



# SPECaccel<sup>®</sup>2023 Result

Copyright 2023 Standard Performance Evaluation Corporation

Supermicro  
(Test Sponsor: NVIDIA Corporation)

**Tesla V100-PCIE-16GB**  
**SuperServer SYS-1029GQ-TRT**

SPECaccel2023\_base = 1.23

SPECaccel2023\_peak = 1.23

accel2023 License: 9045

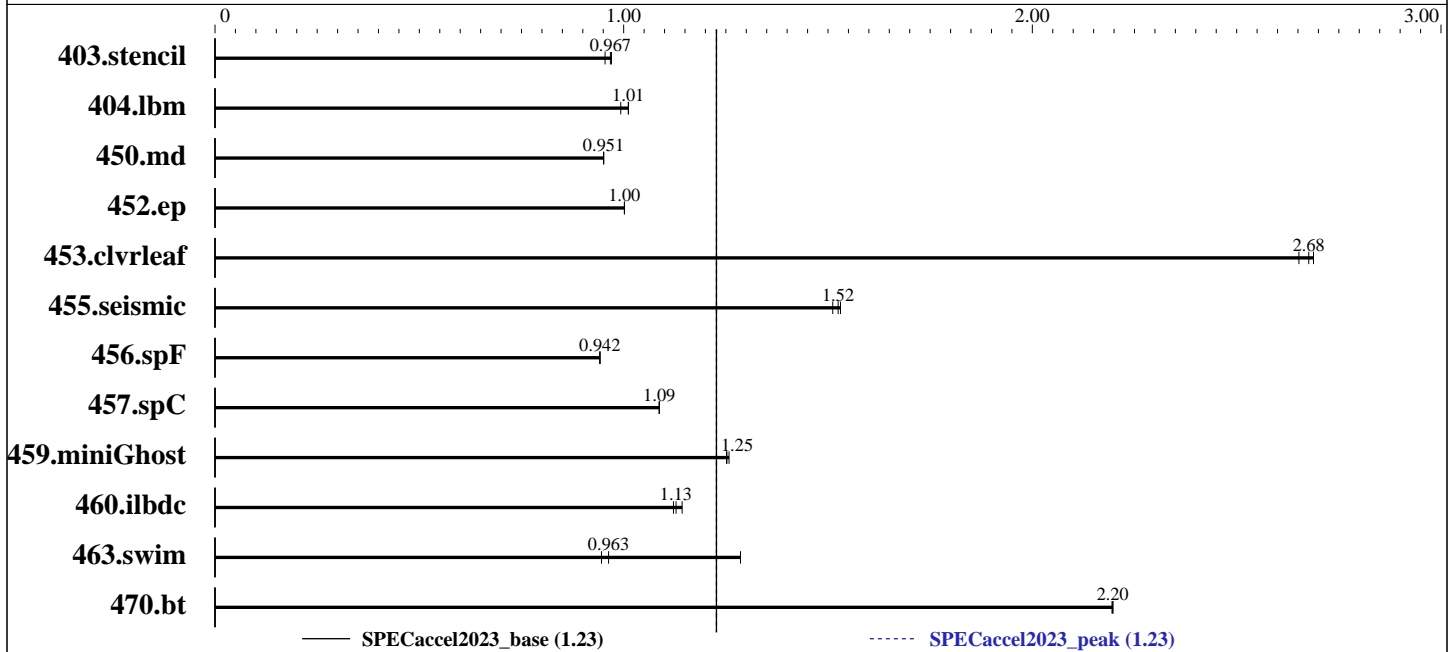
Test Sponsor: NVIDIA Corporation

Tested by: NVIDIA Corporation

Test Date: Oct-2023

Hardware Availability: Feb-2018

Software Availability: Oct-2023



### Hardware

CPU Name: Intel Xeon Gold 6148  
 Max MHz.: 3700  
 Nominal: 2400  
 Enabled: 40 cores, 2 chips, 2 threads/core  
 Orderable: 2 chips  
 Cache L1: 32 KB I + 32 KB D on chip per core  
 L2: 1 MB I+D on chip per core  
 L3: 28160 KB I+D on chip per chip  
 Other: None  
 Memory: 384 GB (12 x 32 GB 2Rx4 PC4-2666V-R)  
 Storage: 440 GB SATA  
 Other: None  
 Base Threads Run: 1  
 Min. Peak Threads: 1  
 Max. Peak Threads: 1

