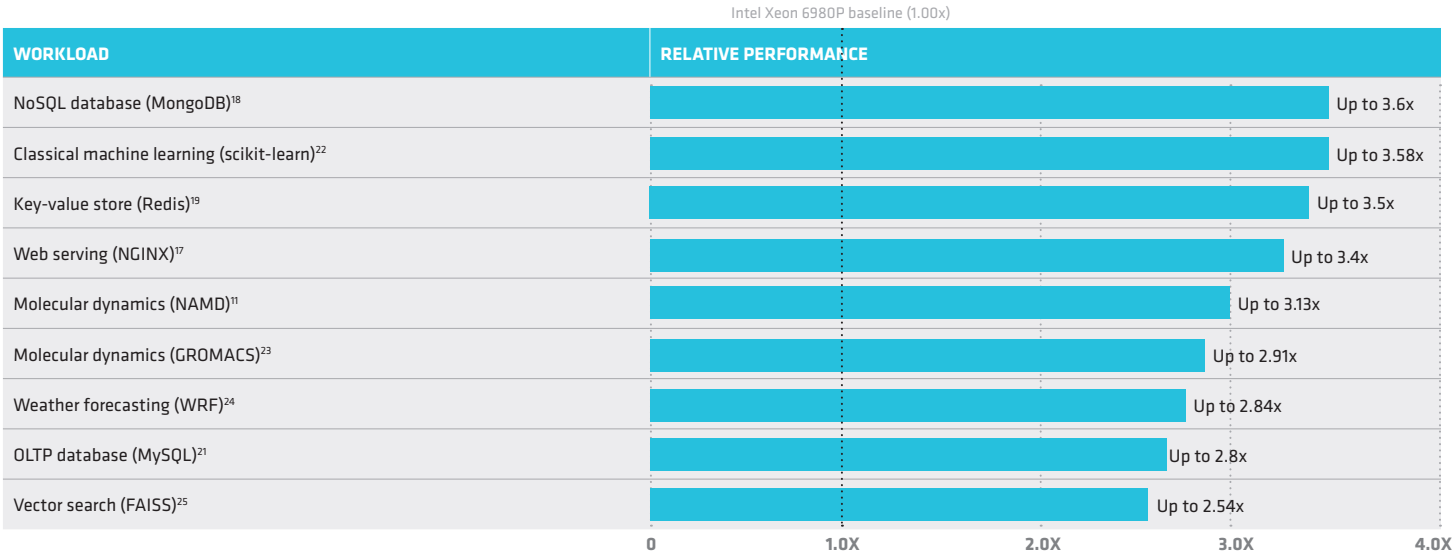
CXL 3.1
MEMORY EXPANSION
Add capacity beyond DIMM slots for large datasets

128
PCIE® GEN 6 LANES
Up to 128 lanes in a 2P system for GPUs, networking, and storage[16]

READY TO CONNECT? Visit explore.amd.com/server-newsletter/sign-up

PERFORMANCE ACROSS KEY WORKLOADS

2P AMD EPYC 9996 relative performance | 2P Intel 6980P = 1.00x | higher is better



Comparisons are based on the corresponding AMD claim and system configurations. Dashed line marks the Intel Xeon 6980P baseline (1.00X). See claim disclosures for full test details.

PRODUCT SPECIFICATIONS

MODEL	PLATFORM	CPU CORES	THREADS	MAX BOOST (GHZ)	BASE CLOCK (GHZ)	L3 CACHE (MB)	DEFAULT CPU POWER
AMD EPYC™ 9996[A]	SP7	256	512	4.1	2.55	1024	600W (CPU Power Range: 400W-600W)
AMD EPYC™ 9956[A]	SP7	256	512	4.1	1.70	1024	400W (CPU Power Range: 400W-600W)
AMD EPYC™ 9966[A]	SP7	192	384	4.1	3.05	768	600W (CPU Power Range: 400W-600W)
AMD EPYC™ 9846[A]	SP7	168	336	4.1	2.90	768	500W (CPU Power Range: 320W-500W)
AMD EPYC™ 9756	SP7	128	256	4.1	3.20	512	500W (CPU Power Range: 320W-500W)
AMD EPYC™ 9656	SP7	96	192	3.7	3.05	512	400W (CPU Power Range: 220W-400W)
AMD EPYC™ 9686F	SP7	96	192	5.3	4.05	384	600W (CPU Power Range: 400W-600W)
AMD EPYC™ 9G76	SP7	96	192	5.3	3.65	384	500W (CPU Power Range: 320W-500W)
AMD EPYC™ 9556	SP7	64	128	5.1	3.60	384	300W (CPU Power Range: 220W-300W)
AMD EPYC™ 9586F	SP7	64	128	5.3	4.05	384	500W (CPU Power Range: 400W-600W)

***Subject to change**

All models are built on the SP7 platform with support for up to 16 DDR5 memory channels and PCIe® Gen 6 I/O.
* Max boost for AMD EPYC™ processors is the maximum frequency achievable by any single core on the processor under normal operating conditions for server systems. EPYC-018. ‡ Base frequency is the measured frequency related to the P0 power state while executing a light-load, integer-based workload on all cores. EPYC-061.
† Starting with the 6th Gen AMD EPYC™ server processor family, AMD uses Default CPU Power to describe processor power consumption, succeeding the historical TDP reference. Default CPU Power reflects total power consumed across the processor's compute and I/O dies for the stated performance target. EPYC-070.
A. These items are classified under Export Control Classification Number (ECCN) 5A992.z.2 pursuant to the U.S. Export Administration Regulations (EAR). For current export control requirements, please refer to the U.S. Department of Commerce, Bureau of Industry and Security (BIS) Export Administration Regulations. See https://www.bis.gov/regulations/ear

FOOTNOTES
1. & 3. 9xx6-005B: 6th Gen AMD EPYC CPUs can support up to 1.33x the (33% more) vCPUs and threads compared to 5th Gen AMD EPYC 9965.

