



SPECaccel[®]2023 Result

Copyright 2023-2024 Standard Performance Evaluation Corporation

Supermicro
Intel Xeon Platinum 8592+
SuperServer SYS-221H-TN24R

SPECaccel2023_base = 1.40

SPECaccel2023_peak = Not Run

accel2023 License: 001176

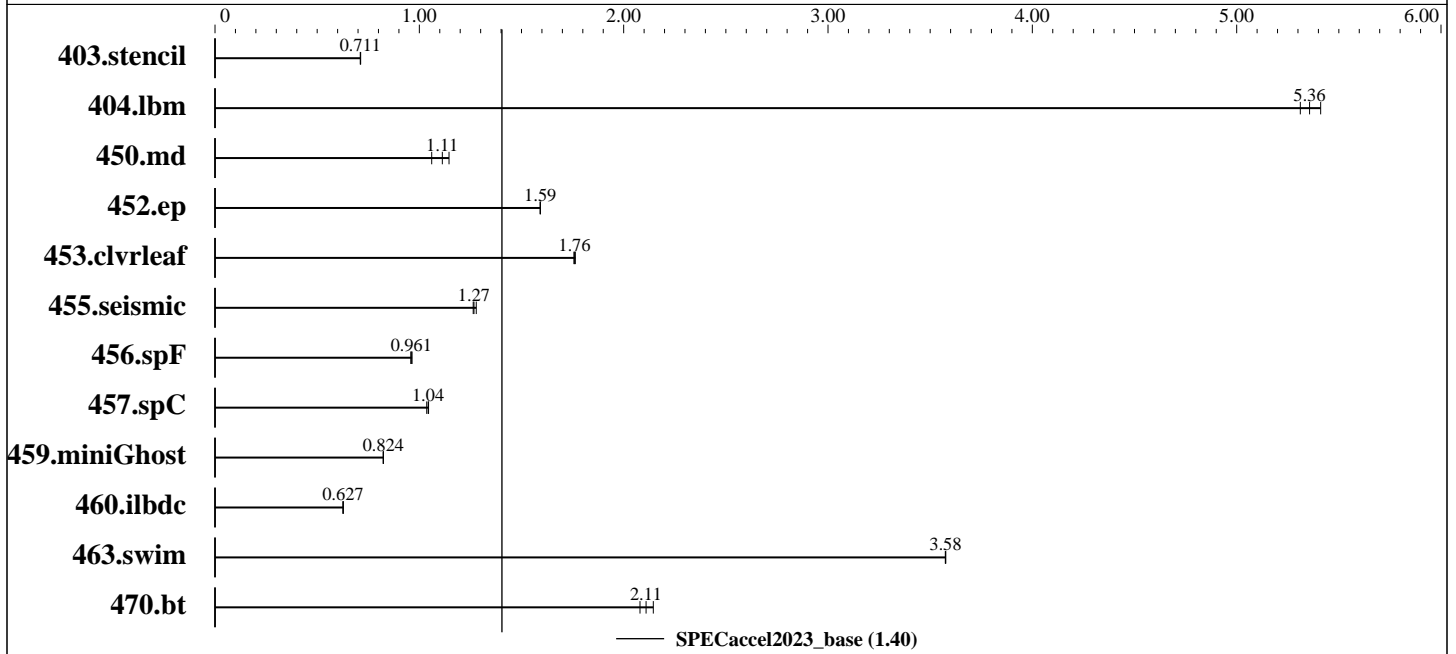
Test Sponsor: Supermicro

Tested by: Supermicro

Test Date: Dec-2023

Hardware Availability: Oct-2023

Software Availability: Nov-2023



Hardware

CPU Name: Intel Xeon Platinum 8592+
 Max MHz.: 3900
 Nominal: 1900
 Enabled: 128 cores, 2 chips, 2 threads/core
 Orderable: 1,2 chips
 Cache L1: 32 KB I + 48 KB D on chip per core
 L2: 2 MB I+D on chip per core
 L3: 320 KB I+D on chip per chip
 Other: None
 Memory: 1 TB (16 x 64 GB 2Rx4 PC5-5600B-R)
 Storage: 1 x 960 GB NVMe SSD
 Other: None
 Base Threads Run: 256
 Min. Peak Threads: --
 Max. Peak Threads: --

