



SPECaccel[®]2023 Result

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Supermicro Intel Xeon 6787P

SuperServer SYS-222H-TN (2 x Intel Xeon 6787P, 2.0GHz, MCR)

SPECaccel2023_base = 1.99

SPECaccel2023_peak = Not Run

accel2023 License: 001176

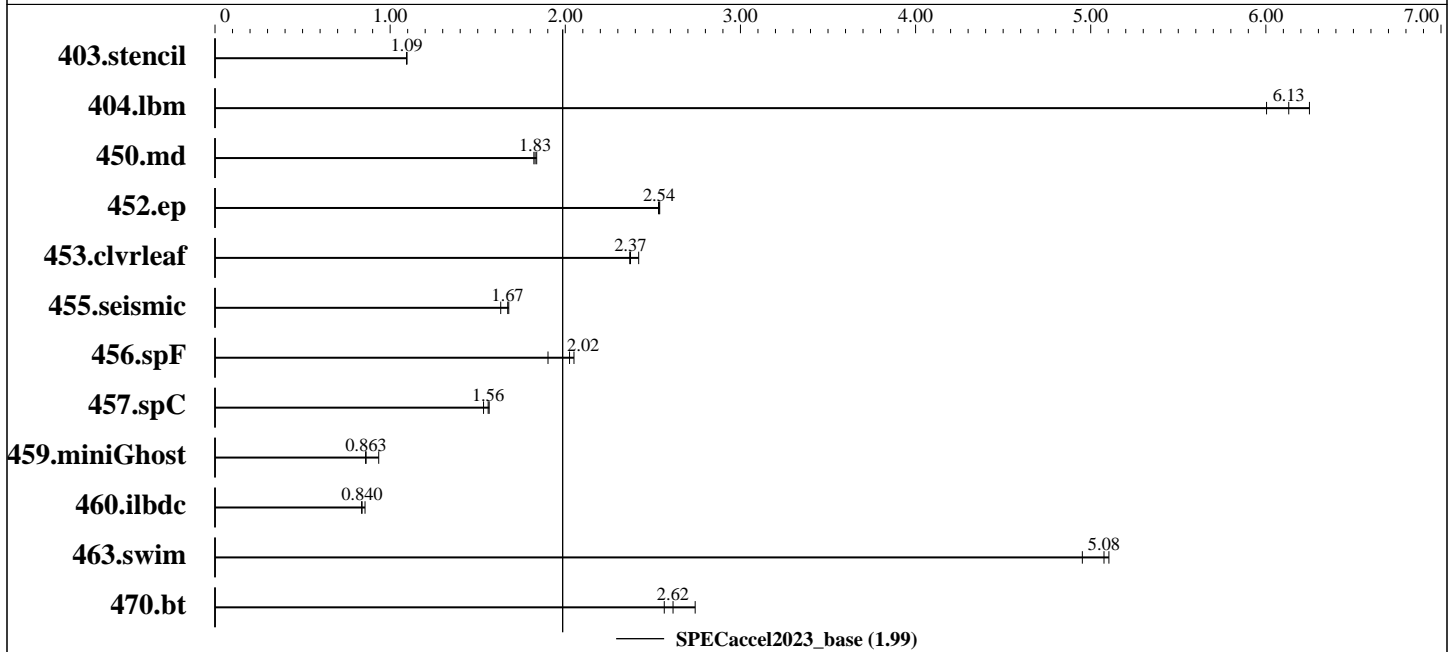
Test Sponsor: Supermicro

Tested by: Supermicro

Test Date: Feb-2025

Hardware Availability: Feb-2025

Software Availability: Oct-2024



Hardware

CPU Name: Intel Xeon 6787P
 Max MHz.: 3800
 Nominal: 2000
 Enabled: 172 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: 336 MB I+D on chip per chip
 Other: None
 Memory: 1024 GB (16x64GB DDR5 MRDIMM 8800 MT/s)
 Storage: 1 x 1.6TB NVMe SSD
 Other: None
 Base Threads Run: 344
 Min. Peak Threads: --
 Max. Peak Threads: --

Accelerator

Accel Model Name: Intel Xeon 6787P
 Accel Vendor: Intel
 Accel Name: Intel Xeon 6787P
 Type of Accel: CPU
 Accel Connection: N/A
 Does Accel Use ECC: yes
 Accel Description: Intel Xeon 6787P
 SMT ON, Turbo ON
 Accel Driver: None

Software

OS: SUSE Linux Enterprise Server 15 SP6
 6.4.0-150600.21-default
 Compiler: Intel oneAPI Compiler 2025.0.0
 Firmware: Version 1.2 released Jan-2025
 File System: btrfs
 System State: Run level 3 (multi-user)
 Other: None
 Base Parallel Model: SMD
 Base Threads Run: 344
 Peak Parallel Models: Not Run