### Accelerator

Accel Model Name: Tesla V100  
 Accel Vendor: NVIDIA  
 Accel Name: Tesla V100-PCIE-16GB  
 Type of Accel: GPU  
 Accel Connection: PCIe 3.0 x 16  
 Does Accel Use ECC: Yes  
 Accel Description: See Notes  
 Accel Driver: NVIDIA UNIX x86\_64 Kernel Module 465.19.01

### Software

OS: Ubuntu 18.04.2 LTS  
 4.15.0-50-generic  
 Compiler: C/Fortran: Version 23.9 of NVIDIA NVHPC SDK  
 Firmware: American Megatrends Inc. 3.2 11/07/2019  
 File System: ext4  
 System State: Run level 5 (multi-user)  
 Other: None  
 Base Parallel Model: ACC  
 Base Threads Run: 1  
 Peak Parallel Models: ACC

(Continued on next page)



# SPECaccel<sup>®</sup>2023 Result

Copyright 2023 Standard Performance Evaluation Corporation

Supermicro  
(Test Sponsor: NVIDIA Corporation)

Tesla V100-PCIE-16GB  
SuperServer SYS-1029GQ-TRT

SPECaccel2023\_base = 1.23

SPECaccel2023\_peak = 1.23

accel2023 License: 9045  
Test Sponsor: NVIDIA Corporation  
Tested by: NVIDIA Corporation

Test Date: Oct-2023  
Hardware Availability: Feb-2018  
Software Availability: Oct-2023

## Software (Continued)

Max. Peak Threads: 1  
Min. Peak Threads: 1

## Results Table

Benchmark	Base								Peak							
	Model	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Model	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio		
403.stencil	ACC	454	0.970	461	0.954	<b>455</b>	<b>0.967</b>	ACC	454	0.970	461	0.954	<b>455</b>	<b>0.967</b>		
404.lbm	ACC	450	1.01	<b>450</b>	<b>1.01</b>	458	0.993	ACC	450	1.01	<b>450</b>	<b>1.01</b>	458	0.993		
450.md	ACC	631	0.951	<b>631</b>	<b>0.951</b>	631	0.951	ACC	631	0.951	<b>631</b>	<b>0.951</b>	631	0.951		
452.ep	ACC	414	1.00	<b>414</b>	<b>1.00</b>	414	1.00	ACC	414	1.00	<b>414</b>	<b>1.00</b>	414	1.00		
453.cvrleaf	ACC	377	2.65	372	2.69	<b>374</b>	<b>2.68</b>	ACC	377	2.65	372	2.69	<b>374</b>	<b>2.68</b>		
455.seismic	ACC	516	1.51	<b>512</b>	<b>1.52</b>	510	1.53	ACC	516	1.51	<b>512</b>	<b>1.52</b>	510	1.53		
456.spF	ACC	504	0.942	<b>504</b>	<b>0.942</b>	504	0.942	ACC	504	0.942	<b>504</b>	<b>0.942</b>	504	0.942		
457.spC	ACC	<b>497</b>	<b>1.09</b>	497	1.09	497	1.09	ACC	<b>497</b>	<b>1.09</b>	497	1.09	497	1.09		
459.miniGhost	ACC	471	1.25	469	1.26	<b>471</b>	<b>1.25</b>	ACC	471	1.25	469	1.26	<b>471</b>	<b>1.25</b>		
460.ilbdc	ACC	486	1.14	495	1.12	<b>492</b>	<b>1.13</b>	ACC	486	1.14	495	1.12	<b>492</b>	<b>1.13</b>		
463.swim	ACC	<b>457</b>	<b>0.963</b>	465	0.946	342	1.29	ACC	<b>457</b>	<b>0.963</b>	465	0.946	342	1.29		
470.bt	ACC	480	2.20	<b>480</b>	<b>2.20</b>	481	2.19	ACC	480	2.20	<b>480</b>	<b>2.20</b>	481	2.19		

