



# SPECaccel<sup>®</sup>2023 Result

Copyright 2023-2025 Standard Performance Evaluation Corporation

**Intel**  
**Intel Xeon 6980P**

Supermicro SYS-222HA-TN (2 x Intel Xeon 6980P, 2.0GHz)

SPECaccel2023\_base = 2.30

SPECaccel2023\_peak = Not Run

accel2023 License: 13

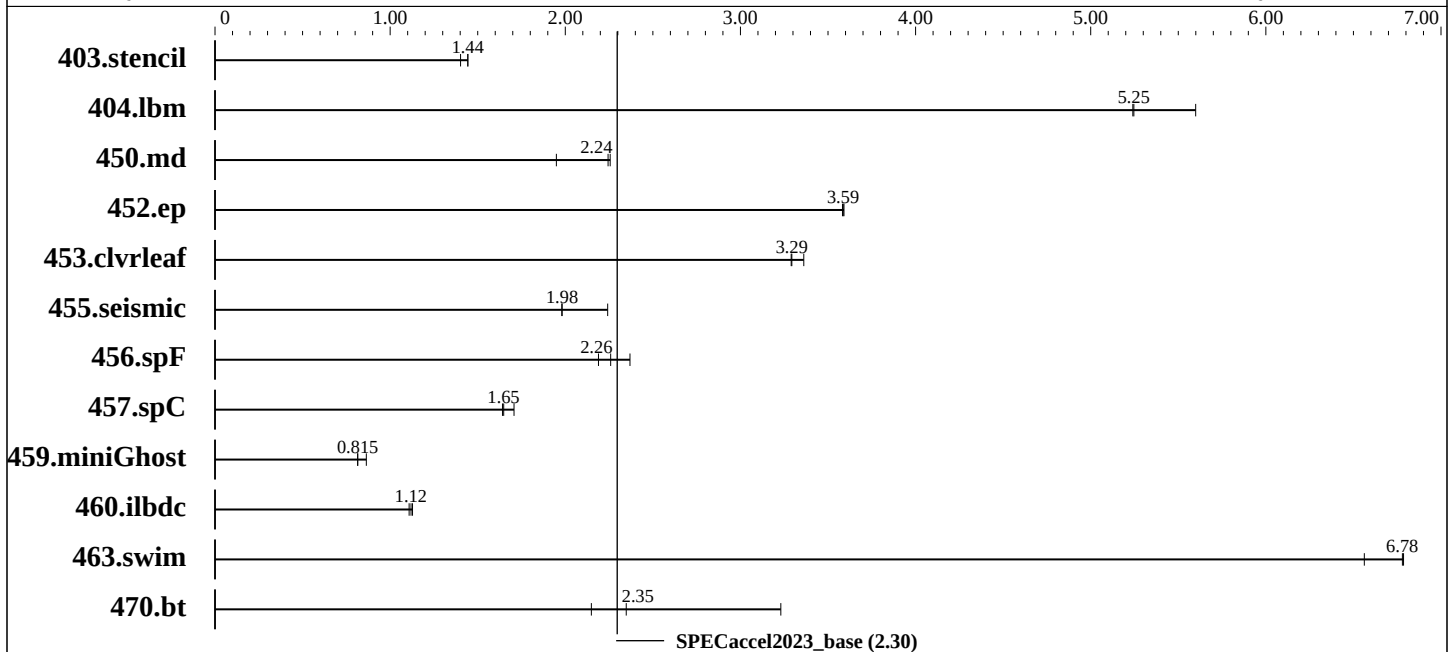
Test Sponsor: Intel

Tested by: Intel

Test Date: Aug-2025

Hardware Availability: Sep-2024

Software Availability: Jun-2025



## Hardware

CPU Name: Intel Xeon 6980P  
Max MHz.: 3900  
Nominal: 2000  
Enabled: 256 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: 504 MB I+D on chip per chip  
Other: None  
Memory: 1536 GB (24 x 64 GB 2Rx4 PC5-8800X)  
Storage: 1 x 3.5 TB NVMe SSD  
Other: None  
Base Threads Run: 512  
Min. Peak Threads: --  
Max. Peak Threads: --