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Software (Continued)

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	402	1.09	402	1.09	402	1.09							
404.lbm	SMD	75.8	6.00	74.2	6.13	72.8	6.25							
450.md	SMD	328	1.83	327	1.84	330	1.82							
452.ep	SMD	164	2.54	164	2.53	163	2.54							
453.clvrleaf	SMD	422	2.37	422	2.37	413	2.42							
455.seismic	SMD	465	1.68	478	1.63	467	1.67							
456.spF	SMD	235	2.02	250	1.90	232	2.05							
457.spC	SMD	352	1.53	346	1.56	345	1.57							
459.miniGhost	SMD	684	0.863	686	0.860	631	0.935							
460.ilbdc	SMD	661	0.840	663	0.837	648	0.857							
463.swim	SMD	88.8	4.95	86.2	5.10	86.7	5.08							
470.bt	SMD	411	2.57	403	2.62	385	2.74							

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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,86C,2T"
KMP_LIBRARY = "turnaround"
KMP_STACKSIZE = "8M"
OMP_DYNAMIC = "FALSE"
OMP_WAIT_POLICY = "active"

```

BIOS Setting:

```

Power Performance Tuning = BIOS Controls EPB
ENERGY_PERF_BIAS_CFG Mode = Extreme Performance

```

OS tuning:

Stack size set to unlimited using "ulimit -s unlimited"

Platform Notes

Sysinfo program /home/accel2023/bin/sysinfo

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Platform Notes (Continued)

Rev: r6622 of 2021-04-07 b1a7d5f8f71be5aff70a755cad7211a0
running on 166-191 Tue Feb 4 02:17:41 2025

SUT (System Under Test) info as seen by some common utilities.
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) 6787P
 2 "physical id"s (chips)
344 "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 : 86
siblings  : 172
```

```
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
```

```
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
```

From lscpu from util-linux 2.39.3:

```
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):                344
On-line CPU(s) list:   0-343
Vendor ID:             GenuineIntel
BIOS Vendor ID:       Intel(R) Corporation
Model name:            Intel(R) Xeon(R) 6787P
BIOS Model name:      Intel(R) Xeon(R) 6787P CPU @ 2.0GHz
BIOS CPU family:       179
CPU family:            6
Model:                 173
Thread(s) per core:    2
Core(s) per socket:    86
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 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
```

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Platform Notes (Continued)

smx est tm2 ssse3 sdbg fma cx16 xtptr 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 intel_ppin cdp_l2 ssbd mba ibrs ibpb stibp ibrs_enhanced tpr_shadow flexpriority ept vpid ept_ad fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2 erms invpcid rtm 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 user_shstk 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 fsmr md_clear serialize tsxldtrk pconfig arch_lbr ibt amx_bf16 avx512_fp16 amx_tile amx_int8 flush_lld arch_capabilities

Virtualization: VT-x
L1d cache: 8.1 MiB (172 instances)
L1i cache: 10.8 MiB (172 instances)
L2 cache: 344 MiB (172 instances)
L3 cache: 672 MiB (2 instances)
NUMA node(s): 4
NUMA node0 CPU(s): 0-42,172-214
NUMA node1 CPU(s): 43-85,215-257
NUMA node2 CPU(s): 86-128,258-300
NUMA node3 CPU(s): 129-171,301-343
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 Reg file data sampling: 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/swaps barriers and __user pointer sanitization
Vulnerability Spectre v2: Mitigation; Enhanced / Automatic IBRS; IBPB conditional; RSB filling; PBRSE-eIBRS Not affected; BHI BHI_DIS_S
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	8.1M	12	Data	1	64	1	64
L1i	64K	10.8M	16	Instruction	1	64	1	64
L2	2M	344M	16	Unified	2	2048	1	64
L3	336M	672M	16	Unified	3	344064	1	64

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Platform Notes (Continued)

```
/proc/cpuinfo cache data
cache size : 344064 KB
```