6th Gen AMD EPYC 9996 has the highest thread density (thread count) and the highest multithreaded core density of server CPUs in production.
9xx6-005B: as of 11/5/2026, AMD EPYC CPUs can support up to 1.33x the vCPUs and threads vs 5th Gen AMD EPYC 9965. 6th Gen AMD EPYC 9996 has the highest thread density (thread count) and the highest multithreaded core density of server CPUs in production.

vCPU support based on thread count, comparing Top of Stack 6th Gen EPYC 9996 CPU with 256 cores (512 threads) and 5th Gen EPYC 9965 with 192 cores (384 threads).

In comparison, the highest thread count Intel® Xeon® processor is the Intel Xeon 6990E at 288 cores (288 threads).

The highest multithreaded core count is the Intel Xeon 6980P at 128C (256 threads), and the highest thread count Nvidia CPU is the Nvidia Vera with 88 cores (176 threads).

FOOTNOTES CONTINUED

For reference, 6th Gen Intel Xeon CPUs support up to ~0.8x, ARM AGI is expected to support up to ~0.7x, and Nvidia Vera is expected to support ~0.5x the thread count of 5th Gen AMD EPYC CPUs.

Intel specifications from ark.intel.com. ARM specifications from https://www.arm.com/products/cloud-datacenter/arm-agi-cpu#Specifications. Nvidia specifications from https://developer.nvidia.com/blog/nvidia-vera-cpu-delivers-high-performance-bandwidth-and-efficiency-for-ai-factories/.

2. & 9. 9xx6-004C: 6th Gen AMD EPYC™ 9996 is the highest performing 2P server CPU running SPECrate®2017_int_base, establishing it as the best general purpose processor, with leading performance, leading performance / CPU W, leading performance / CPU $, and leading performance / socket compared to competitors and 5th Gen AMD EPYC server processors
~3.7x the performance comparing 2P AMD EPYC 9996 vs estimated 2P NVIDIA Vera servers
~2.2x the performance comparing 2P AMD EPYC 9965 vs estimated 2P NVIDIA Vera servers
~2.2x the performance and ~2.0x the performance / CPU $ comparing 2P AMD EPYC 9996 vs 2P Intel Xeon 6980P servers
~1.8x the performance comparing 2P AMD EPYC 9996 vs 2P Intel Xeon 6990E+ servers
9xx6-004C: SPECrate®2017_int_base comparison based on published scores from www.spec.org as of 11/05/2026 and AMD internal estimates for 2P NVIDIA Vera and 2P Arm AGI as of 10/10/2026. Highest performing 2P server CPU based on the highest published 2P SPECrate®2017_int_base score and the highest published score per CPU (per socket). Results and configurations below are in the format of: [processor], [cores], [Default CPU Power or TDP], [1Ku price in USD], [score], [score / CPU W], [score / 1Ku price in USD], [score / core], [Link to score]
2P AMD EPYC 9996, 512C, 600W, $14904 USD, 5470, 9.117, 0.367, 10.68, https://www.spec.org/cpu2017/results/res2026q4/cpu2017-20261020-52013.html
2P AMD EPYC 9965, 384C, 500W, $11988 USD, 3260, 6.520, 0.272, 8.49, https://www.spec.org/cpu2017/results/res2026q4/cpu2017-20261005-51950.html
2P Intel Xeon 6990E+, 576C, 450W, $14995 USD, 3050, 6.778, 0.203, 5.30, https://www.spec.org/cpu2017/results/res2026q2/cpu2017-20260518-51499.html
2P Intel Xeon 6980P, 256C, 500W, $13955 USD, 2510, 5.020, 0.180, 9.80, https://www.spec.org/cpu2017/results/res2025q4/cpu2017-20251126-50522.html
2P NVIDIA Vera, 176C, 450W, pricing not published, AMD estimate 1459, 3.242, n/a, 8.29
2P Arm AGI, 272C, 300W, pricing not published, AMD estimate 1944, 6.480, n/a, 7.15
NVIDIA Vera and Arm AGI scores are AMD internal estimates based on AMD engineering projections and subject to change; NVIDIA Vera estimate based on published Phoronix testing, https://www.phoronix.com/review/nvidia-vera-benchmarks/. Pricing not published for NVIDIA Vera or Arm AGI. Intel CPU W and prices at https://ark.intel.com/ as of 11/05/2026.
Starting with the 6th Gen AMD EPYC™ server processor family, AMD uses Default CPU Power to describe processor power consumption, succeeding AMD's historical TDP reference. Default CPU Power reflects total power consumed across the processor's compute and I/O dies for the stated performance target. Default CPU Power and TDP may both serve as processor power references for product comparison, platform planning, and performance-per-watt analysis.
SPEC®, SPEC CPU®, SPECrate® and SPECint® are registered trademarks of the Standard Performance Evaluation Corporation. See www.spec.org for more information.
AMD CPU prices as of 11/05/2026.
Results may vary due to factors including system configurations, software versions and BIOS settings.
4. 9xx6-018: FAISS SIFT-1M (128-dim, 1M vectors, L2 distance) vector-search throughput comparison based on AMD internal testing as of 7/13/2026. 2P 6th Gen AMD EPYC 9996 delivers a geometric mean of 2.26x the FAISS SIFT-1M query throughput (QPS) of 2P 5th Gen AMD EPYC 9755 (256C Total) across five indices (flat_l2, hnsw_pq_l2, ivf_pq_fastscan_l2, ivf_pq_fastscanr_l2, ivf_pq_l2). Both use FAISS v1.14.1 with PyZSS and AOCL. Index parameters tuned for recall of at least 0.9. QPS is inference only.
System configurations: 6th Gen AMD EPYC 9996: 2P (256C per socket, 512C total, SMT off, 1 thread per core), 4096 GiB RDIMM DDR5 at 8000 MT/s, NPS1, BIOS WNIV6520N, microcode 0xb501005, Ubuntu 26.04 LTS (Linux 7.0.0-22-generic), FrequencyBoost enabled, PowerProfile Auto, GCC 15.2.0.
5th Gen AMD EPYC 9755: 2P (128C per socket, 256C total, SMT off, 1 thread per core), 3072 GiB DDR5, BIOS RVOT100AB, microcode 0xb002162, Ubuntu 22.04.5 LTS (Linux 6.8.0-124-generic), FrequencyBoost enabled, GCC 12.3.0, AMD reference platform.
Data presented: Index, 9996 score, 9755 score
flat_l2 171800, 79100; hnsw_pq_l2 7291000, 3863000; ivf_pq_fastscan_l2 14710000, 6312500; ivf_pq_fastscanr_l2 3502000, 1190500; ivf_pq_l2 3289000, 1551000.
Results may vary.

