



SPECaccel[®]2023 Result

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Intel
Intel Xeon Platinum 8360Y

Intel Server M50CYP2SBSTD (2 x Intel Xeon Platinum 8360Y, 2.4GHz)

SPECaccel2023_base = 0.8276

SPECaccel2023_peak = Not Run

accel2023 License: 13

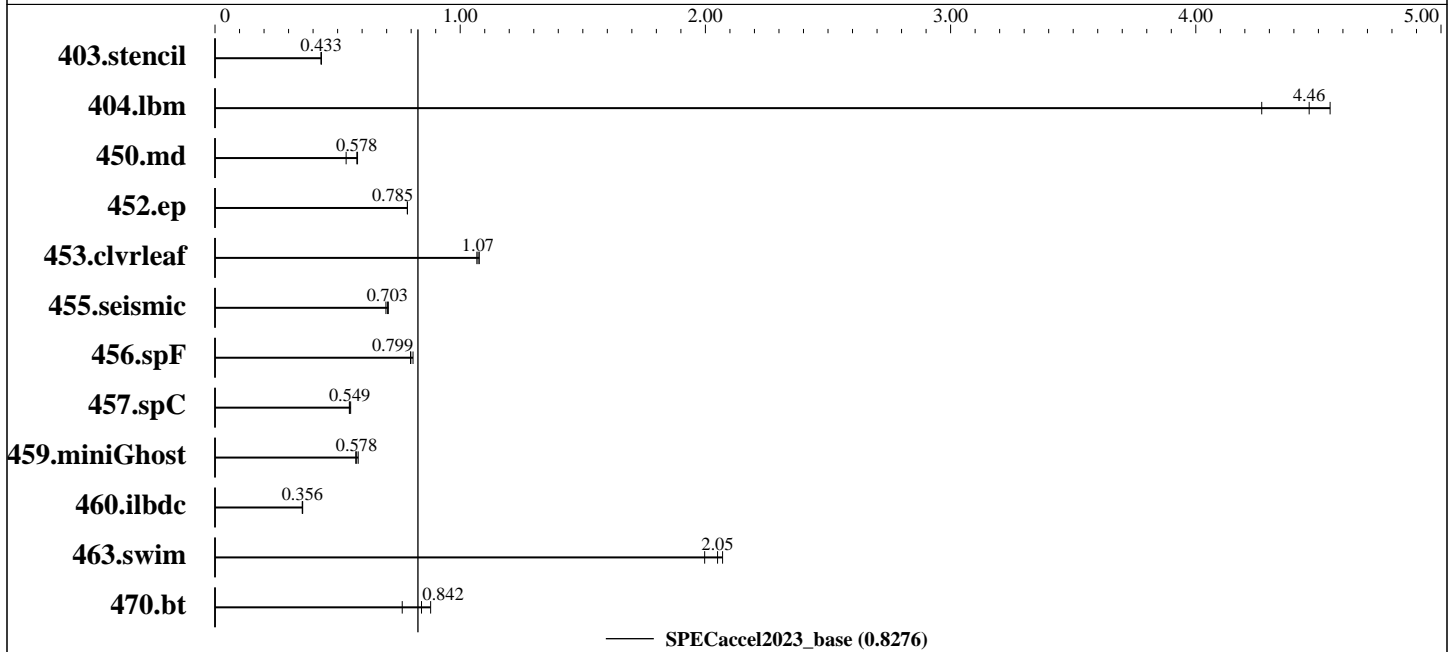
Test Sponsor: Intel

Tested by: Intel

Test Date: Dec-2023

Hardware Availability: Apr-2021

Software Availability: Nov-2023



Hardware

CPU Name: Intel Xeon Platinum 8360Y
 Max MHz.: 3500
 Nominal: 2400
 Enabled: 72 cores, 2 chips, 2 threads/core
 Orderable: 1, 2 chips
 Cache L1: 32 KB I + 48 KB D on chip per core
 L2: 1280 KB I+D on chip per core
 L3: 54 MB I+D on chip per chip
 Other: None
 Memory: 256 GB (16 x 16 GB 2Rx8 DDR4-3200Y-R ECC Registered)
 Storage: 269 TB
 Other: None
 Base Threads Run: 144
 Min. Peak Threads: --
 Max. Peak Threads: --

Accelerator

Accel Model Name: Intel Xeon Platinum 8360Y
 Accel Vendor: Intel
 Accel Name: Intel Xeon Platinum 8360Y
 Type of Accel: CPU
 Accel Connection: N/A
 Does Accel Use ECC: yes
 Accel Description: Intel Xeon Platinum 8360Y SMT ON, Turbo OFF
 Accel Driver: N/A

