



SPECaccel[®]2023 Result

Copyright 2023-2025 Standard Performance Evaluation Corporation

Intel
Intel Xeon 6972P

Supermicro SYS-222HA-TN (2 x Intel Xeon
6972P, 2.4GHz)

SPECaccel2023_base = 2.14

SPECaccel2023_peak = Not Run

accel2023 License: 13

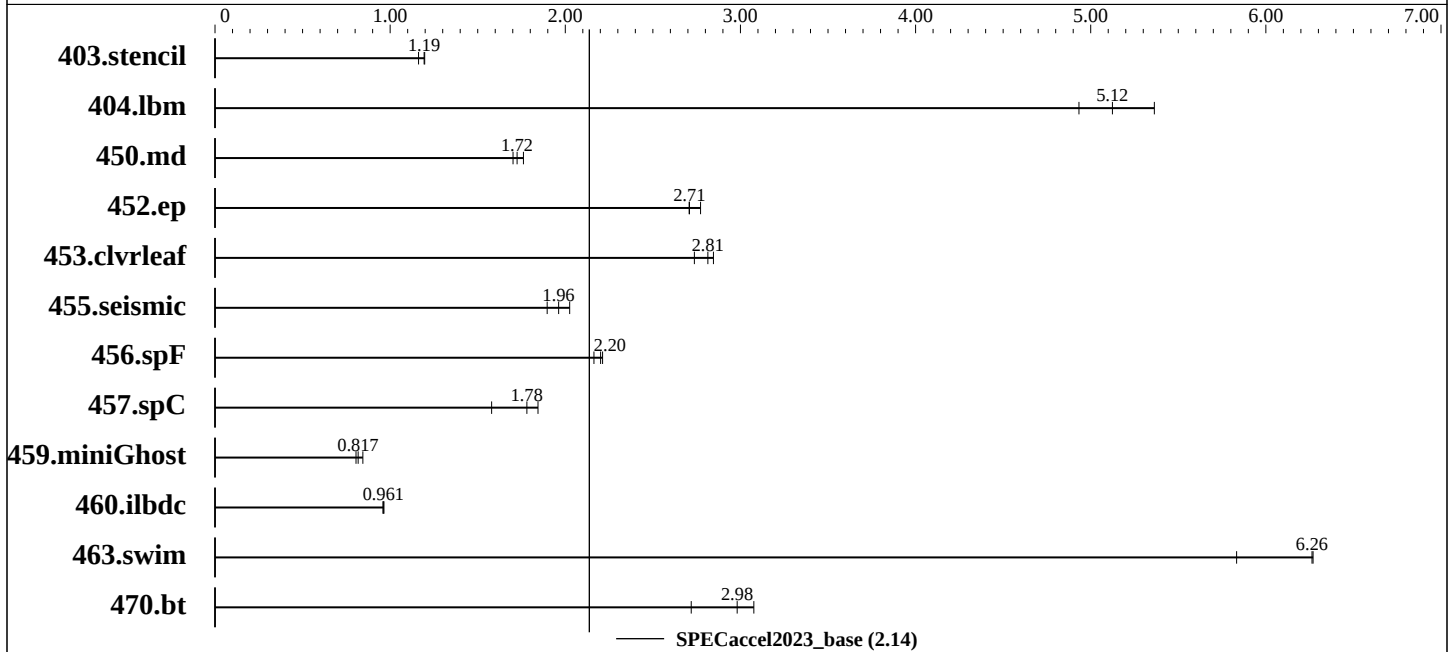
Test Sponsor: Intel

Tested by: Intel

Test Date: Aug-2025

Hardware Availability: Sep-2024

Software Availability: Jun-2025



Hardware

CPU Name: Intel Xeon 6972P
Max MHz.: 3900
Nominal: 2400
Enabled: 192 cores, 2 chips, 2 threads/core
Orderable: 1, 2 chips
Cache L1: 64 KB I + 48 KB D on chip per core
L2: 2 MB I+D on chip per core
L3: 480 MB I+D on chip per chip
Other: None
Memory: 1536 GB (24 x 64 GB 2Rx4 PC5-6400B)
Storage: 1 x 3.5 TB NVMe SSD
Other: None
Base Threads Run: 384
Min. Peak Threads: --
Max. Peak Threads: --