5. 9xx6-030A: First to market with 5.3 GHz at 96 cores

A 6th Gen AMD EPYC 9686F (96-core, high-frequency) host node delivers 36% higher peak frequency compared to Intel Xeon 6972P (96C), and a 5th Gen AMD EPYC 9575F (64-core, high-frequency) host node delivers 28% higher peak frequency compared to Intel Xeon 6960P (72C), for GPU server host node applications.
9xx6-030A: Peak frequency comparison based on published specifications as of October 13, 2026.
6th Gen AMD EPYC 9686F (96C, high-frequency): 5.3 GHz max boost frequency. Source: amd.com.
Intel Xeon 6972P (96C): 3.9 GHz max turbo frequencySource: https://ark.intel.com.
5th Gen AMD EPYC 9575F (64C, high-frequency): 5.0 GHz max boost frequency. Source: amd.com.
Intel Xeon 6960P (72C): 3.9 GHz max turbo frequency. Source: https://ark.intel.com.
As of October 13, 2026, no other publicly available server processor with 96 or more cores offers a 5.3 GHz max frequency (Intel Xeon 6972P 96C: 3.9 GHz; NVIDIA Vera 88C: up to 3.2 GHz; Arm AGI 136C: up to 3.7 GHz; Intel Xeon 6776P with PCT: 4.6 GHz at 64C).
Max boost for AMD EPYC processors is the maximum frequency achievable by any single core on the processor under normal operating conditions for server systems. Intel and Xeon are trademarks of Intel Corporation or its subsidiaries.
6. 9xx6-049D: The 6th Gen AMD EPYC™ 9686F (96 cores per socket, high-frequency) processor delivers ~1.26x the per-core SPECrate®2026_int_base performance of 2P NVIDIA Vera (88 cores per socket), ~1.7x the per-core SPECrate®2026_int_base performance of the 2P Intel Xeon 6952P (96 cores per socket) and ~1.5x the per-core SPECrate®2026_int_base performance of the 2P Intel Xeon 6980P (128 cores per socket).
9xx6-049D: SPECrate®2026_int_base per-core comparison based on the published 2P 6th Gen AMD EPYC 9686F result, the highest published 96-core Intel Xeon SPECrate®2026_int_base result and the highest published 2P Intel Xeon 6980P result from www.spec.org as of 11/05/2026, and NVIDIA published estimates for NVIDIA Vera. Per-core results use total processor cores (cores per socket x sockets).
2P AMD EPYC 9686F (GCC 16.1) delivers 1.26x the per-core performance of 2P NVIDIA Vera (GCC 15.2), 1.73x the per-core performance of 2P Intel Xeon 6952P (Intel oneAPI 2025.3) and 1.51x the per-core performance of 2P Intel Xeon 6980P (Intel oneAPI 2026.0).
Configurations:
2P AMD EPYC 9686F: 96 cores per socket (192 cores total), SMT on, 32x 64GB DDR5-8000 RDIMM, 500W Default CPU Power, power determinism mode, GCC 16.1, 384 copies, SPECrate®2026_int_base 1270, published Nov-2026, https://www.spec.org/cpu2026/results/res2026q4/cpu2026-20261020-00766.html
2P NVIDIA Vera: 88 cores per socket (176 cores total), GCC 15.2, NVIDIA published estimate, https://nvdam.widen.net/s/nmw5vblpqd/nvidia_vera_cpu_architecture_whitepaper?nvid=nv-tblg-543584
2P Intel Xeon 6952P: Dell PowerEdge R770AP, 96 cores per socket (192 cores total), SMT on, 400W TDP, 768GB (24x 32GB DDR5-6400), Intel oneAPI 2025.3, 384 copies, published May-2026, https://www.spec.org/cpu2026/results/res2026q2/cpu2026-20260210-00069.html
2P Intel Xeon 6980P: 128 cores per socket (256 cores total), 500W TDP, 24x 64GB MRDIMM-8800, Intel oneAPI 2026.0, published Jun-2026, https://spec.org/cpu2026/results/res2026q2/cpu2026-20260519-00255.html
Starting with the 6th Gen AMD EPYC™ server processor family, AMD uses Default CPU Power to describe processor power consumption, succeeding AMD's historical TDP reference.
SPEC®, SPEC CPU® and SPECrate® are registered trademarks of the Standard Performance Evaluation Corporation. See www.spec.org for more information.
Results may vary due to factors including system configurations, software versions and BIOS settings.
7. & 15. EPYC-032E: AMD EPYC™ 9006 Series CPUs have the most maximum memory bandwidth of any x86 CPU available as of 11/05/2026.
AND / OR
AMD EPYC 9006 Series CPUs have 1.94x the max memory bandwidth of 6th Gen Intel Xeon CPUs.
AND / OR
AMD EPYC 9006 Series CPUs are the first CPUs to support JEDEC-standard MRDIMM memory at 12,800 MT/s.
EPYC-032E: AMD EPYC™ 9006 processors support up to 16 channels of 12,800 MT/s MRDIMM memory, providing up to 1,638.4 GB/s of theoretical memory bandwidth per socket. Intel® Xeon® 6 processors and ARM AGI processors support up to 12 channels of 8,800 MT/s MRDIMM memory, providing up to 844.8 GB/s of theoretical memory bandwidth per socket. AMD EPYC 9006

