

SPEC ACCEL™ ACC Result

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Supermicro
(Test Sponsor: NVIDIA Corporation)

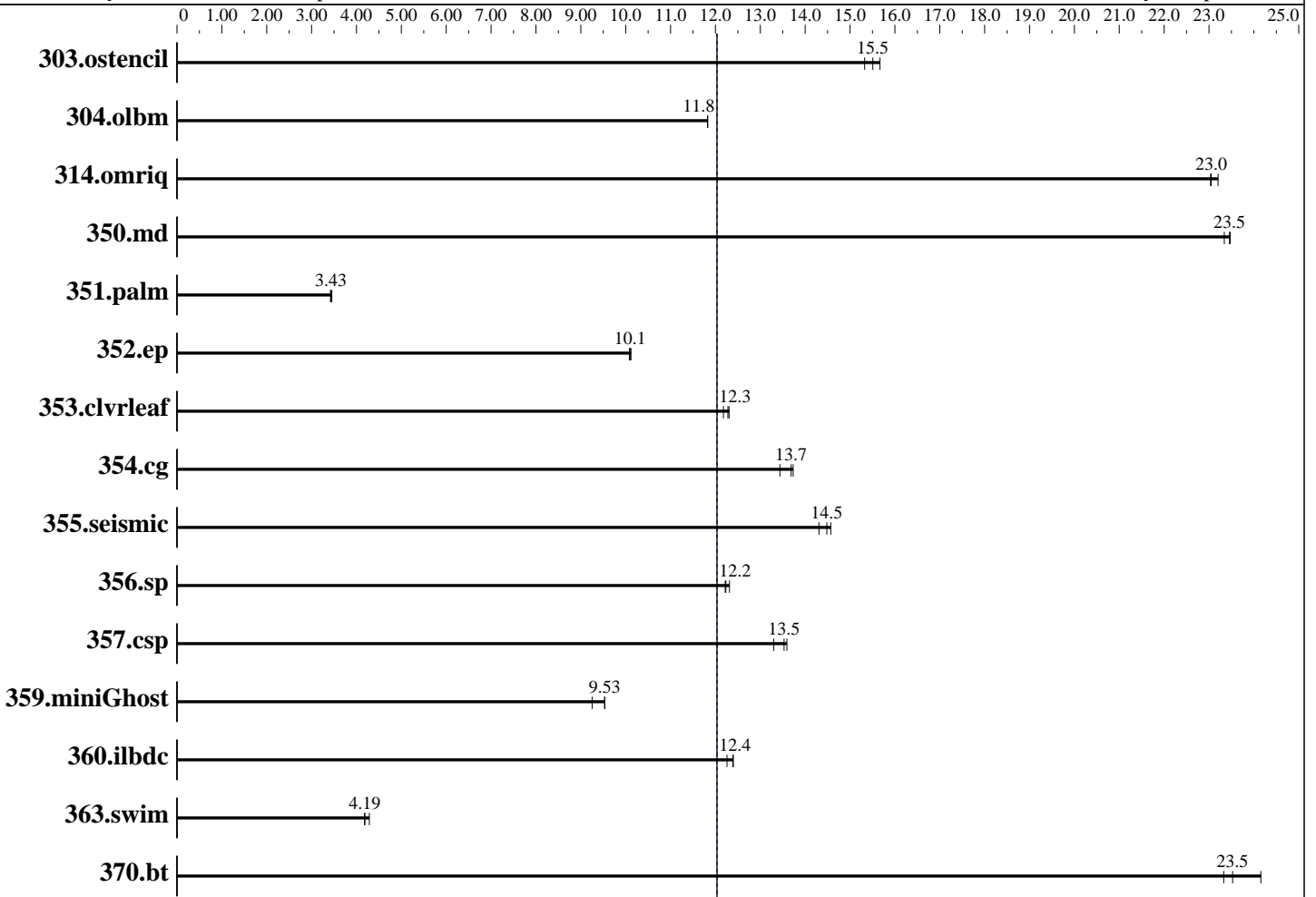
Tesla V100-PCIE-16GB
SYS-1029GQ-TRT

SPECaccel_acc_peak = 12.0

SPECaccel_acc_base = 12.0

ACCEL license: 019
Test sponsor: NVIDIA Corporation
Tested by: NVIDIA Corporation