SPEC accel2023\_base = 1.23

SPEC accel2023\_peak = 1.23

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

## Operating System Notes

Shell stacksize set to unlimited via "limit stacksize unlimited"

## Platform Notes

Information from nvaccelinfo

```

CUDA Driver Version:      11030
NVRM version:             NVIDIA UNIX x86_64 Kernel Module  465.19.01  Fri Mar 19 07:44:41 UTC 2021
Device Number:           0
Device Name:              NVIDIA Tesla V100-PCIE-16GB
Device Revision Number:   7.0
Global Memory Size:      16945512448
Number of Multiprocessors: 80
Concurrent Copy and Execution: Yes
Total Constant Memory:   65536
Total Shared Memory per Block: 49152
Registers per Block:     65536
Warp Size:               32
Maximum Threads per Block: 1024
Maximum Block Dimensions: 1024, 1024, 64
Maximum Grid Dimensions: 2147483647 x 65535 x 65535
Maximum Memory Pitch:    2147483647B

```

(Continued on next page)



# SPECaccel<sup>®</sup>2023 Result

Copyright 2023 Standard Performance Evaluation Corporation

Supermicro  
(Test Sponsor: NVIDIA Corporation)

Tesla V100-PCIE-16GB  
SuperServer SYS-1029GQ-TRT

SPECaccel2023\_base = 1.23

SPECaccel2023\_peak = 1.23

accel2023 License: 9045  
Test Sponsor: NVIDIA Corporation  
Tested by: NVIDIA Corporation

Test Date: Oct-2023  
Hardware Availability: Feb-2018  
Software Availability: Oct-2023

## Platform Notes (Continued)

```

Texture Alignment:          512B
Clock Rate:                 1380 MHz
Execution Timeout:         No
Integrated Device:         No
Can Map Host Memory:       Yes
Compute Mode:              default
Concurrent Kernels:        Yes
ECC Enabled:               Yes
Memory Clock Rate:         877 MHz
Memory Bus Width:          4096 bits
L2 Cache Size:             6291456 bytes
Max Threads Per SMP:       2048
Async Engines:             7
Unified Addressing:        Yes
Managed Memory:           Yes
Concurrent Managed Memory: Yes
Preemption Supported:      Yes
Cooperative Launch:        Yes
Default Target:            cc70

```

```

Sysinfo program /local/home/mcolgrove/ACCELv2b/bin/sysinfo
Rev: r6622 of 2021-04-07 bla7d5f8f71be5aff70a755cad7211a0
running on dev-sky5 Fri Oct 13 14:55:26 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) Gold 6148 CPU @ 2.40GHz
 2 "physical id"s (chips)
 80 "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 : 20
siblings  : 40
physical 0: cores 0 1 2 3 4 8 9 10 11 12 16 17 18 19 20 24 25 26 27 28
physical 1: cores 0 1 2 3 4 8 9 10 11 12 16 17 18 19 20 24 25 26 27 28

```

```

From lscpu from util-linux 2.31.1:
Architecture:          x86_64
CPU op-mode(s):        32-bit, 64-bit
Byte Order:            Little Endian
CPU(s):                 80
On-line CPU(s) list:   0-79
Thread(s) per core:    2
Core(s) per socket:    20

```

(Continued on next page)



# SPECaccel<sup>®</sup>2023 Result

Copyright 2023 Standard Performance Evaluation Corporation

Supermicro  
(Test Sponsor: NVIDIA Corporation)