From numactl --hardware

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

available: 4 nodes (0-3)

```
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 42 172 173 174 175 176 177 178 179 180 181
182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200 201 202 203
204 205 206 207 208 209 210 211 212 213 214
```

node 0 size: 257468 MB

node 0 free: 256316 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 85 215 216 217 218 219 220 221 222
223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240 241 242 243 244
245 246 247 248 249 250 251 252 253 254 255 256 257
```

node 1 size: 258025 MB

node 1 free: 257261 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
108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 258
259 260 261 262 263 264 265 266 267 268 269 270 271 272 273 274 275 276 277 278 279 280
281 282 283 284 285 286 287 288 289 290 291 292 293 294 295 296 297 298 299 300
```

node 2 size: 257986 MB

node 2 free: 257120 MB

```
node 3 cpus: 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
169 170 171 301 302 303 304 305 306 307 308 309 310 311 312 313 314 315 316 317 318 319
320 321 322 323 324 325 326 327 328 329 330 331 332 333 334 335 336 337 338 339 340 341
342 343
```

node 3 size: 257578 MB

node 3 free: 256693 MB

node distances:

```
node 0 1 2 3
0: 10 12 21 21
1: 12 10 21 21
2: 21 21 10 12
3: 21 21 12 10
```

From /proc/meminfo

MemTotal: 1055804660 kB

HugePages_Total: 0

Hugepagesize: 2048 kB

From /etc/*release* /etc/*version*

os-release:

NAME="SLES"

VERSION="15-SP6"

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Platform Notes (Continued)

```
VERSION_ID="15.6"
PRETTY_NAME="SUSE Linux Enterprise Server 15 SP6"
ID="sles"
ID_LIKE="suse"
ANSI_COLOR="0;32"
CPE_NAME="cpe:/o:suse:sles:15:sp6"
```

```
uname -a:
Linux 166-191 6.4.0-150600.21-default #1 SMP PREEMPT_DYNAMIC Thu May 16 11:09:22 UTC
2024 (36c1e09) 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
reg_file_data_sampling:	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; PBR SB-eIBRS: Not affected; BHI: BHI_DIS_S
CVE-2020-0543 (Special Register Buffer Data Sampling):	Not affected
CVE-2019-11135 (TSX Asynchronous Abort):	Not affected

```
run-level 3 Feb 4 02:14 last=5
```

```
SPEC is set to: /home/accel2023
Filesystem Type Size Used Avail Use% Mounted on
/dev/nvme0nlp2 btrfs 1.5T 24G 1.5T 2% /home
```

```
From /sys/devices/virtual/dmi/id
Vendor: Supermicro
Product: Super Server
Product Family: Family
Serial: 0123456789
```

Additional information from dmidecode 3.4 follows. WARNING: Use caution when you

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Platform Notes (Continued)

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:

16x Samsung M327R8GA0EB0-CLVXB 64 GB 2 rank 11200, configured at 8000

BIOS:

BIOS Vendor: American Megatrends International, LLC.
BIOS Version: 1.2
BIOS Date: 01/24/2025
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 2025.0.0 (2025.0.0.20241008)  
Target: x86_64-unknown-linux-gnu  
Thread model: posix  
InstalledDir: /opt/intel/oneapi/compiler/2025.0/bin/compiler  
Configuration file: /opt/intel/oneapi/compiler/2025.0/bin/compiler/./icx.cfg  
-----
```

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

```
ifx (IFX) 2025.0.0 20241008  
Copyright (C) 1985-2024 Intel Corporation. All rights reserved.  
-----
```

```
=====  
Fortran, C | 453.clvrleaf(base) 459.miniGhost(base)  
-----
```

```
ifx (IFX) 2025.0.0 20241008  
Copyright (C) 1985-2024 Intel Corporation. All rights reserved.  
Intel(R) oneAPI DPC++/C++ Compiler 2025.0.0 (2025.0.0.20241008)  
Target: x86_64-unknown-linux-gnu  
Thread model: posix  
InstalledDir: /opt/intel/oneapi/compiler/2025.0/bin/compiler  
Configuration file: /opt/intel/oneapi/compiler/2025.0/bin/compiler/./icx.cfg  
-----
```



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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: -mcmodel=medium -Wl,--no-relax
459.miniGhost: -nofor-main

Base Optimization Flags

C 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
-fimf-precision=low -Xclang
-fopenmp-declare-target-scalar-defaultmap-firstprivate

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
-fimf-precision=low -nostandard-realloc-lhs -align array32byte -auto
-fimf-accuracy-bits-sqrt=14

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
-fimf-precision=low -Xclang
-fopenmp-declare-target-scalar-defaultmap-firstprivate
-nostandard-realloc-lhs -align array32byte -auto
-fimf-accuracy-bits-sqrt=14



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The flags files that were used to format this result can be browsed at

<http://www.spec.org/accel2023/flags/Supermicro-Platform-Settings-V1.2-SPR-revG.html>
http://www.spec.org/accel2023/flags/Intel_compiler_flags.2024-12-31.html

You can also download the XML flags sources by saving the following links:

<http://www.spec.org/accel2023/flags/Supermicro-Platform-Settings-V1.2-SPR-revG.xml>
http://www.spec.org/accel2023/flags/Intel_compiler_flags.2024-12-31.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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