Test date: May-2019
Hardware Availability: Nov-2017
Software Availability: Apr-2019



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Hardware

CPU Name: Intel Xeon Gold 6148
CPU Characteristics:
CPU MHz: 2400
CPU MHz Maximum: 2400
FPU: Integrated
CPU(s) enabled: 40 cores, 2 chips, 40 cores/chip, 2 threads/core
CPU(s) orderable: 1,2 chips
Primary Cache: 32 KB I + 32 KB D on chip per core
Secondary Cache: 1 MB I+D on chip per core
L3 Cache: 28160 KB I+D on chip per chip
Other Cache: None

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Accelerator

Accel Model Name: Tesla V100
Accel Vendor: NVIDIA Corporation
Accel Name: Tesla V100-PCIE-16GB
Type of Accel: GPU
Accel Connection: PCIe
Does Accel Use ECC: Yes
Accel Description: See notes
Accel Driver: NVIDIA UNIX x86_64 Kernel Module 410.79

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Hardware (Continued)

Memory: 384 GB (12 x 32 GB 2Rx8 PC4-2666V-R)
Disk Subsystem: Micron 51000 ECO M.2 480GB SATA SSD
Other Hardware: None

Software

Operating System: CentOS Linux release 7.6.1810 (Core)
3.10.0-957.1.3.el7.x86_64
Compiler: PGI Professional Edition, Release 19.4
File System: xfs
System State: Run level 3 (add definition here)
Other Software: None

Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
303.ostencil	9.46	15.3	9.26	15.7	<u>9.35</u>	<u>15.5</u>	9.46	15.3	9.26	15.7	<u>9.35</u>	<u>15.5</u>
304.olbm	<u>38.5</u>	<u>11.8</u>	38.5	11.8	38.5	11.8	<u>38.5</u>	<u>11.8</u>	38.5	11.8	38.5	11.8
314.omriq	41.2	23.2	<u>41.5</u>	<u>23.0</u>	41.5	23.0	41.2	23.2	<u>41.5</u>	<u>23.0</u>	41.5	23.0
350.md	<u>10.7</u>	<u>23.5</u>	10.7	23.5	10.8	23.3	<u>10.7</u>	<u>23.5</u>	10.7	23.5	10.8	23.3
351.palm	108	3.42	<u>108</u>	<u>3.43</u>	107	3.45	108	3.42	<u>108</u>	<u>3.43</u>	107	3.45
352.ep	52.4	10.1	52.6	10.1	<u>52.5</u>	<u>10.1</u>	52.4	10.1	52.6	10.1	<u>52.5</u>	<u>10.1</u>
353.clvleaf	36.2	12.3	<u>36.2</u>	<u>12.3</u>	36.5	12.2	36.2	12.3	<u>36.2</u>	<u>12.3</u>	36.5	12.2
354.cg	<u>29.8</u>	<u>13.7</u>	30.4	13.4	29.7	13.7	<u>29.8</u>	<u>13.7</u>	30.4	13.4	29.7	13.7
355.seismic	25.4	14.6	25.9	14.3	<u>25.5</u>	<u>14.5</u>	25.4	14.6	25.9	14.3	<u>25.5</u>	<u>14.5</u>
356.sp	22.4	12.3	<u>22.6</u>	<u>12.2</u>	22.6	12.2	22.4	12.3	<u>22.6</u>	<u>12.2</u>	22.6	12.2
357.csp	20.3	13.3	<u>20.0</u>	<u>13.5</u>	19.9	13.6	20.3	13.3	<u>20.0</u>	<u>13.5</u>	19.9	13.6
359.miniGhost	<u>38.7</u>	<u>9.53</u>	39.9	9.25	38.7	9.53	<u>38.7</u>	<u>9.53</u>	39.9	9.25	38.7	9.53
360.ilbdc	<u>29.6</u>	<u>12.4</u>	29.9	12.3	29.6	12.4	<u>29.6</u>	<u>12.4</u>	29.9	12.3	29.6	12.4
363.swim	55.0	4.18	<u>54.9</u>	<u>4.19</u>	53.6	4.29	55.0	4.18	<u>54.9</u>	<u>4.19</u>	53.6	4.29
370.bt	9.23	24.2	9.56	23.3	<u>9.48</u>	<u>23.5</u>	9.23	24.2	9.56	23.3	<u>9.48</u>	<u>23.5</u>

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

Submit Notes

The config file option 'submit' was used.