Accelerator

Accel Model Name: Intel Xeon 6972P
Accel Vendor: Intel
Accel Name: Intel Xeon 6972P
Type of Accel: CPU
Accel Connection: N/A
Does Accel Use ECC: yes
Accel Description: Intel Xeon 6972P
SMT ON, Turbo ON
Accel Driver: None

Software

OS: Ubuntu 22.04.5 LTS
6.5.0-21-generic
Compiler: Intel oneAPI Compiler 2025.2
Firmware: SE5C7411.86B.9533.D01.2310110651
File System: ext4
System State: Run level 5 (add definition here)
Other: None
Base Parallel Model: SMD
Base Threads Run: 384

(Continued on next page)



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Software (Continued)

Peak Parallel Models: Not Run

Max. Peak Threads: --

Min. Peak Threads: --

Results Table

Benchmark	Base							Peak						
	Model	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Model	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
403.stencil	SMD	369	1.19	368	1.20	379	1.16							
404.lbm	SMD	84.8	5.36	92.2	4.93	88.8	5.12							
450.md	SMD	348	1.72	353	1.70	341	1.76							
452.ep	SMD	153	2.71	153	2.71	150	2.77							
453.clvleaf	SMD	365	2.74	351	2.85	355	2.81							
455.seismic	SMD	411	1.90	385	2.02	398	1.96							
456.spF	SMD	220	2.16	216	2.20	215	2.21							
457.spC	SMD	342	1.58	293	1.84	303	1.78							
459.miniGhost	SMD	699	0.844	722	0.817	733	0.805							
460.ilbdc	SMD	575	0.965	579	0.959	577	0.961							
463.swim	SMD	75.4	5.83	70.2	6.27	70.2	6.26							
470.bt	SMD	354	2.98	343	3.08	388	2.72							

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Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

General Notes

Environment variables set by runaccel before the start of the run:

FORT_BUFFERED = "true"

KMP_AFFINITY = "compact,0,granularity=thread"

KMP_BLOCKTIME = "infinite"

KMP_HW_SUBSET = "2S,96C,2T"

KMP_LIBRARY = "turnaround"

KMP_STACKSIZE = "8M"

OMP_DYNAMIC = "FALSE"

OMP_WAIT_POLICY = "active"

Platform Notes

Sysinfo program /root/knektyag/accel2023-2.0.18/bin/sysinfo

Rev: r6622 of 2021-04-07 b1a7d5f8f71be5aff70a755cad7211a0

running on SMCAP6 Thu Aug 7 06:53:13 2025

SUT (System Under Test) info as seen by some common utilities.

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Platform Notes (Continued)

For more information on this section, see
<https://www.spec.org/cpu2017/Docs/config.html#sysinfo>

From /proc/cpuinfo

model name : Intel(R) Xeon(R) 6972P

2 "physical id"s (chips)

384 "processors"

cores, siblings (Caution: counting these is hw and system dependent. The following excerpts from /proc/cpuinfo might not be reliable. Use with caution.)

cpu cores : 96

siblings : 192

physical 0: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
25 26 27 28 29 30 31 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84
85 86 87 88 89 90 91 92 93 94 95 128 129 130 131 132 133 134 135 136 137 138 139
140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159
physical 1: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
25 26 27 28 29 30 31 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84
85 86 87 88 89 90 91 92 93 94 95 128 129 130 131 132 133 134 135 136 137 138 139
140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159

From lscpu from util-linux 2.37.2:

Architecture: x86_64
CPU op-mode(s): 32-bit, 64-bit
Address sizes: 52 bits physical, 57 bits virtual
Byte Order: Little Endian
CPU(s): 384
On-line CPU(s) list: 0-383
Vendor ID: GenuineIntel
Model name: Intel(R) Xeon(R) 6972P
CPU family: 6
Model: 173
Thread(s) per core: 2
Core(s) per socket: 96
Socket(s): 2
Stepping: 1
CPU max MHz: 3900.0000
CPU min MHz: 800.0000
BogoMIPS: 4800.00
Flags: fpu vme de pse tsc msr pae mce cx8 apic sep mtrr
pge mca cmov pat pse36 clflush dts acpi mmx fxsr sse sse2 ss ht tm pbe syscall nx
pdpe1gb rdtscp lm constant_tsc art arch_perfmon pebs bts rep_good nopl xtopology
nonstop_tsc cpuid aperfmperf tsc_known_freq pni pclmulqdq dtes64 monitor ds_cpl vmx
smx est tm2 ssse3 sdbg fma cx16 xtpr pdcm pcid dca sse4_1 sse4_2 x2apic movbe popcnt
tsc_deadline_timer aes xsave avx f16c rdrand lahf_lm abm 3dnowprefetch cpuid_fault
epb cat_l3 cat_l2 cdp_l3 invpcid_single intel_ppin cdp_l2 ssbd mba ibrs ibpb stibp
ibrs_enhanced tpr_shadow flexpriority ept vpid ept_ad fsgsbase tsc_adjust bmi1 avx2
smep bmi2 erms invpcid cqm rdt_a avx512f avx512dq rdseed adx smap avx512ifma