## Accelerator

Accel Model Name: Intel Xeon 6980P  
Accel Vendor: Intel  
Accel Name: Intel Xeon 6980P  
Type of Accel: CPU  
Accel Connection: N/A  
Does Accel Use ECC: yes  
Accel Description: Intel Xeon 6980P  
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  
Other: None  
Base Parallel Model: SMD  
Base Threads Run: 512

(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   | <b>305</b> | <b>1.44</b> | 305         | 1.44         | 314         | 1.40        |       |         |       |         |       |         |       |
| 404.lbm       | SMD   | 86.8       | 5.24        | <b>86.7</b> | <b>5.25</b>  | 81.3        | 5.60        |       |         |       |         |       |         |       |
| 450.md        | SMD   | 308        | 1.95        | <b>267</b>  | <b>2.24</b>  | 266         | 2.26        |       |         |       |         |       |         |       |
| 452.ep        | SMD   | <b>116</b> | <b>3.59</b> | 116         | 3.58         | 116         | 3.59        |       |         |       |         |       |         |       |
| 453.clvleaf   | SMD   | 297        | 3.36        | <b>304</b>  | <b>3.29</b>  | 304         | 3.29        |       |         |       |         |       |         |       |
| 455.seismic   | SMD   | 394        | 1.98        | <b>394</b>  | <b>1.98</b>  | 348         | 2.24        |       |         |       |         |       |         |       |
| 456.spF       | SMD   | <b>210</b> | <b>2.26</b> | 200         | 2.37         | 217         | 2.19        |       |         |       |         |       |         |       |
| 457.spC       | SMD   | 316        | 1.71        | 329         | 1.64         | <b>328</b>  | <b>1.65</b> |       |         |       |         |       |         |       |
| 459.miniGhost | SMD   | 683        | 0.864       | <b>724</b>  | <b>0.815</b> | 724         | 0.815       |       |         |       |         |       |         |       |
| 460.ilbdc     | SMD   | 492        | 1.13        | 501         | 1.11         | <b>496</b>  | <b>1.12</b> |       |         |       |         |       |         |       |
| 463.swim      | SMD   | 67.1       | 6.56        | 64.8        | 6.79         | <b>64.9</b> | <b>6.78</b> |       |         |       |         |       |         |       |
| 470.bt        | SMD   | <b>449</b> | <b>2.35</b> | 491         | 2.15         | 327         | 3.23        |       |         |       |         |       |         |       |

SPEC accel2023\_base = 2.30

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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,128C,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 SMCAP5 Tue Aug 19 08:38:47 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) 6980P

2 "physical id"s (chips)

512 "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 : 128

siblings : 256

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 32 33 34 35 36 37 38 39 40 41 42 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 96 97 98 99 100  
101 102 103 104 105 106 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142  
143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163  
164 165 166 167 168 169

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 32 33 34 35 36 37 38 39 40 41 42 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 96 97 98 99 100  
101 102 103 104 105 106 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142  
143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163  
164 165 166 167 168 169

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): 512  
On-line CPU(s) list: 0-511  
Vendor ID: GenuineIntel  
Model name: Intel(R) Xeon(R) 6980P  
CPU family: 6  
Model: 173  
Thread(s) per core: 2  
Core(s) per socket: 128  
Socket(s): 2  
Stepping: 1  
BogoMIPS: 4000.00

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

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## Platform Notes (Continued)

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  
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 vnni 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 fsrc 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: 12 MiB (256 instances)

L1i cache: 16 MiB (256 instances)

L2 cache: 512 MiB (256 instances)

L3 cache: 1008 MiB (2 instances)

NUMA node(s): 6

NUMA node0 CPU(s): 0-42, 256-298

NUMA node1 CPU(s): 43-85, 299-341

NUMA node2 CPU(s): 86-127, 342-383

NUMA node3 CPU(s): 128-170, 384-426

NUMA node4 CPU(s): 171-213, 427-469

NUMA node5 CPU(s): 214-255, 470-511

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      | 12M      | 12   | Data        | 1     | 64     | 1        | 64             |
| L1i  | 64K      | 16M      | 16   | Instruction | 1     | 64     | 1        | 64             |
| L2   | 2M       | 512M     | 16   | Unified     | 2     | 2048   | 1        | 64             |
| L3   | 504M     | 1008M    | 16   | Unified     | 3     | 516096 | 1        | 64             |