FOOTNOTES CONTINUED

Series processors are the first CPUs to support JEDEC-standard MRDIMM memory at 12,800 MT/s, as of 11/05/2026.
8. 9xx6TCO-001 This scenario contains many assumptions and estimates and, while based on AMD internal research and best approximations, should be considered an example for information purposes only, and not used as a basis for decision making over actual testing. The AMD Server & Greenhouse Gas Emissions TCO (total cost of ownership) Estimator Tool - version 1.57, compares the selected AMD EPYC™ and Intel® Xeon® CPU based server solutions required to deliver a TOTAL_PERFORMANCE of ~397,000 units of SPECrate®2017_int_base performance as of July 20, 2026. This analysis compares a 2P AMD 256 core (512 total cores) EPYC 9996 powered server with an estimated SPECrate2017_int_base score of 4900; versus legacy 2P Intel Xeon 28 core (56 total cores) Gold_6258R based server with a SPECrate2017_int_base score of 397, https://spec.org/cpu2017/results/res2020q3/cpu2017-20200915-23981.pdf
Environmental impact estimates made leveraging this Environmental impact estimates made leveraging data from the 2025 International Country Specific Electricity Factors and can be found at https://www.carbondi.com/#electricity-factors/ and the US EPA Greenhouse Gas Equivalencies Calculator used in this analysis was sourced on 09/04/2024 and can be found at https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator..
For additional details, see https://www.amd.com/ en/legal/claims/epyc.html#q=9xx6TCO-001
10. & 23. 9xx6-031A: GROMACS (benchPEP) relative performance of 2P 6th Gen AMD EPYC™ 9686F (192C) and 9996 (512C) vs 2P Intel Xeon 6980P (256C) with the same memory type and vs 2P 5th Gen AMD EPYC 9755 (256C) with DDR5-6400 RDIMM; 2P 5th Gen AMD EPYC 9755 and 9965 (384C) vs 2P Intel Xeon 6980P with DDR5-6400 RDIMM:
CPU vs6980P vs9755
9686F-RDIMM 1.60x 1.04x
9996-RDIMM 2.80x 1.83x
9755-RDIMM 1.53x 1.00x
9965-RDIMM 1.82x NA
9686F-MRDIMM 1.68x 1.13x
9996-MRDIMM 2.91x 1.96x
9686F MRDIMM-12800 vs DDR5-8000 RDIMM 1.09x
9xx6-031A: GROMACS performance comparison based on AMD internal testing as of 10/16/2026, results in ns/day, higher is better, mean of 3 runs (benchPEP). Each AMD EPYC system is compared with the Intel Xeon 6980P using the same memory type (DDR5-6400 RDIMM or MRDIMM-8800); 6th Gen AMD EPYC systems are also compared with the 5th Gen AMD EPYC 9755 (DDR5-6400 RDIMM).
Systems tested (2P, single node, SMT off, RHEL 10.1): Intel Xeon 6980P (256C total), 24x 96GB DDR5-6400 RDIMM or 24x 64GB MRDIMM-8800, Intel ICX compiler. 5th Gen AMD EPYC 9755 (256C total) and 9965 (384C total), 24x 64GB DDR5-6400 RDIMM. 6th Gen AMD EPYC 9686F (192C total) and 9996 (512C total), 32x 64GB DDR5-8000 RDIMM or MRDIMM-12800. AMD EPYC systems use AOCC 5.1. GROMACS 2025.3.
Relative to 2P Intel Xeon 6980P with the same memory type (1.00x):
9686F RDIMM-8000 1.60x
9996 RDIMM-8000 2.80x
9755 RDIMM-6400 1.53x
9965 RDIMM-6400 1.82x
9686F MRDIMM-12800 1.68x
9996 MRDIMM-12800 2.91x
Relative to 2P 5th Gen AMD EPYC 9755 with DDR5-6400 RDIMM (1.00x):
9686F RDIMM-8000 1.04x
9996 RDIMM-8000 1.83x
9686F MRDIMM-12800 1.13x
9996 MRDIMM-12800 1.96x
Same system, 2P 6th Gen AMD EPYC 9686F (192C total) with 32x 64GB MRDIMM-12800 relative to 32x 64GB DDR5-8000 RDIMM (1.00x): 1.09x
Results may vary due to factors including system configurations, software versions and BIOS settings.
11. 9xx6-032A: NAMD (20stmv) relative performance of 2P 6th Gen AMD EPYC™ 9686F (192C) and 9996 (512C) vs 2P Intel Xeon 6980P (256C) with the same memory type and vs 2P 5th Gen AMD EPYC 9755 (256C) with DDR5-6400 RDIMM; 2P 5th Gen AMD EPYC 9755 and 9965 (384C) vs 2P Intel Xeon 6980P with DDR5-6400 RDIMM:
CPU vs6980P vs9755
9686F-RDIMM 1.87x 1.16x
9996-RDIMM 3.13x 1.93x
9755-RDIMM 1.61x 1.00x
9965-RDIMM 2.10x NA
9686F-MRDIMM 1.87x 1.17x
9996-MRDIMM 3.20x 2.00x
9xx6-032A: NAMD performance comparison based on AMD internal testing as of 10/16/2026, results in ns/day, higher is better, mean of 3 runs (20stmv). Each AMD EPYC system is compared with the Intel Xeon 6980P using the same memory type (DDR5-6400 RDIMM or MRDIMM-8800); 6th Gen AMD EPYC systems are also compared with the 5th Gen AMD EPYC 9755 (DDR5-6400 RDIMM).
Systems tested (2P, single node, SMT off, RHEL 10.1): Intel Xeon 6980P (256C total), 24x 96GB DDR5-6400 RDIMM or 24x 64GB MRDIMM-8800, Intel ICX compiler. 5th Gen AMD EPYC 9755 (256C total) and 9965 (384C total), 24x 64GB DDR5-6400 RDIMM. 6th Gen AMD EPYC 9686F (192C total) and 9996 (512C total), 32x 64GB DDR5-8000 RDIMM or MRDIMM-12800. AMD EPYC systems use AOCC 5.1.
Relative to 2P Intel Xeon 6980P with the same memory type (1.00x):
9686F RDIMM-8000 1.87x
9996 RDIMM-8000 3.13x
9755 RDIMM-6400 1.61x
9965 RDIMM-6400 2.10x
9686F MRDIMM-12800 1.87x
9996 MRDIMM-12800 3.20x
Relative to 2P 5th Gen AMD EPYC 9755 with DDR5-6400 RDIMM (1.00x):
9686F RDIMM-8000 1.16x
9996 RDIMM-8000 1.93x
9686F MRDIMM-12800 1.17x
9996 MRDIMM-12800 2.00x
Results may vary due to factors including system configurations, software versions and BIOS settings.
12. 9xx6-034A: Quantum ESPRESSO relative performance (geometric mean of 2 benchmarks) of 2P 6th Gen AMD EPYC™ 9686F (192C) and 9996 (512C) vs 2P Intel Xeon 6980P (256C) with the same memory type and vs 2P 5th Gen AMD EPYC 9755 (256C) with DDR5-6400 RDIMM; 2P 5th Gen AMD EPYC 9755 vs 2P Intel Xeon 6980P with DDR5-6400 RDIMM:
CPU vs6980P vs9755
9686F-RDIMM 1.41x 1.12x
9996-RDIMM 1.72x 1.38x
9755-RDIMM 1.25x 1.00x
9686F-MRDIMM 1.44x 1.19x
9996-MRDIMM 1.75x 1.46x
9686F MRDIMM-12800 vs DDR5-8000 RDIMM 1.06x
9xx6-034A: Quantum ESPRESSO performance comparison based on AMD internal testing as of 10/16/2026, results in wall clock time in seconds, lower is better, mean of 3 runs per benchmark. Relative performance is computed per benchmark and combined as a geometric mean across 2 benchmarks (Ausurf, Ta205). Each AMD EPYC system is compared with the Intel