Software

OS: Rocky Linux 8.8 (Green Obsidian)
 SUSE Linux Enterprise Server 15 SP4
 5.14.21-150400.24.100-default
 Compiler: Intel oneAPI Compiler 2024.0.2
 Firmware: SE5C620.86B.01.01.0003.2104260124
 File System: panfs
 System State: Run level 5
 Other: None
 Base Parallel Model: SMD

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Software (Continued)

Base Threads Run: 144
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	1017	0.433	1014	0.434	<u>1015</u>	<u>0.433</u>							
404.lbm	SMD	100	4.55	<u>102</u>	<u>4.46</u>	107	4.27							
450.md	SMD	1032	0.581	<u>1037</u>	<u>0.578</u>	1122	0.535							
452.ep	SMD	529	0.785	529	0.785	<u>529</u>	<u>0.785</u>							
453.clvrlf	SMD	928	1.08	936	1.07	<u>932</u>	<u>1.07</u>							
455.seismic	SMD	1119	0.697	<u>1109</u>	<u>0.703</u>	1103	0.707							
456.spF	SMD	588	0.808	<u>595</u>	<u>0.799</u>	596	0.797							
457.spC	SMD	976	0.553	986	0.548	<u>983</u>	<u>0.549</u>							
459.miniGhost	SMD	1010	0.584	1028	0.574	<u>1021</u>	<u>0.578</u>							
460.ilbdc	SMD	1552	0.358	1558	0.356	<u>1558</u>	<u>0.356</u>							
463.swim	SMD	213	2.07	<u>215</u>	<u>2.05</u>	220	2.00							
470.bt	SMD	<u>1253</u>	<u>0.842</u>	1200	0.879	1382	0.764							

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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,36C,2T"
KMP_LIBRARY = "turnaround"
KMP_STACKSIZE = "8M"
OMP_DYNAMIC = "FALSE"
OMP_WAIT_POLICY = "active"
```

The PANASAS filesystem as described on this result page was formerly generally available. At the time of this publication, it may not be shipping, and/or may not be supported, and/or may fail to meet other tests of General Availability described in the SPEC HPG Policy document, <http://www.spec.org/hpg/policy.html>



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Platform Notes

Sysinfo program /global/panfs02/innl/abobyrr/SpecACCEL_OMP/kits/accel2023_emr/bin/sysinfo
Rev: r6622 of 2021-04-07 bla7d5f8f71be5aff70a755cad7211a0
running on eix150 Fri Dec 29 04:06:45 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 8360Y CPU @ 2.40GHz
 2 "physical id"s (chips)
144 "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 : 36
siblings : 72
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
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
```

```
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): 144
On-line CPU(s) list: 0-143
Vendor ID: GenuineIntel
Model name: Intel(R) Xeon(R) Platinum 8360Y CPU @ 2.40GHz
CPU family: 6
Model: 106
Thread(s) per core: 2
Core(s) per socket: 36
Socket(s): 2
Stepping: 6
Frequency boost: disabled
CPU max MHz: 2401.0000
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
pdpelgb rdtscp lm constant_tsc art arch_perfmon pebs bts rep_good nopl xtopology
nonstop_tsc cpuid aperfmperf pni pclmulqdq dtes64 monitor ds_cpl 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
```

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Platform Notes (Continued)

epb cat_l3 invpcid_single ssbd mba ibrs ibpb stibp ibrs_enhanced fsgsbase tsc_adjust
bmi1 hle avx2 smep bmi2 erms invpcid rtm cqm rdt_a avx512f avx512dq rdseed adx
avx512ifma clflushopt clwb intel_pt avx512cd sha_ni avx512bw avx512vl xsaveopt
xsaves xgetbv1 xsaves cqm_llc cqm_occup_llc cqm_mbm_total cqm_mbm_local
split_lock_detect wbnoinvd dtherm ida arat pln pts hwp hwp_act_window hwp_epp
hwp_pkg_req avx512vbmi umip pku ospke avx512_vbmi2 gfni vaes vpclmulqdq avx512_vnni
avx512_bitalg tme avx512_vpopcntdq la57 rdpid fsrm md_clear pconfig flush_l1d
arch_capabilities

L1d cache: 3.4 MiB (72 instances)
L1i cache: 2.3 MiB (72 instances)
L2 cache: 90 MiB (72 instances)
L3 cache: 108 MiB (2 instances)
NUMA node(s): 2
NUMA node0 CPU(s): 0-35,72-107
NUMA node1 CPU(s): 36-71,108-143
Vulnerability Gather data sampling: Vulnerable: No microcode
Vulnerability Itlb multihit: Not affected
Vulnerability L1tf: Not affected
Vulnerability Mds: Not affected
Vulnerability Meltdown: Not affected
Vulnerability Mmio stale data: Vulnerable: Clear CPU buffers attempted, no
microcode; SMT vulnerable
Vulnerability Retbleed: Not affected
Vulnerability Spec rstack overflow: Not affected
Vulnerability Spec store bypass: Mitigation; Speculative Store Bypass disabled
via prctl and seccomp
Vulnerability Spectre v1: Mitigation; usercopy/swaps barriers and __user
pointer sanitization
Vulnerability Spectre v2: Mitigation; Enhanced / Automatic 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	3.4M	12	Data	1	64	1	64
L1i	32K	2.3M	8	Instruction	1	64	1	64
L2	1.3M	90M	20	Unified	2	1024	1	64
L3	54M	108M	12	Unified	3	73728	1	64