/proc/cpuinfo cache data  
cache size : 516096 KB

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## Platform Notes (Continued)

From numactl --hardware

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 32 33 34 35 36 37 38 39 40 41 42 256 257 258 259 260 261 262 263 264 265  
266 267 268 269 270 271 272 273 274 275 276 277 278 279 280 281 282 283 284 285 286 287  
288 289 290 291 292 293 294 295 296 297 298

node 0 size: 257534 MB

node 0 free: 255297 MB

node 1 cpus: 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67  
68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 299 300 301 302 303 304 305 306  
307 308 309 310 311 312 313 314 315 316 317 318 319 320 321 322 323 324 325 326 327 328  
329 330 331 332 333 334 335 336 337 338 339 340 341

node 1 size: 258026 MB

node 1 free: 255204 MB

node 2 cpus: 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105 106 107  
108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 342 343  
344 345 346 347 348 349 350 351 352 353 354 355 356 357 358 359 360 361 362 363 364 365  
366 367 368 369 370 371 372 373 374 375 376 377 378 379 380 381 382 383

node 2 size: 258027 MB

node 2 free: 257041 MB

node 3 cpus: 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145  
146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167  
168 169 170 384 385 386 387 388 389 390 391 392 393 394 395 396 397 398 399 400 401 402  
403 404 405 406 407 408 409 410 411 412 413 414 415 416 417 418 419 420 421 422 423 424  
425 426

node 3 size: 257974 MB

node 3 free: 256543 MB

node 4 cpus: 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188  
189 190 191 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210  
211 212 213 427 428 429 430 431 432 433 434 435 436 437 438 439 440 441 442 443 444 445  
446 447 448 449 450 451 452 453 454 455 456 457 458 459 460 461 462 463 464 465 466 467  
468 469

node 4 size: 258026 MB

node 4 free: 256636 MB

node 5 cpus: 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231  
232 233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250 251 252 253  
254 255 470 471 472 473 474 475 476 477 478 479 480 481 482 483 484 485 486 487 488 489  
490 491 492 493 494 495 496 497 498 499 500 501 502 503 504 505 506 507 508 509 510 511

node 5 size: 257999 MB

node 5 free: 256835 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 |

(Continued on next page)



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## Platform Notes (Continued)

```
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:      1584730352 kB
HugePages_Total:      0
Hugepagesize:    2048 kB
```

/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 SMCAP5 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                                                                                     |

(Continued on next page)



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## Platform Notes (Continued)

CVE-2019-11135 (TSX Asynchronous Abort): Not affected

run-level 5 Aug 14 08:35

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

| Filesystem     | Type | Size | Used | Avail | Use% | Mounted on |
|----------------|------|------|------|-------|------|------------|
| /dev/nvme0n1p2 | ext4 | 1.8T | 131G | 1.6T  | 8%   | /          |

From /sys/devices/virtual/dmi/id  
Vendor: Supermicro  
Product: SYS-222HA-TN  
Product Family: Family  
Serial: S928613X4614555

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 MTC40F2046S1HC88XDY WCCCC 64 GB 2 rank 8800

BIOS:  
BIOS Vendor: American Megatrends International, LLC.  
BIOS Version: 1.2  
BIOS Date: 02/14/2025  
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)  
-----
```

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## Compiler Version Notes (Continued)

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

=====  
Fortran, C | 453.clvrleaf(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

(Continued on next page)





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## Base Optimization Flags (Continued)

403.stencil (continued):

-fiopenmp -qopt-dynamic-align -fvec-peel-loops  
-qopt-streaming-stores always -Xclang  
-fopenmp-declare-target-scalar-defaultmap-firstprivate  
-fimf-precision=low

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 -mcmode=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](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](http://www.spec.org/accel2023/flags/Intel_compiler_flags.2024-02-14.xml)



# SPECaccel<sup>®</sup>2023 Result

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Intel  
Intel Xeon 6980P

Supermicro SYS-222HA-TN (2 x Intel Xeon 6980P, 2.0GHz)

SPECaccel2023\_base = 2.30

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

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For questions about this result, please contact the tester. For other inquiries, please contact [info@spec.org](mailto:info@spec.org).

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