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Platform Notes (Continued)

clflushopt clwb intel_pt avx512cd sha_ni avx512bw avx512vl xsaveopt xsavec xgetbv1
xsaves cqm_llc cqm_occup_llc cqm_mbm_total cqm_mbm_local split_lock_detect avx_vnni
avx512_bf16 wbnoinvd dtherm ida arat pln pts hwp hwp_act_window hwp_epp hwp_pkg_req
hfi vnmi avx512vbmi umip pku ospke waitpkg avx512_vbmi2 gfni vaes vpclmulqdq
avx512_vnni avx512_bitalg tme avx512_vpopcntdq la57 rdpid bus_lock_detect cldemote
movdiri movdir64b enqcmd fsrm md_clear serialize tsxldtrk pconfig arch_lbr ibt
amx_bf16 avx512_fp16 amx_tile amx_int8 flush_l1d arch_capabilities

Virtualization:

VT-x

L1d cache: 9 MiB (192 instances)
L1i cache: 12 MiB (192 instances)
L2 cache: 384 MiB (192 instances)
L3 cache: 960 MiB (2 instances)

NUMA node(s):

6

NUMA node0 CPU(s): 0-31,192-223
NUMA node1 CPU(s): 32-63,224-255
NUMA node2 CPU(s): 64-95,256-287
NUMA node3 CPU(s): 96-127,288-319
NUMA node4 CPU(s): 128-159,320-351
NUMA node5 CPU(s): 160-191,352-383

Vulnerability Gather data sampling: Not affected
Vulnerability Itlb multihit: Not affected
Vulnerability L1tf: Not affected
Vulnerability Mds: Not affected
Vulnerability Meltdown: Not affected
Vulnerability Mmio stale data: Not affected
Vulnerability Retbleed: Not affected
Vulnerability Spec rstack overflow: Not affected
Vulnerability Spec store bypass: Mitigation; Speculative Store Bypass disabled
via prctl

Vulnerability Spectre v1: Mitigation; usercopy/swapgs barriers and __user
pointer sanitization

Vulnerability Spectre v2: Mitigation; Enhanced / Automatic IBRS, IBPB
conditional, RSB filling, PBRSE-eIBRS Not affected

Vulnerability Srbds: Not affected

Vulnerability Tsx async abort: Not affected

From lscpu --cache:

NAME	ONE-SIZE	ALL-SIZE	WAYS	TYPE	LEVEL	SETS	PHY-LINE	COHERENCY-SIZE
L1d	48K	9M	12	Data	1	64	1	64
L1i	64K	12M	16	Instruction	1	64	1	64
L2	2M	384M	16	Unified	2	2048	1	64
L3	480M	960M	16	Unified	3	491520	1	64

/proc/cpuinfo cache data
cache size : 491520 KB

From numactl --hardware

(Continued on next page)



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Platform Notes (Continued)

WARNING: a numactl 'node' might or might not correspond to a physical chip.

available: 6 nodes (0-5)

node 0 cpus: 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27
28 29 30 31 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210
211 212 213 214 215 216 217 218 219 220 221 222 223

node 0 size: 257545 MB

node 0 free: 248346 MB

node 1 cpus: 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56
57 58 59 60 61 62 63 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239
240 241 242 243 244 245 246 247 248 249 250 251 252 253 254 255

node 1 size: 258031 MB

node 1 free: 251852 MB

node 2 cpus: 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88
89 90 91 92 93 94 95 256 257 258 259 260 261 262 263 264 265 266 267 268 269 270 271
272 273 274 275 276 277 278 279 280 281 282 283 284 285 286 287