Tesla V100-PCIE-16GB  
SuperServer SYS-1029GQ-TRT

SPECaccel2023\_base = 1.23

SPECaccel2023\_peak = 1.23

accel2023 License: 9045  
Test Sponsor: NVIDIA Corporation  
Tested by: NVIDIA Corporation

Test Date: Oct-2023  
Hardware Availability: Feb-2018  
Software Availability: Oct-2023

## Platform Notes (Continued)

```

Socket(s): 2
NUMA node(s): 2
Vendor ID: GenuineIntel
CPU family: 6
Model: 85
Model name: Intel(R) Xeon(R) Gold 6148 CPU @ 2.40GHz
Stepping: 4
CPU MHz: 1000.011
CPU max MHz: 2401.0000
CPU min MHz: 1000.0000
BogoMIPS: 4800.00
Virtualization: VT-x
L1d cache: 32K
L1i cache: 32K
L2 cache: 1024K
L3 cache: 28160K
NUMA node0 CPU(s): 0-19,40-59
NUMA node1 CPU(s): 20-39,60-79
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 rep_good nopl xtopology nonstop_tsc cpuid
aperfmpperf 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 cdp_l3
invpcid_single pti intel_ppin ssbd mba ibrs ibpb stibp tpr_shadow vnmi flexpriority
ept vpid fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2 erms invpcid rtm cqm mpx rdt_a
avx512f avx512dq rdseed adx smap clflushopt clwb intel_pt avx512cd avx512bw avx512vl
xsaveopt xsavec xgetbv1 xsaves cqm_llc cqm_occup_llc cqm_mbm_total cqm_mbm_local
dtherm ida arat pln pts pku ospke md_clear flush_l1d

```

```

/proc/cpuinfo cache data
cache size : 28160 KB

```

```

Unable to get information from 'numactl --hardware'
Please verify numactl installation.

```

```

From /proc/meminfo
MemTotal: 394882320 kB
HugePages_Total: 0
Hugepagesize: 2048 kB

```

```

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

```

```

/usr/bin/lsb_release -d
Ubuntu 18.04.2 LTS

```

(Continued on next page)



# SPECaccel<sup>®</sup>2023 Result

Copyright 2023 Standard Performance Evaluation Corporation

Supermicro  
(Test Sponsor: NVIDIA Corporation)

Tesla V100-PCIE-16GB  
SuperServer SYS-1029GQ-TRT

SPECaccel2023\_base = 1.23

SPECaccel2023\_peak = 1.23

accel2023 License: 9045  
Test Sponsor: NVIDIA Corporation  
Tested by: NVIDIA Corporation

Test Date: Oct-2023  
Hardware Availability: Feb-2018  
Software Availability: Oct-2023

## Platform Notes (Continued)

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

```
debian_version: buster/sid
os-release:
  NAME="Ubuntu"
  VERSION="18.04.2 LTS (Bionic Beaver)"
  ID=ubuntu
  ID_LIKE=debian
  PRETTY_NAME="Ubuntu 18.04.2 LTS"
  VERSION_ID="18.04"
  HOME_URL="https://www.ubuntu.com/"
  SUPPORT_URL="https://help.ubuntu.com/"
```

uname -a:

```
Linux dev-sky5 4.15.0-50-generic #54-Ubuntu SMP Mon May 6 18:46:08 UTC 2019 x86_64
x86_64 x86_64 GNU/Linux
```

Kernel self-reported vulnerability status:

CVE-2018-12207 (iTLB Multihit):	No status reported
CVE-2018-3620 (L1 Terminal Fault):	Mitigation: PTE Inversion; VMX: conditional cache flushes, SMT vulnerable
Microarchitectural Data Sampling:	Mitigation: Clear CPU buffers; SMT vulnerable
CVE-2017-5754 (Meltdown):	Mitigation: PTI
CVE-2018-3639 (Speculative Store Bypass):	Mitigation: Speculative Store Bypass disabled via prctl and seccomp
CVE-2017-5753 (Spectre variant 1):	Mitigation: __user pointer sanitization
CVE-2017-5715 (Spectre variant 2):	Mitigation: Full generic retpoline, IBPB: conditional, IBRS_FW, STIBP: conditional, RSB filling
CVE-2020-0543 (Special Register Buffer Data Sampling):	No status reported
CVE-2019-11135 (TSX Asynchronous Abort):	No status reported

run-level 5 Oct 12 10:32

```
SPEC is set to: /local/home/mcolgrove/ACCELv2b
Filesystem      Type  Size  Used Avail Use% Mounted on
/dev/sda1       ext4  440G  281G  137G  68% /
```

```
From /sys/devices/virtual/dmi/id
Vendor:          Supermicro
Product:         SYS-1029GQ-TRT
Product Family: SMC X11
```

(Continued on next page)



# SPECaccel<sup>®</sup>2023 Result

Copyright 2023 Standard Performance Evaluation Corporation

Supermicro  
(Test Sponsor: NVIDIA Corporation)

Tesla V100-PCIE-16GB  
SuperServer SYS-1029GQ-TRT

SPECaccel2023\_base = 1.23

SPECaccel2023\_peak = 1.23

accel2023 License: 9045  
Test Sponsor: NVIDIA Corporation  
Tested by: NVIDIA Corporation

Test Date: Oct-2023  
Hardware Availability: Feb-2018  
Software Availability: Oct-2023

## Platform Notes (Continued)

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

BIOS:  
BIOS Vendor: American Megatrends Inc.  
BIOS Version: 3.2  
BIOS Date: 11/07/2019

(End of data from sysinfo program)

## Compiler Version Notes

=====  
C | 457.spC(base)  
=====

/usr/lib/x86\_64-linux-gnu/crt1.o: In function `\_start':  
(.text+0x20): undefined reference to `main'  
pgacclnk: child process exit status 1: /usr/bin/ld  
nvc Rel Dev-r238789 64-bit target on x86-64 Linux -tp skylake-avx512  
NVIDIA Compilers and Tools  
Copyright (c) 2023, NVIDIA CORPORATION & AFFILIATES. All rights reserved.  
=====

=====  
C | 403.stencil(base) 404.lbm(base) 452.ep(base) 470.bt(base)  
=====

nvc Rel Dev-r238789 64-bit target on x86-64 Linux -tp skylake-avx512  
NVIDIA Compilers and Tools  
Copyright (c) 2023, NVIDIA CORPORATION & AFFILIATES. All rights reserved.  
=====

=====  
C | 457.spC(base)  
=====

/usr/lib/x86\_64-linux-gnu/crt1.o: In function `\_start':  
(.text+0x20): undefined reference to `main'  
pgacclnk: child process exit status 1: /usr/bin/ld  
nvc Rel Dev-r238789 64-bit target on x86-64 Linux -tp skylake-avx512  
NVIDIA Compilers and Tools  
Copyright (c) 2023, NVIDIA CORPORATION & AFFILIATES. All rights reserved.  
=====

=====  
C | 403.stencil(base) 404.lbm(base) 452.ep(base) 470.bt(base)  
=====

(Continued on next page)



# SPECaccel<sup>®</sup>2023 Result

Copyright 2023 Standard Performance Evaluation Corporation

Supermicro  
(Test Sponsor: NVIDIA Corporation)

Tesla V100-PCIE-16GB  
SuperServer SYS-1029GQ-TRT

SPECaccel2023\_base = 1.23

SPECaccel2023\_peak = 1.23

accel2023 License: 9045  
Test Sponsor: NVIDIA Corporation  
Tested by: NVIDIA Corporation

Test Date: Oct-2023  
Hardware Availability: Feb-2018  
Software Availability: Oct-2023

## Compiler Version Notes (Continued)

nvc Rel Dev-r238789 64-bit target on x86-64 Linux -tp skylake-avx512  
NVIDIA Compilers and Tools  
Copyright (c) 2023, NVIDIA CORPORATION & AFFILIATES. All rights reserved.