/proc/cpuinfo cache data
cache size : 55296 KB

From numactl --hardware

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

available: 2 nodes (0-1)

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

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Platform Notes (Continued)

28 29 30 31 32 33 34 35 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

node 0 size: 128586 MB

node 0 free: 116283 MB

node 1 cpus: 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 64 65 66 67 68 69 70 71 108 109 110 111 112 113 114 115 116 117 118 119 120
121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142
143

node 1 size: 128958 MB

node 1 free: 127768 MB

node distances:

```
node  0  1
   0: 10 20
   1: 20 10
```

From /proc/meminfo

MemTotal: 263726088 kB

HugePages_Total: 0

Hugepagesize: 2048 kB

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

/usr/bin/lsb_release -d
SUSE Linux Enterprise Server 15 SP4

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

os-release:

NAME="SLES"

VERSION="15-SP4"

VERSION_ID="15.4"

PRETTY_NAME="SUSE Linux Enterprise Server 15 SP4"

ID="sles"

ID_LIKE="suse"

ANSI_COLOR="0;32"

CPE_NAME="cpe:/o:suse:sles:15:sp4"

uname -a:

Linux eix150 5.14.21-150400.24.100-default #1 SMP PREEMPT_DYNAMIC Mon Dec 4 19:12:13
UTC 2023 (3f5cd84) x86_64 x86_64 x86_64 GNU/Linux

Kernel self-reported vulnerability status:

gather_data_sampling:

CVE-2018-12207 (iTLB Multihit):

CVE-2018-3620 (L1 Terminal Fault):

Microarchitectural Data Sampling:

Vulnerable: No microcode

Not affected

Not affected

Not affected

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Platform Notes (Continued)

```

CVE-2017-5754 (Meltdown): Not affected
mmio_stale_data: Vulnerable: Clear CPU buffers
                    attempted, no microcode; SMT
                    vulnerable
retbleed: Not affected
spec_rstack_overflow: Not affected
CVE-2018-3639 (Speculative Store Bypass): Mitigation: Speculative Store
                    Bypass disabled via prctl and
                    seccomp
CVE-2017-5753 (Spectre variant 1): Mitigation: usercopy/swaps
                    barriers and __user pointer
                    sanitization
CVE-2017-5715 (Spectre variant 2): Mitigation: Enhanced / Automatic
                    IBRS, IBPB: conditional, RSB
                    filling, PBR SB-eIBRS: SW sequence
CVE-2020-0543 (Special Register Buffer Data Sampling): Not affected
CVE-2019-11135 (TSX Asynchronous Abort): Not affected

run-level 5 Dec 22 00:17

SPEC is set to: /global/panfs02/innl/abobyrr/SpecACCEL_OMP/kits/accel2023_emr
Filesystem      Type  Size  Used Avail Use% Mounted on
panfs://36.101.212.1/innl panfs 269T 245T  25T  92% /global/panfs02/innl

From /sys/devices/virtual/dmi/id
Vendor:          Intel Corporation
Product:         WHITLEY
Product Family:  Family

Cannot run dmidecode; consider saying (as root)
chmod +s /usr/sbin/dmidecode

BIOS:
  BIOS Vendor:    Intel Corporation
  BIOS Version:   SE5C620.86B.01.01.0003.2104260124
  BIOS Date:      04/26/2021

(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 2024.0.2 (2024.0.2.20231213)

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Compiler Version Notes (Continued)

Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /home/abobyrr/intel/oneapi/compiler/2024.0/bin/compiler
Configuration file:
/home/abobyrr/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) 2024.0.2 20231213
Copyright (C) 1985-2023 Intel Corporation. All rights reserved.

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

ifx (IFX) 2024.0.2 20231213
Copyright (C) 1985-2023 Intel Corporation. All rights reserved.
Intel(R) oneAPI DPC++/C++ Compiler 2024.0.2 (2024.0.2.20231213)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /home/abobyrr/intel/oneapi/compiler/2024.0/bin/compiler
Configuration file:
/home/abobyrr/intel/oneapi/compiler/2024.0/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)

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Base Portability Flags (Continued)

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

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

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Base Optimization Flags (Continued)

Benchmarks using both Fortran and C (continued):

(*) 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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