node 2 size: 257979 MB

node 2 free: 251810 MB

node 3 cpus: 96 97 98 99 100 101 102 103 104 105 106 107 108 109 110 111 112 113 114
115 116 117 118 119 120 121 122 123 124 125 126 127 288 289 290 291 292 293 294 295 296
297 298 299 300 301 302 303 304 305 306 307 308 309 310 311 312 313 314 315 316 317 318
319

node 3 size: 258031 MB

node 3 free: 255075 MB

node 4 cpus: 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145
146 147 148 149 150 151 152 153 154 155 156 157 158 159 320 321 322 323 324 325 326 327
328 329 330 331 332 333 334 335 336 337 338 339 340 341 342 343 344 345 346 347 348 349
350 351

node 4 size: 258031 MB

node 4 free: 253040 MB

node 5 cpus: 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177
178 179 180 181 182 183 184 185 186 187 188 189 190 191 352 353 354 355 356 357 358 359
360 361 362 363 364 365 366 367 368 369 370 371 372 373 374 375 376 377 378 379 380 381
382 383

node 5 size: 258013 MB

node 5 free: 183617 MB

node distances:

node	0	1	2	3	4	5
0:	10	12	12	21	21	21
1:	12	10	12	21	21	21
2:	12	12	10	21	21	21
3:	21	21	21	10	12	12
4:	21	21	21	12	10	12
5:	21	21	21	12	12	10

From /proc/meminfo

MemTotal: 1584778080 kB

HugePages_Total: 0

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Platform Notes (Continued)

Hugepagesize: 2048 kB

/sys/devices/system/cpu/cpu*/cpufreq/scaling_governor has performance

/usr/bin/lsb_release -d
Ubuntu 22.04.5 LTS

```
From /etc/*release* /etc/*version*
debian_version: bookworm/sid
os-release:
  PRETTY_NAME="Ubuntu 22.04.5 LTS"
  NAME="Ubuntu"
  VERSION_ID="22.04"
  VERSION="22.04.5 LTS (Jammy Jellyfish)"
  VERSION_CODENAME=jammy
  ID=ubuntu
  ID_LIKE=debian
  HOME_URL="https://www.ubuntu.com/"
```

```
uname -a:
Linux SMCAP6 6.5.0-21-generic #21~22.04.1-Ubuntu SMP PREEMPT_DYNAMIC Fri Feb 9
13:32:52 UTC 2 x86_64 x86_64 x86_64 GNU/Linux
```

Kernel self-reported vulnerability status:

gather_data_sampling:	Not affected
CVE-2018-12207 (iTLB Multihit):	Not affected
CVE-2018-3620 (L1 Terminal Fault):	Not affected
Microarchitectural Data Sampling:	Not affected
CVE-2017-5754 (Meltdown):	Not affected
mmio_stale_data:	Not affected
retbleed:	Not affected
spec_rstack_overflow:	Not affected
CVE-2018-3639 (Speculative Store Bypass):	Mitigation: Speculative Store Bypass disabled via prctl
CVE-2017-5753 (Spectre variant 1):	Mitigation: usercopy/swapgs barriers and __user pointer sanitization
CVE-2017-5715 (Spectre variant 2):	Mitigation: Enhanced / Automatic IBRS, IBPB: conditional, RSB filling, PBRSE-eIBRS: Not affected
CVE-2020-0543 (Special Register Buffer Data Sampling):	Not affected
CVE-2019-11135 (TSX Asynchronous Abort):	Not affected

run-level 5 Jun 30 05:39

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Platform Notes (Continued)

SPEC is set to: /root/knektyag/accel2023-2.0.18

Filesystem	Type	Size	Used	Avail	Use%	Mounted on
/dev/nvme0n1p2	ext4	1.8T	129G	1.6T	8%	/

From /sys/devices/virtual/dmi/id
Vendor: Supermicro
Product: SYS-222HA-TN
Product Family: Family
Serial: S928613X4614557

Additional information from dmidecode 3.3 follows. WARNING: Use caution when you interpret this section. The 'dmidecode' program reads system data which is "intended to allow hardware to be accurately determined", but the intent may not be met, as there are frequent changes to hardware, firmware, and the "DMTF SMBIOS" standard.