Accelerator

Accel Model Name: Intel Xeon Platinum 8592+
 Accel Vendor: Intel
 Accel Name: Intel Xeon Platinum 8592+
 Type of Accel: CPU
 Accel Connection: N/A
 Does Accel Use ECC: Yes
 Accel Description: 2 x Intel Xeon Platinum 8592+
 Accel Driver: N/A

Software

OS: Ubuntu 22.04.3 LTS
 6.2.0-39-generic
 Compiler: C/C++/Fortran: Version 2024.0 of Intel
 oneAPI DPC++/C++
 Firmware: Version 2.0 released Oct-2023
 File System: ext4
 System State: Run level 3 (multi-user)
 Other: None
 Base Parallel Model: LOP
 Base Threads Run: 256

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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	LOP	619	0.711	617	0.713	619	0.711									
404.lbm	LOP	84.1	5.41	84.9	5.36	85.7	5.31									
450.md	LOP	566	1.06	524	1.15	539	1.11									
452.ep	LOP	261	1.59	261	1.59	261	1.59									
453.clvleaf	LOP	568	1.76	569	1.76	567	1.76									
455.seismic	LOP	610	1.28	617	1.26	615	1.27									
456.spF	LOP	496	0.958	493	0.964	494	0.961									
457.spC	LOP	518	1.04	517	1.05	521	1.04									
459.miniGhost	LOP	717	0.823	716	0.824	716	0.824									
460.ilbdc	LOP	885	0.627	886	0.626	884	0.628									
463.swim	LOP	123	3.58	123	3.57	123	3.58									
470.bt	LOP	492	2.15	500	2.11	507	2.08									

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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"
KMP_BLOCKTIME = "infinite"
KMP_HW_SUBSET = "2S,64C,2T"S
KMP_LIBRARY = "turnaround"
OMP_DYNAMIC = "FALSE"
OMP_NUM_THREADS = "128"
OMP_WAIT_POLICY = "active"
```

is mitigated in the system as tested and documented.

Yes: The test sponsor attests, as of date of publication, the CVE-2017-5753 (Spectre variant 1) is mitigated in the system as tested and documented.

Yes: The test sponsor attests, as of date of publication, that CVE-2017-5715 (Spectre variant 2) is mitigated in the system as tested and documented.

OS tuning:

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



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Platform Notes

sysinfo program /home/accel/bin/sysinfo
Rev: r6622 of 2021-04-07 bla7d5f8f71be5aff70a755cad7211a0
running on mingyuan-Super-Server Sun Dec 24 11:20:49 2023

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) PLATINUM 8592+
  2 "physical id"s (chips)
  256 "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 : 64
siblings  : 128
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 43 44 45 46 47 48 49 50 51 52
53 54 55 56 57 58 59 60 61 62 63
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 43 44 45 46 47 48 49 50 51 52
53 54 55 56 57 58 59 60 61 62 63
```

```
From lscpu from util-linux 2.37.2:
Architecture:                x86_64
CPU op-mode(s):              32-bit, 64-bit
Address sizes:                46 bits physical, 57 bits virtual
Byte Order:                   Little Endian
CPU(s):                       256
On-line CPU(s) list:         0-255
Vendor ID:                    GenuineIntel
Model name:                   INTEL(R) XEON(R) PLATINUM 8592+
CPU family:                   6
Model:                        207
Thread(s) per core:          2
Core(s) per socket:          64
Socket(s):                    2
Stepping:                     2
BogoMIPS:                     3800.00
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
pdpelgb 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 cdp_l2 ssbd mba ibrs ibpb stibp
```

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Platform Notes (Continued)

ibrs_enhanced tpr_shadow vnmi 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 avx_vnni avx512_bf16
wbnoinvd dtherm ida arat pln pts 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_lld

arch_capabilities

Virtualization: VT-x
L1d cache: 6 MiB (128 instances)
L1i cache: 4 MiB (128 instances)
L2 cache: 256 MiB (128 instances)
L3 cache: 640 MiB (2 instances)
NUMA node(s): 2
NUMA node0 CPU(s): 0-63,128-191
NUMA node1 CPU(s): 64-127,192-255
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 IBRS, IBPB conditional, RSB filling, PBR SB-eIBRS SW sequence
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	6M	12	Data	1	64	1	64
L1i	32K	4M	8	Instruction	1	64	1	64
L2	2M	256M	16	Unified	2	2048	1	64
L3	320M	640M	20	Unified	3	262144	1	64