FOOTNOTES CONTINUED

Xeon 6980P using the same memory type (DDR5-6400 RDIMM or MRDIMM-8800); 6th Gen AMD EPYC systems are also compared with the 5th Gen AMD EPYC 9755 (DDR5-6400 RDIMM). Systems tested (2P, single node, SMT off, RHEL 10.1): Intel Xeon 6980P (256C total), 24x 96GB DDR5-6400 RDIMM or 24x 64GB MRDIMM-8800, Intel ICX compiler. 5th Gen AMD EPYC 9755 (256C total), 24x 64GB DDR5-6400 RDIMM. 6th Gen AMD EPYC 9686F (192C total) and 9996 (512C total), 32x 64GB DDR5-8000 RDIMM or MRDIMM-12800. AMD EPYC systems use AOCC 5.1. Quantum ESPRESSO 7.5.
Relative to 2P Intel Xeon 6980P with the same memory type (1.00x), geometric mean (per benchmark):
9686F RDIMM-8000: 1.41x (Ausurf 1.32, Ta205 1.50)
9996 RDIMM-8000: 1.72x (Ausurf 1.78, Ta205 1.67)
9755 RDIMM-6400: 1.25x (Ausurf 1.19, Ta205 1.31)
9686F MRDIMM-12800: 1.44x (Ausurf 1.35, Ta205 1.53)
9996 MRDIMM-12800: 1.75x (Ausurf 1.85, Ta205 1.67)
Relative to 2P 5th Gen AMD EPYC 9755 with DDR5-6400 RDIMM (1.00x), geometric mean:
9686F RDIMM-8000 1.12x
9996 RDIMM-8000 1.38x
9686F MRDIMM-12800 1.19x
9996 MRDIMM-12800 1.46x
Same system, 2P 6th Gen AMD EPYC 9686F (192C total) with 32x 64GB MRDIMM-12800 relative to 32x 64GB DDR5-8000 RDIMM (1.00x), geometric mean: 1.06x
Results may vary due to factors including system configurations, software versions and BIOS settings.
13. & 24. 9xx6-035B: WRF (conus2.5km) relative performance of 2P 6th Gen AMD EPYC™ 9686F (192C) and 9996 (512C) vs 2P Intel Xeon 6980P (256C) with the same memory type and vs 2P 5th Gen AMD EPYC 9755 (256C) with DDR5-6400 RDIMM; 2P 5th Gen AMD EPYC 9755 vs 2P Intel Xeon 6980P with DDR5-6400 RDIMM:
CPU vs6980P vs9755
9686F-RDIMM 2.03x 1.30x
9996-RDIMM 2.53x 1.62x
9755-RDIMM 1.56x 1.00x
9686F-MRDIMM 2.14x 1.51x
9996-MRDIMM 2.84x 2.02x
9996 MRDIMM-12800 vs DDR5-8000 RDIMM 1.25x
Estimated time for a 3-day (72-hour) and 5-day (120-hour) WRF forecast, extrapolated from conus2.5km:
CPU 3-day 5-day
6980P-MRDIMM 7.3 hours 12.2 hours
9755-RDIMM 5.1 hours 8.6 hours
9686F-MRDIMM 3.4 hours 5.7 hours
9996-MRDIMM 2.5 hours 4.2 hours
9xx6-035B: WRF performance comparison based on AMD internal testing as of 11/05/2026, results in mean time per step in seconds, lower is better, mean of 3 runs (conus2.5km). Each AMD EPYC system is compared with the Intel Xeon 6980P using the same memory type (DDR5-6400 RDIMM or MRDIMM-8800); 6th Gen AMD EPYC systems are also compared with the 5th Gen AMD EPYC 9755 (DDR5-6400 RDIMM).
Systems tested (2P, single node, SMT off, RHEL 10.1): Intel Xeon 6980P (256C total), 24x 96GB DDR5-6400 RDIMM or 24x 64GB MRDIMM-8800, Intel ICX compiler. 5th Gen AMD EPYC 9755 (256C total), 24x 64GB DDR5-6400 RDIMM. 6th Gen AMD EPYC 9686F (192C total) and 9996 (512C total), 32x 64GB DDR5-8000 RDIMM or MRDIMM-12800. AMD EPYC systems use AOCC 5.1. WRF 4.7.0.
Relative to 2P Intel Xeon 6980P with the same memory type (1.00x):
9686F RDIMM-8000 2.03x
9996 RDIMM-8000 2.53x
9755 RDIMM-6400 1.56x
9686F MRDIMM-12800 2.14x
9996 MRDIMM-12800 2.84x
Relative to 2P 5th Gen AMD EPYC 9755 with DDR5-6400 RDIMM (1.00x):
9686F RDIMM-8000 1.30x
9996 RDIMM-8000 1.62x
9686F MRDIMM-12800 1.51x
9996 MRDIMM-12800 2.02x
Same system, 2P 6th Gen AMD EPYC 9996 (512C total) with 32x 64GB MRDIMM-12800 relative to 32x 64GB DDR5-8000 RDIMM (1.00x): 1.25x
Estimated forecast time: the measured mean time per step was extrapolated to a 3-day (72-hour) and 5-day (120-hour) forecast at the conus2.5km 15-second time step (17,280 and 28,800 time steps), excluding model initialization and output: 2P Intel Xeon 6980P MRDIMM-8800 7.3 and 12.2 hours; 2P AMD EPYC 9755 DDR5-6400 RDIMM 5.1 and 8.6 hours; 2P AMD EPYC 9686F MRDIMM-12800 3.4 and 5.7 hours; 2P AMD EPYC 9996 MRDIMM-12800 2.5 and 4.2 hours.
Results may vary due to factors including system configurations, software versions and BIOS settings.
14. 9xx6-011C: SPECrate®2026_int_base comparison based on published scores from www.spec.org as of 11/05/2026. Highest performing server CPU based on the highest published SPECrate®2026_int_base score, overall and per CPU. Generational comparison based on the highest published 2P AMD EPYC 9996 score and the highest published 2P AMD EPYC 9965 scores compiled with AOCC 5.1.0 (2.0x the performance, ~1.7x the performance / CPU W and ~1.6x the performance / CPU $) and with AOCC 5.2.0 (1.8x, ~1.5x and ~1.4x). Intel Xeon 6980P comparison based on the highest published 2P Intel Xeon 6980P score (2.3x the performance). Results and configurations below are in the format of: [processor], [cores], [Default CPU Power or TDP], [1Ku price in USD], [compiler], [score], [score / CPU W], [score / 1Ku price in USD], [Link to score]
2P AMD EPYC 9996, 512C, 600W, $14904 USD, AOCC 6.0, 2560, 4.267, 0.172, https://www.spec.org/cpu2026/results/res2026q4/cpu2026-20261014-00694.html
2P AMD EPYC 9965, 384C, 500W, $11988 USD, AOCC 5.1.0, 1270, 2.540, 0.106, https://spec.org/cpu2026/results/res2026q2/cpu2026-20260210-00037.html
2P AMD EPYC 9965, 384C, 500W, $11988 USD, AOCC 5.2.0, 1430, 2.860, 0.119, https://spec.org/cpu2026/results/res2026q2/cpu2026-20260601-00269.html
2P Intel Xeon 6980P, 256C, 500W, $13955 USD, Intel oneAPI 2026.0, 1120, 2.240, 0.080, https://spec.org/cpu2026/results/res2026q2/cpu2026-20260519-00255.html
Next highest published SPECrate®2026_int_base score: 8P Intel Xeon Platinum 8490H, 1660, https://www.spec.org/cpu2026/results/res2026q3/cpu2026-20260629-00321.html.
The 2P AMD EPYC 9996 score is also higher than the NVIDIA published estimate for 2P NVIDIA Vera (925), https://nvdam.widen.net/s/nmw5vblpqd/nvidia_vera_cpu_architecture_whitepaper?nvid=nv-tblg-543584
Starting with the 6th Gen AMD EPYC™ server processor family, AMD uses Default CPU Power to describe processor power consumption, succeeding AMD's historical TDP reference. Default CPU Power reflects total power consumed across the processor's compute and I/O dies for the stated performance target. Default CPU Power and TDP may both serve as processor power references for product comparison, platform planning, and performance-per-watt analysis.
SPEC®, SPEC CPU® and SPECrate® are registered trademarks of the Standard Performance Evaluation Corporation. See www.spec.org for more information.
AMD CPU prices as of 11/05/2026.
Intel CPU W and prices at https://ark.intel.com/ as of 11/05/2026.
Results may vary due to factors including system configurations, software versions and BIOS settings.
16. EPYC-035D: AMD EPYC 9006 CPUs are the only Server CPUs in production that support up to 128 PCIe® Gen 6 lanes in a single socket.
EPYC-035D: AMD EPYC 9006 CPUs are the only Server CPUs in production that support up to 128 PCIe® Gen 6 lanes in a single socket.
17. 9xx6-038A: 2P AMD EPYC™ 9996 (512 cores total) delivers up to 3.4x the NGINX request throughput of 2P Intel Xeon 6980P (256 cores total).
9xx6-038A: NGINX request-throughput comparison based on AMD internal testing as of 11/05/2026. 2P AMD EPYC™ 9996 (512 cores total) delivers 3.41x the NGINX request throughput of 2P Intel Xeon 6980P (256 cores total).
Both systems were fully loaded with KVM virtual machines (64 VMs on 2P AMD EPYC 9996, 32 VMs on 2P Intel Xeon 6980P); throughput is aggregated across all VMs, mean of 3 runs. Each VM: 16 vCPUs, 48GB memory, Ubuntu 26.04, Linux kernel 7.0, KVM with vCPU pinning.

