



SPECaccel[®]2023 Result

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Intel
Intel Xeon Platinum 8480+

Intel Server D50DNP2MFALACB (2 x Intel Xeon Platinum 8480+, 2.0GHz)

SPECaccel2023_base = 1.23

SPECaccel2023_peak = Not Run

accel2023 License: 13

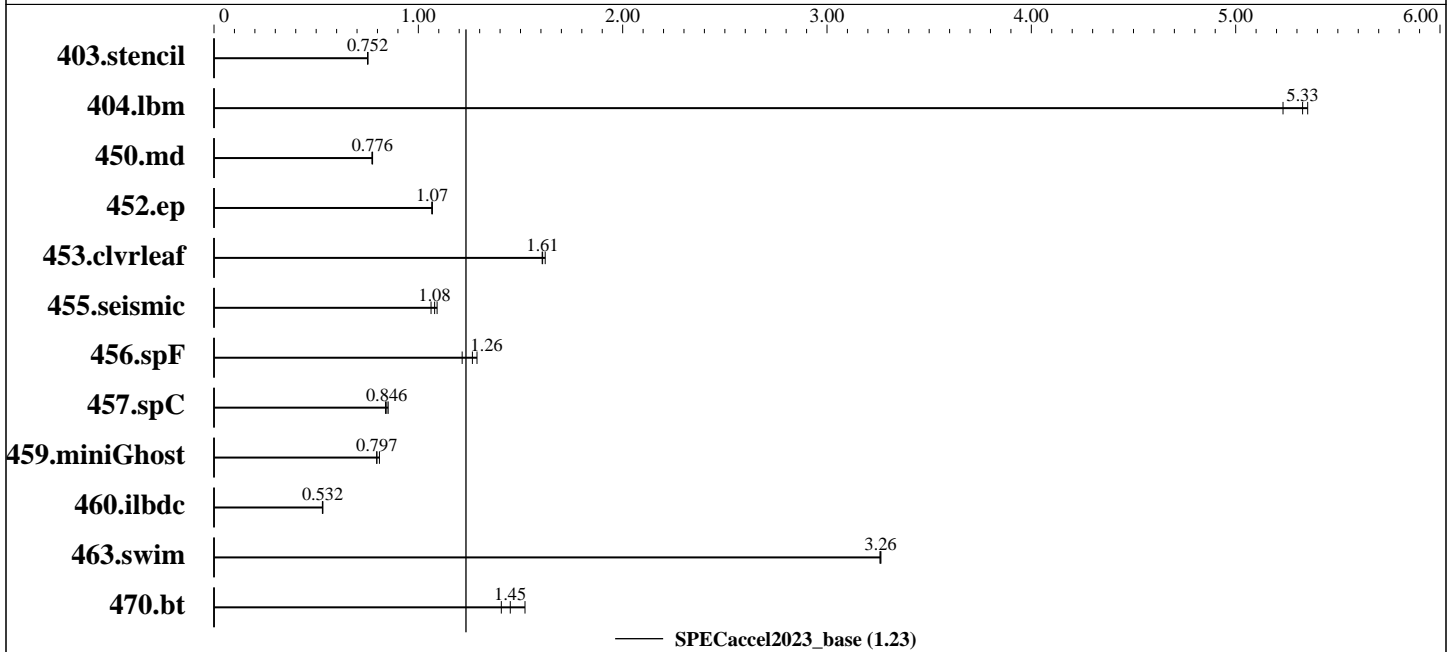
Test Sponsor: Intel

Tested by: Intel

Test Date: Dec-2023

Hardware Availability: Jan-2023

Software Availability: Nov-2023



Hardware

CPU Name: Intel Xeon Platinum 8480+
 Max MHz.: 3800
 Nominal: 2000
 Enabled: 112 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: 105 MB I+D on chip per chip
 Other: None
 Memory: 512 GB (16 x 32 GB 2Rx8 PC5-4800B)
 Storage: 269 TB
 Other: None
 Base Threads Run: 224
 Min. Peak Threads: --
 Max. Peak Threads: --

Accelerator

Accel Model Name: Intel Xeon Platinum 8480+
 Accel Vendor: Intel
 Accel Name: Intel Xeon Platinum 8480+
 Type of Accel: CPU
 Accel Connection: N/A
 Does Accel Use ECC: yes
 Accel Description: Intel Xeon Platinum 8480+
 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: SE5C7411.86B.9525.D26.2305160804
 File System: panfs
 System State: Run level 5
 Other: None
 Base Parallel Model: SMD
 Base Threads Run: 224