/proc/cpuinfo cache data
cache size : 327680 KB

From numactl --hardware

WARNING: a numactl 'node' might or might not correspond to a physical chip.
available: 2 nodes (0-1)

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Platform Notes (Continued)

```

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 43 44 45 46 47 48 49 50 51 52 53 54 55 56
57 58 59 60 61 62 63 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143
144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165
166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187
188 189 190 191
node 0 size: 515702 MB
node 0 free: 512744 MB
node 1 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 96 97 98 99 100 101 102 103 104 105 106 107 108 109 110 111 112
113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 192 193 194 195 196 197 198
199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220
221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240 241 242
243 244 245 246 247 248 249 250 251 252 253 254 255
node 1 size: 516000 MB
node 1 free: 513762 MB
node distances:
node 0 1
0: 10 21
1: 21 10

```

```

From /proc/meminfo
MemTotal: 1056463060 kB
HugePages_Total: 0
Hugepagesize: 2048 kB

```

```

/sbin/tuned-adm active
Current active profile: throughput-performance

```

```

/usr/bin/lsb_release -d
Ubuntu 22.04.3 LTS

```

```

From /etc/*release* /etc/*version*
debian_version: bookworm/sid
os-release:
PRETTY_NAME="Ubuntu 22.04.3 LTS"
NAME="Ubuntu"
VERSION_ID="22.04"
VERSION="22.04.3 LTS (Jammy Jellyfish)"
VERSION_CODENAME=jammy
ID=ubuntu
ID_LIKE=debian
HOME_URL="https://www.ubuntu.com/"

```

```

uname -a:
Linux mingyuan-Super-Server 6.2.0-39-generic #40~22.04.1-Ubuntu SMP PREEMPT_DYNAMIC
Thu Nov 16 10:53:04 UTC 2 x86_64 x86_64 x86_64 GNU/Linux

```

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Platform Notes (Continued)

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 IBRS, IBPB: conditional, RSB filling, PBRSE-eIBRS: SW sequence
CVE-2020-0543 (Special Register Buffer Data Sampling):	Not affected
CVE-2019-11135 (TSX Asynchronous Abort):	Not affected

run-level 3 Dec 21 15:43

```

SPEC is set to: /home/accel
Filesystem      Type  Size  Used Avail Use% Mounted on
/dev/nvme0n1p2 ext4  879G  250G  585G  30% /

```

```

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

```

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:
 16x NO DIMM NO DIMM
 15x Samsung M321R8GA0PB0-CWMKH 64 GB 2 rank 5600
 1x Samsung M321R8GA0PB0-CWMXH 64 GB 2 rank 5600

```

```

BIOS:
BIOS Vendor:      American Megatrends International, LLC.
BIOS Version:     2.0
BIOS Date:        10/07/2023

```

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Platform Notes (Continued)

BIOS Revision: 5.32

(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 2024.0.0 (2024.0.0.20231017)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/intel/oneapi/compiler/2024.0/bin/compiler
Configuration file: /opt/intel/oneapi/compiler/2024.0/bin/compiler/./icx.cfg

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

ifx (IFX) 2024.0.0 20231017
Copyright (C) 1985-2023 Intel Corporation. All rights reserved.

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

ifx (IFX) 2024.0.0 20231017
Copyright (C) 1985-2023 Intel Corporation. All rights reserved.
Intel(R) oneAPI DPC++/C++ Compiler 2024.0.0 (2024.0.0.20231017)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/intel/oneapi/compiler/2024.0/bin/compiler
Configuration file: /opt/intel/oneapi/compiler/2024.0/bin/compiler/./icx.cfg

Base Compiler Invocation

C benchmarks:
icx

Fortran benchmarks:
ifx

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Base Compiler Invocation (Continued)

Benchmarks using both Fortran and C:
ifx icx

Base Portability Flags

450.md: -80
457.spC: -w1,--no-relax(icx)(*) -mmodel=medium -shared-intel
-w1,--no-relax(icx)
459.miniGhost: -nofor-main

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

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

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

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.html



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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.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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