FOOTNOTES CONTINUED

Software: NGINX with wrk load generator.
Configurations:
2P AMD EPYC 9996: 256 cores per socket (512 cores total, 1024 vCPU), SMT on, 3.9TB DDR5-8000 (128GB DIMMs, 1 DIMM per channel), BIOS YNIV1000A, 4 NUMA nodes, Ubuntu 26.04 LTS, Linux kernel 7.0.0-30-generic, 64 VMs.
2P Intel Xeon 6980P: 128 cores per socket (256 cores total, 512 vCPU), SMT on, 2.2TB DDR5-6400, BIOS 1.0, 6 NUMA nodes, Ubuntu 26.04 LTS, Linux kernel 7.0.0-31-generic, 32 VMs.
Results may vary due to factors including system configurations, software versions and BIOS settings.
18. 9xx6-041A: 2P AMD EPYC™ 9996 (512 cores total) delivers up to 3.6x the MongoDB throughput (YCSB) of 2P Intel Xeon 6980P (256 cores total).
9xx6-041A: MongoDB throughput comparison based on AMD internal testing as of 11/05/2026. 2P AMD EPYC™ 9996 (512 cores total) delivers 3.56x the MongoDB throughput (YCSB) of 2P Intel Xeon 6980P (256 cores total).
Both systems were fully loaded with KVM virtual machines (64 VMs on 2P AMD EPYC 9996, 32 VMs on 2P Intel Xeon 6980P); throughput is aggregated across all VMs, mean of 3 runs. Each VM: 16 vCPUs, 48GB memory, Ubuntu 26.04, Linux kernel 7.0, KVM with vCPU pinning.
Software: MongoDB with YCSB (Yahoo! Cloud Serving Benchmark).
Configurations:
2P AMD EPYC 9996: 256 cores per socket (512 cores total, 1024 vCPU), SMT on, 3.9TB DDR5-8000 (128GB DIMMs, 1 DIMM per channel), BIOS YNIV1000A, 4 NUMA nodes, Ubuntu 26.04 LTS, Linux kernel 7.0.0-30-generic, 64 VMs.
2P Intel Xeon 6980P: 128 cores per socket (256 cores total, 512 vCPU), SMT on, 2.2TB DDR5-6400, BIOS 1.0, 6 NUMA nodes, Ubuntu 26.04 LTS, Linux kernel 7.0.0-31-generic, 32 VMs.
Results may vary due to factors including system configurations, software versions and BIOS settings.
19. 9xx6-037A: 2P AMD EPYC™ 9996 (512 cores total) delivers up to 3.5x the Redis request throughput of 2P Intel Xeon 6980P (256 cores total).
9xx6-037A: Redis request-throughput comparison based on AMD internal testing as of 11/05/2026. 2P AMD EPYC™ 9996 (512 cores total) delivers 3.49x the Redis request throughput of 2P Intel Xeon 6980P (256 cores total).
Relative to 2P Intel Xeon 6980P (1.00x): SET 3.43x, GET 3.54x.
Both systems were fully loaded with KVM virtual machines (64 VMs on 2P AMD EPYC 9996, 32 VMs on 2P Intel Xeon 6980P); throughput is aggregated across all VMs, mean of 3 runs. Each VM: 16 vCPUs, 48GB memory, Ubuntu 26.04, Linux kernel 7.0, KVM with vCPU pinning.
Software: Redis with redis-benchmark SET and GET.
Configurations:
2P AMD EPYC 9996: 256 cores per socket (512 cores total, 1024 vCPU), SMT on, 3.9TB DDR5-8000 (128GB DIMMs, 1 DIMM per channel), BIOS YNIV1000A, 4 NUMA nodes, Ubuntu 26.04 LTS, Linux kernel 7.0.0-30-generic, 64 VMs.
2P Intel Xeon 6980P: 128 cores per socket (256 cores total, 512 vCPU), SMT on, 2.2TB DDR5-6400, BIOS 1.0, 6 NUMA nodes, Ubuntu 26.04 LTS, Linux kernel 7.0.0-31-generic, 32 VMs.
Results may vary due to factors including system configurations, software versions and BIOS settings.
20. 9xx6-048: Geometric mean across the five CPU-centric Agentic AI pipeline tiers (Gateway and Stream Response; Assemble Context, Plan and Route, and Verification; Retrieve Context and Similarity Search; Enterprise Tools; Ephemeral Tools) based on AMD internal testing as of 07/11/2026.
System configurations:
Intel Xeon 6980P (128C/256T, 1P), SMT ON, 64GB DDR5-6400 RDIMM, SNC3, SuperMicro SYS-222HA-TN, Ubuntu 24.04.4 LTS kernel 6.17.0-29-generic, performance governor. AWS Graviton5 (192C/192T, 1P), DDR5-8800, AWS m9gd.metal-48xl, Ubuntu 24.04.4 LTS kernel 6.17.0-29-generic, performance governor. AMD EPYC 9755 (128C/256T, 1P), SMT ON, 64GB DDR5-6400 RDIMM, AMD reference platform, Ubuntu 24.04.4 LTS kernel 6.17.0-29-generic, performance governor. AMD EPYC 9965 (192C/384T, 1P), SMT ON, 64GB DDR5-6400 RDIMM, AMD reference platform, Ubuntu 24.04.4 LTS kernel 6.17.0-29-generic, performance governor. AMD EPYC 9996 (256C/512T, 1P), SMT ON, 64GB DDR5-8000 RDIMM, AMD reference platform, Ubuntu 24.04.4 LTS kernel 6.17.0-29-generic, performance governor.