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Operating System Notes

Stacksize set to 'unlimited'

Platform Notes

Sysinfo program /local/home/toepfer/SPECACCEL/Docs/sysinfo
\$Rev: 6965 \$ \$Date:: 2015-04-21 #\$ c05a7f14b1b1765e3fe1df68447e8a35
running on perf-sky6 Thu May 30 13:32:23 2019

This section contains SUT (System Under Test) info as seen by some common utilities. To remove or add to this section, see:
<http://www.spec.org/accel/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
cache size : 28160 KB
```

From /proc/meminfo

```
MemTotal:      394869788 kB
HugePages_Total:       20
Hugepagesize:       2048 kB
```

/usr/bin/lsb_release -d

```
CentOS Linux release 7.6.1810 (Core)
```

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

```
centos-release: CentOS Linux release 7.6.1810 (Core)
centos-release-upstream: Derived from Red Hat Enterprise Linux 7.6 (Source)
os-release:
NAME="CentOS Linux"
VERSION="7 (Core)"
ID="centos"
ID_LIKE="rhel fedora"
VERSION_ID="7"
PRETTY_NAME="CentOS Linux 7 (Core)"
ANSI_COLOR="0;31"
CPE_NAME="cpe:/o:centos:centos:7"
redhat-release: CentOS Linux release 7.6.1810 (Core)
system-release: CentOS Linux release 7.6.1810 (Core)
system-release-cpe: cpe:/o:centos:centos:7
```

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Platform Notes (Continued)

```
uname -a:  
Linux perf-sky6 3.10.0-957.1.3.el7.x86_64 #1 SMP Thu Nov 29 14:49:43 UTC 2018  
x86_64 x86_64 x86_64 GNU/Linux
```

```
run-level 3 Jan 28 10:37
```

```
SPEC is set to: /local/home/toepfer/SPECACCEL  
Filesystem                Type      Size  Used Avail Use% Mounted on  
/dev/mapper/centos_perf--sky6-root xfs      443G   32G  411G   8% /  
Additional information from dmidecode:
```

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.

(End of data from sysinfo program)
Information from pgaccelinfo

```
CUDA Driver Version:          10000  
NVRM version:                 NVIDIA UNIX x86_64 Kernel Module  410.79  Thu Nov 15 10:41:04 CST 2018
```

```
Device Number:                0  
Device Name:                  Tesla V100-PCIE-16GB  
Device Revision Number:       7.0  
Global Memory Size:           16914055168  
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  
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
```

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Platform Notes (Continued)

Max Threads Per SMP: 2048
Async Engines: 7
Unified Addressing: Yes
Managed Memory: Yes
Concurrent Managed Memory: Yes
Preemption Supported: Yes
Cooperative Launch: Yes
Multi-Device: Yes
PGI Default Target: -ta=tesla:cc70

Base Compiler Invocation

C benchmarks:
pgcc

Fortran benchmarks:
pgfortran

Benchmarks using both Fortran and C:
pgcc pgfortran

Base Optimization Flags

C benchmarks:
-fast -Mnouniform -Mhugetlb -acc -ta=tesla:cc70

Fortran benchmarks:
-fast -Mnouniform -Mhugetlb -acc -ta=tesla:cc70

Benchmarks using both Fortran and C:

353.civrleaf: -fast -Mnouniform -Mhugetlb -acc -ta=tesla:cc70
359.miniGhost: -fast -Mnouniform -Mhugetlb -acc -ta=tesla:cc70 -Mnomain

Peak Optimization Flags

C benchmarks:

303.ostencil: basepeak = yes

304.olbm: basepeak = yes

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Peak Optimization Flags (Continued)

314.omriq: basepeak = yes

352.ep: basepeak = yes

354.cg: basepeak = yes

357.csp: basepeak = yes

370.bt: basepeak = yes

Fortran benchmarks:

350.md: basepeak = yes

351.palm: basepeak = yes

355.seismic: basepeak = yes

356.sp: basepeak = yes

360.ilbdc: basepeak = yes

363.swim: basepeak = yes

Benchmarks using both Fortran and C:

353.clvleaf: basepeak = yes

359.miniGhost: basepeak = yes

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For other inquiries, please contact webmaster@spec.org.

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