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Software (Continued)

Peak Parallel Models: Not Run
Max. Peak Threads: --
Min. Peak Threads: --

Results Table

Benchmark	Model	Base						Peak						
		Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Model	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
403.stencil	SMD	585	0.752	585	0.752	584	0.753							
404.lbm	SMD	85.4	5.33	87.0	5.23	85.0	5.35							
450.md	SMD	776	0.773	773	0.776	774	0.776							
452.ep	SMD	389	1.07	389	1.07	388	1.07							
453.clvleaf	SMD	617	1.62	622	1.61	623	1.61							
455.seismic	SMD	714	1.09	734	1.06	722	1.08							
456.spF	SMD	376	1.26	391	1.21	369	1.29							
457.spC	SMD	639	0.846	644	0.839	634	0.852							
459.miniGhost	SMD	729	0.810	741	0.796	740	0.797							
460.ilbdc	SMD	1043	0.532	1046	0.530	1043	0.532							
463.swim	SMD	135	3.26	135	3.26	135	3.26							
470.bt	SMD	750	1.41	728	1.45	693	1.52							

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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,56C,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 eedq007 Fri Dec 29 15:21:46 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 8480+
 2 "physical id"s (chips)
 224 "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 : 56
siblings : 112
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
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
```

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): 224
On-line CPU(s) list: 0-223
Vendor ID: GenuineIntel
Model name: Intel(R) Xeon(R) Platinum 8480+
CPU family: 6
Model: 143
Thread(s) per core: 2
Core(s) per socket: 56
Socket(s): 2
Stepping: 6
Frequency boost: disabled
CPU max MHz: 2001.0000
CPU min MHz: 800.0000
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 smx
```

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Platform Notes (Continued)

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 invpcid_single intel_ppin cdp_l2 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 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 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 avx512_fp16 amx_tile flush_lld arch_capabilities

L1d cache: 5.3 MiB (112 instances)
L1i cache: 3.5 MiB (112 instances)
L2 cache: 224 MiB (112 instances)
L3 cache: 210 MiB (2 instances)
NUMA node(s): 2
NUMA node0 CPU(s): 0-55,112-167
NUMA node1 CPU(s): 56-111,168-223
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 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	5.3M	12	Data	1	64	1	64
L1i	32K	3.5M	8	Instruction	1	64	1	64
L2	2M	224M	16	Unified	2	2048	1	64
L3	105M	210M	15	Unified	3	114688	1	64

/proc/cpuinfo cache data
cache size : 107520 KB

From numactl --hardware

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

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Platform Notes (Continued)

```

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
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 55 112
113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134
135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156
157 158 159 160 161 162 163 164 165 166 167
node 0 size: 257737 MB
node 0 free: 245175 MB
node 1 cpus: 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 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105 106
107 108 109 110 111 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184
185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206
207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223
node 1 size: 257925 MB
node 1 free: 256493 MB
node distances:
node 0 1
0: 10 21
1: 21 10

```

```

From /proc/meminfo
MemTotal:      528039236 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 eedq007 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:

(Continued on next page)



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Platform Notes (Continued)

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 and seccomp
CVE-2017-5753 (Spectre variant 1):	Mitigation: usercopy/swaggs barriers and __user pointer sanitization
CVE-2017-5715 (Spectre variant 2):	Mitigation: Enhanced / Automatic 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 5 Dec 29 15:20

```
SPEC is set to: /global/panfs02/innl/abobyr/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:         D50DNP1SBB
Product Family: Family
```

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

```
BIOS:
  BIOS Vendor:    Intel Corporation
  BIOS Version:   SE5C7411.86B.9525.D26.2305160804
  BIOS Date:      05/16/2023
```

(End of data from sysinfo program)

Compiler Version Notes

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

(Continued on next page)



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Compiler Version Notes (Continued)

| 470.bt(base)

```
-----
Intel(R) oneAPI DPC++/C++ Compiler 2024.0.2 (2024.0.2.20231213)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /home/abobyr/intel/oneapi/compiler/2024.0/bin/compiler
Configuration file:
/home/abobyr/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/abobyr/intel/oneapi/compiler/2024.0/bin/compiler
Configuration file:
/home/abobyr/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



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Base Portability Flags

450.md: -80

457.spC: -w1, --no-relax(icx)(*) -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:

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)

(*) 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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