Per-tier ratios vs Intel Xeon 6980P = 1.00: Gateway and Stream Response (AMD EPYC 9755 = 1.76x, AMD EPYC 9965 = 2.39x, AMD EPYC 9996 = 2.83x, AWS Graviton5 = 1.51x); Assemble Context, Plan and Route, and Verification (AMD EPYC 9755 = 1.54x, AMD EPYC 9965 = 2.01x, AMD EPYC 9996 = 3.45x, AWS Graviton5 = 1.41x); Retrieve Context and Similarity Search (AMD EPYC 9755 = 1.17x, AMD EPYC 9965 = 1.49x, AMD EPYC 9996 = 2.38x, AWS Graviton5 = 0.38x); Enterprise Tools (AMD EPYC 9755 = 1.11x, AMD EPYC 9965 = 1.69x, AMD EPYC 9996 = 2.65x, AWS Graviton5 = 1.31x); Ephemeral Tools (AMD EPYC 9755 = 1.30x, AMD EPYC 9965 = 1.67x, AMD EPYC 9996 = 2.50x, AWS Graviton5 = 1.41x).
Consolidated geometric mean normalized to Intel Xeon 6980P = 1.00: AMD EPYC 9755 = 1.36x, AMD EPYC 9965 = 1.82x, AMD EPYC 9996 = 2.74x, AWS Graviton5 = 1.08x.
See 9xx6-042, 9xx6-043, 9xx6-044, 9xx6-045, 9xx6-046 for more info.
Results compare AMD internal testing of the listed AMD and Intel systems against testing performed on the listed AWS EC2 Graviton5 bare-metal instance. Cloud instance results may be affected by cloud service configuration, instance availability, regional deployment, hypervisor/Nitro behavior, storage/network configuration, and other cloud provider variables. Results may vary due to factors including system configurations, software versions and BIOS settings.
21. 9xx6-039A: 2P AMD EPYC™ 9996 (512 cores total) delivers up to 2.8x the MySQL online transaction processing throughput (HammerDB TPROC-C) of 2P Intel Xeon 6980P (256 cores total).
9xx6-039A: MySQL online transaction processing throughput (HammerDB TPROC-C) comparison based on AMD internal testing as of 11/05/2026. 2P AMD EPYC™ 9996 (512 cores total) delivers 2.81x the MySQL online transaction processing throughput (HammerDB TPROC-C) of 2P Intel Xeon 6980P (256 cores total).
Both systems were fully loaded with KVM virtual machines (64 VMs on 2P AMD EPYC 9996, 32 VMs on 2P Intel Xeon 6980P); throughput is aggregated across all VMs, mean of 3 runs. Each VM: 16 vCPUs, 48GB memory, Ubuntu 26.04, Linux kernel 7.0, KVM with vCPU pinning.
Software: HammerDB 6.0 TPROC-C on MySQL 8.4.10.
Configurations:
2P AMD EPYC 9996: 256 cores per socket (512 cores total, 1024 vCPU), SMT on, 3.9TB DDR5-8000 (128GB DIMMs, 1 DIMM per channel), BIOS YNIV1000A, 4 NUMA nodes, Ubuntu 26.04 LTS, Linux kernel 7.0.0-30-generic, 64 VMs.
2P Intel Xeon 6980P: 128 cores per socket (256 cores total, 512 vCPU), SMT on, 2.2TB DDR5-6400, BIOS 1.0, 6 NUMA nodes, Ubuntu 26.04 LTS, Linux kernel 7.0.0-31-generic, 32 VMs.
Results may vary due to factors including system configurations, software versions and BIOS settings.
The HammerDB TPROC-C for MySQL workload is an open-source workload derived from TPC-Benchmark™ Standard, and as such is not comparable to published TPC-C™ results, as the results do not comply with the TPC-C Benchmark Standard. TPC, TPC Benchmark, TPC-C are trademarks of the Transaction Processing Performance Council.
22. 9xx6-023: scikit-learn (kmeans, PCA, SVC, SVR, linear regression) throughput comparison based on AMD internal testing as of 7/13/2026. 2P 6th Gen AMD EPYC 9996 delivers a geometric mean of 3.58x the scikit-learn throughput of 2P Intel Xeon 6980P across the five workloads. The AMD EPYC 9996uses the AOCL Data Analytics Extension for scikit-learn, Intel Xeon uses MKL-based scikit-learn-intelex. Medians of multi-instance total throughput used for all cases.
EPYC 9996,Intel Xeon 6980P:
kmeans 3377.3, 1217.9;
pca 5703.7, 2014.3;
svc 1317.8, 146.9;
svr 1541.9, 333.4;
linear reg 16398.6, 9056.6.
System configurations:
6th Gen AMD EPYC 9996: 2P (256C per socket, 512C total, SMT off, 1 thread per core), 4096 GiB RDIMM DDR5 at 8000 MT/s, NPS1, BIOS WNIV6520N, microcode 0xb501005, Ubuntu 26.04 LTS (Linux 7.0.0-22-generic), FrequencyBoost enabled, PowerProfile Auto, GCC 15.2.0. Intel Xeon 6980P: 2P (128C per socket, 256C total, SMT off, 1 thread per core), 64 GiB DDR5 DIMMs at 6400 MT/s, 1536 GiB total, BIOS 1.4, microcode 0x1000405, Ubuntu 24.04.4 LTS (Linux 6.8.0-134-generic), FrequencyBoost disabled, GCC 13.3.0, Supermicro SYS-222HA-TN.
Results may vary.