Memory:
24x Micron Technology MTC40F2046S1RC64BDY QSFF 64 GB 2 rank 6400

BIOS:
BIOS Vendor: American Megatrends International, LLC.
BIOS Version: 1.1
BIOS Date: 10/28/2024
BIOS Revision: 5.35

(End of data from sysinfo program)

Compiler Version Notes

```
=====
C          | 403.stencil(base) 404.lbm(base) 452.ep(base) 457.spC(base)
          | 470.bt(base)
-----
```

```
Intel(R) oneAPI DPC++/C++ Compiler 2025.2.0 (2025.2.0.20250605)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/intel/oneapi/compiler/2025.2/bin/compiler
Configuration file: /opt/intel/oneapi/compiler/2025.2/bin/compiler/./icx.cfg
-----
```

```
=====
Fortran    | 450.md(base) 455.seismic(base) 456.spF(base) 460.ilbdc(base)
          | 463.swim(base)
-----
```

```
ifx (IFX) 2025.2.0 20250605
Copyright (C) 1985-2025 Intel Corporation. All rights reserved.
-----
```

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Compiler Version Notes (Continued)

```
=====
Fortran, C | 453.clvrlleaf(base) 459.miniGhost(base)
=====
ifx (IFX) 2025.2.0 20250605
Copyright (C) 1985-2025 Intel Corporation. All rights reserved.
Intel(R) oneAPI DPC++/C++ Compiler 2025.2.0 (2025.2.0.20250605)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/intel/oneapi/compiler/2025.2/bin/compiler
Configuration file: /opt/intel/oneapi/compiler/2025.2/bin/compiler/./icx.cfg
=====
```

Base Compiler Invocation

C benchmarks:
icx

Fortran benchmarks:
ifx

Benchmarks using both Fortran and C:
ifx icx

Base Portability Flags

450.md: -80
457.spC: -wl,--no-relax(icx)(*) -shared-intel -wl,--no-relax(icx)
459.miniGhost: -nofor-main

(*) Indicates a portability flag that was found in a non-portability variable.

Base Optimization Flags

C benchmarks:

403.stencil: -Ofast -O3 -xCORE-AVX512 -mprefer-vector-width=512
-qopt-multiple-gather-scatter-by-shuffles -flto -ffast-math
-fiopenmp -qopt-dynamic-align -fvec-peel-loops
-qopt-streaming-stores always -Xclang
-fopenmp-declare-target-scalar-defaultmap-firstprivate
-fimf-precision=low

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Base Optimization Flags (Continued)

404.lbm: Same as 403.stencil

452.ep: Same as 403.stencil

457.spC: -Ofast -O3 -xCORE-AVX512 -mprefer-vector-width=512
-qopt-multiple-gather-scatter-by-shuffles -flto -ffast-math
-fiopenmp -qopt-dynamic-align -fvec-peel-loops
-qopt-streaming-stores always -Xclang
-fopenmp-declare-target-scalar-defaultmap-firstprivate
-fimf-precision=low -mcmmodel=medium(*)

470.bt: Same as 403.stencil

Fortran benchmarks:

-Ofast -O3 -xCORE-AVX512 -mprefer-vector-width=512
-qopt-multiple-gather-scatter-by-shuffles -flto -ffast-math -fiopenmp
-qopt-dynamic-align -fvec-peel-loops -qopt-streaming-stores always
-nostandard-realloc-lhs -align array32byte -auto
-fimf-accuracy-bits-sqrt=14 -fimf-precision=low

Benchmarks using both Fortran and C:

-Ofast -O3 -xCORE-AVX512 -mprefer-vector-width=512
-qopt-multiple-gather-scatter-by-shuffles -flto -ffast-math -fiopenmp
-qopt-dynamic-align -fvec-peel-loops -qopt-streaming-stores always
-Xclang -fopenmp-declare-target-scalar-defaultmap-firstprivate
-fimf-precision=low -nostandard-realloc-lhs -align array32byte -auto
-fimf-accuracy-bits-sqrt=14

(*) Indicates an optimization flag that was found in a portability variable.

The flags file that was used to format this result can be browsed at
http://www.spec.org/accel2023/flags/Intel_compiler_flags.2024-02-14.html

You can also download the XML flags source by saving the following link:
http://www.spec.org/accel2023/flags/Intel_compiler_flags.2024-02-14.xml

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For questions about this result, please contact the tester. For other inquiries, please contact info@spec.org.

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