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

-----  
nvfortran Rel Dev-r238789 64-bit target on x86-64 Linux -tp skylake-avx512  
NVIDIA Compilers and Tools  
Copyright (c) 2023, NVIDIA CORPORATION & AFFILIATES. All rights reserved.

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

-----  
nvfortran Rel Dev-r238789 64-bit target on x86-64 Linux -tp skylake-avx512  
NVIDIA Compilers and Tools  
Copyright (c) 2023, NVIDIA CORPORATION & AFFILIATES. All rights reserved.  
nvc Rel Dev-r238789 64-bit target on x86-64 Linux -tp skylake-avx512  
NVIDIA Compilers and Tools  
Copyright (c) 2023, NVIDIA CORPORATION & AFFILIATES. All rights reserved.

## Base Compiler Invocation

C benchmarks:  
nvc

Fortran benchmarks:  
nvfortran

Benchmarks using both Fortran and C:  
nvfortran nvc

## Base Portability Flags

457.spC: -mcmmodel=medium -Wl,--no-relax



# SPECaccel<sup>®</sup>2023 Result

Copyright 2023 Standard Performance Evaluation Corporation

Supermicro  
(Test Sponsor: NVIDIA Corporation)

Tesla V100-PCIE-16GB  
SuperServer SYS-1029GQ-TRT

SPECaccel2023\_base = 1.23

SPECaccel2023\_peak = 1.23

accel2023 License: 9045

Test Sponsor: NVIDIA Corporation

Tested by: NVIDIA Corporation

Test Date: Oct-2023

Hardware Availability: Feb-2018

Software Availability: Oct-2023

## Base Optimization Flags

C benchmarks:

-fast -acc

Fortran benchmarks:

-fast -acc

Benchmarks using both Fortran and C:

453.clvleaf: -fast -acc

459.miniGhost: -Mnomain -fast -acc

## Peak Optimization Flags

C benchmarks:

403.stencil: basepeak = yes

404.lbm: basepeak = yes

452.ep: basepeak = yes

457.spC: basepeak = yes

470.bt: basepeak = yes

Fortran benchmarks:

450.md: basepeak = yes

455.seismic: basepeak = yes

456.spF: basepeak = yes

460.ilbdc: basepeak = yes

463.swim: basepeak = yes

Benchmarks using both Fortran and C:

453.clvleaf: basepeak = yes

459.miniGhost: basepeak = yes





# SPECaccel<sup>®</sup>2023 Result

Copyright 2023 Standard Performance Evaluation Corporation

Supermicro  
(Test Sponsor: NVIDIA Corporation)

**Tesla V100-PCIE-16GB**  
**SuperServer SYS-1029GQ-TRT**

**SPECaccel2023\_base = 1.23**

**SPECaccel2023\_peak = 1.23**

**accel2023 License:** 9045

**Test Sponsor:** NVIDIA Corporation

**Tested by:** NVIDIA Corporation

**Test Date:** Oct-2023

**Hardware Availability:** Feb-2018

**Software Availability:** Oct-2023

The flags file that was used to format this result can be browsed at  
[http://www.spec.org/accel2023/flags/nv2021\\_flags\\_v1.0.3.html](http://www.spec.org/accel2023/flags/nv2021_flags_v1.0.3.html)

You can also download the XML flags source by saving the following link:  
[http://www.spec.org/accel2023/flags/nv2021\\_flags\\_v1.0.3.xml](http://www.spec.org/accel2023/flags/nv2021_flags_v1.0.3.xml)

SPECaccel is a registered trademark of the Standard Performance Evaluation Corporation. All other brand and product names appearing in this result are trademarks or registered trademarks of their respective holders.

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

Tested with SPECaccel2023 v2.0.17 on 2023-10-13 17:55:25-0400.

Report generated on 2023-12-06 13:06:58 by accel2023 PDF formatter v112.

Originally published on 2023-11-08.