25. 9xx6-017: FAISS SIFT-1M (128-dim, 1M vectors, L2 distance) vector-search throughput comparison based on AMD internal testing as of 7/13/2026. 2P 6th Gen AMD EPYC 9996 delivers a geometric mean of 2.54x the FAISS SIFT-1M query throughput (QPS) of 2P Intel Xeon 6980P (256C Total) across five indices (flat_l2, hnsw_pq_l2, ivf_pq_fastscan_l2, ivf_pq_fastscanr_l2, ivf_pq_l2). FAISS v1.14.1 with PyZSS and AOCL on the AMD EPYC 9996, MKL-optimized libraries on Intel Xeon. Index parameters tuned for recall of at least 0.9. QPS is inference only.
6th Gen AMD EPYC 9996: 2P (256C per socket, 512C total, SMT off, 1 thread per core), 4096 GiB RDIMM DDR5 at 8000 MT/s, NPS1, BIOS WNIV6520N, microcode 0xb501005, Ubuntu 26.04 LTS (Linux 7.0.0-22-generic), FrequencyBoost enabled, PowerProfile Auto, GCC 15.2.0.
Intel Xeon 6980P: 2P (128C per socket, 256C total, SMT off, 1 thread per core), 64 GiB DDR5 DIMMs at 6400 MT/s, 1536 GiB total, BIOS 1.4, microcode 0x1000405, Ubuntu 24.04.4 LTS (Linux

FOOTNOTES CONTINUED

6.8.0-134-generic), FrequencyBoost disabled, GCC 13.3.0, Supermicro SYS-222HA-TN.
Data presented: Index, 9996 score, 6980 score
flat_l2 171800, 62480;
hnsw_pq_l2 7291000, 1938000; ivf_pq_fastscan_l2 14710000, 5448000; ivf_pq_fastscanr_l2 3502000, 2040000; ivf_pq_l2 3289000, 1483000.
Results may vary.

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