## SPEC ACCEL™ ACC Result

**IBM**  
(Test Sponsor: NVIDIA Corporation)

**Tesla V100-SXM2-16GB**

Power System AC922

### SPEC accel acc results

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>SPEC accel acc peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>303.ostencil</td>
<td>12.7</td>
</tr>
<tr>
<td>304.olbm</td>
<td>13.0</td>
</tr>
<tr>
<td>314.omriq</td>
<td>27.1</td>
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<td>316.md</td>
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<td>11.6</td>
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<td>312.ep</td>
<td>12.4</td>
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<tr>
<td>353.clvrleaf</td>
<td>14.3</td>
</tr>
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<td>354.cg</td>
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<td>356.sp</td>
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<td>357.csp</td>
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<tr>
<td>359.miniGhost</td>
<td>13.7</td>
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<tr>
<td>360.ilbdc</td>
<td>7.18</td>
</tr>
<tr>
<td>363.swim</td>
<td>26.5</td>
</tr>
</tbody>
</table>

### Hardware

- **CPU Name:** POWER9 2.2 (pwr 004e 1202), altivec supported
- **CPU Characteristics:**
  - CPU MHz: 2300
  - CPU MHz Maximum: 3800
  - FPU: Integrated
  - CPU(s) enabled: 20 cores, 2 chips, 20 cores/chip, 4 threads/core
  - CPU(s) orderable: 1,2 chips
  - Primary Cache: 32 KB I + 32 KB D on chip per core
  - Secondary Cache: 512 KB I+D on chip per core
  - L3 Cache: 120 MB I+D on chip per chip
  - Other Cache: None

### Accelerator

- **Accel Model Name:** TESLA V100
- **Accel Vendor:** NVIDIA Corporation
- **Accel Name:** Tesla V100-SXM2-16GB
- **Type of Accel:** GPU
- **Accel Connection:** N/A
- **Does Accel Use ECC:** Yes
- **Accel Description:** See notes
- **Accel Driver:** NVIDIA UNIX ppc64le Kernel Module 418.67

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IBM
(Test Sponsor: NVIDIA Corporation)

Tesla V100-SXM2-16GB
Power System AC922

SPECaccel_acc_peak = 13.2
SPECaccel_acc_base = 13.2

ACCEL license: 019
Test sponsor: NVIDIA Corporation
Test date: May-2019
Hardware Availability: Aug-2018
Tested by: NVIDIA Corporation
Software Availability: Apr-2019

Hardware (Continued)
Memory: 128 GB (16 x 8 GB PC4-21300)
Disk Subsystem: 1 TB Seagate SATA HDD
Other Hardware: None

Software
Operating System: Red Hat Enterprise Linux Server release 7.5 (Maipo), 4.14.0-49.8.1.el7a.ibmnvidia.6.1.ppc64le
Compiler: PGI Community Edition, Release 19.4
File System: xfs
System State: Run level 3 (add definition here)
Other Software: None

Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Base</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
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</tr>
</tbody>
</table>

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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http://www.spec.org/
**SPEC ACCEL ACC Result**

<table>
<thead>
<tr>
<th>IBM (Test Sponsor: NVIDIA Corporation)</th>
<th>Tesla V100-SXM2-16GB Power System AC922</th>
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<tbody>
<tr>
<td><strong>SPECaccel_acc_peak</strong> = 13.2</td>
<td><strong>SPECaccel_acc_base</strong> = 13.2</td>
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<tr>
<th>ACCEL license: 019</th>
<th>Test date: May-2019</th>
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**Platform Notes**

Sysinfo program /local/home/toepfer/SPECACCEL/Docs/sysinfo
$Rev: 6965 $ $Date:: 2015-04-21 #$ c05a7f14b1b1765e3fe1df68447e8a35
running on perf-wsn1 Fri May 31 10:23:56 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
- clock : 3616.000000MHz
- machine : PowerNV 8335-GTC........
- model : 8335-GTC........
- platform : PowerNV
- revision : 2.2 (pvr 004e 1202)
- cpu : POWER9, altivec supported

* 0 "physical id" tags found. Perhaps this is an older system, or a virtualized system. Not attempting to guess how to count chips/cores for this system.

* 160 "processors"
  - cores, siblings (Caution: counting these is hw and system dependent. The following excerpts from /proc/cpuinfo might not be reliable. Use with caution.)

From /proc/meminfo
- MemTotal: 150251584 kB
- HugePages_Total: 0
- Hugepagesize: 2048 kB

/usr/bin/lsb_release -d
- Red Hat Enterprise Linux Server release 7.5 (Maipo)

From /etc/*release* /etc/*version*
- os-release:
  - NAME="Red Hat Enterprise Linux Server"
  - VERSION="7.5 (Maipo)"
  - ID="rhel"
  - ID_LIKE="fedora"
  - VARIANT="Server"
  - VARIANT_ID="server"
  - VERSION_ID="7.5"
  - PRETTY_NAME="Red Hat Enterprise Linux Server 7.5 (Maipo)"
  - redhat-release: Red Hat Enterprise Linux Server release 7.5 (Maipo)
  - system-release: Red Hat Enterprise Linux Server release 7.5 (Maipo)

uname -a:
- Linux perf-wsn1 4.14.0-49.8.1.el7a.ibmnvidia.6.1.ppc64le #1 SMP Tue Jun 5

Continued on next page
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Platform Notes (Continued)

13:56:12 -03 2018 ppc64le ppc64le ppc64le GNU/Linux

run-level 3 May 24 11:17

SPEC is set to: /local/home/toepfer/SPECACCEL
Filesystem Type Size Used Avail Use% Mounted on
/dev/mapper/rhel_wsn1-root xfs 927G 116G 812G 13% /

CUDA Driver Version: 10010
NVVM version: NVIDIA UNIX ppc64le Kernel Module 418.67 Sat Apr 6 03:00:10 CDT 2019

Device Number: 0
Device Name: Tesla V100-SXM2-16GB
Device Revision Number: 7.0
Global Memory Size: 16911433728
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: 1530 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: 2
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
SPEC ACCEL ACC Result

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Test date: May-2019
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Software Availability: Apr-2019

Base Compiler Invocation

C benchmarks:
pgcc

Fortran benchmarks:
pgfortran

Benchmarks using both Fortran and C:
pgcc pgfortran

Base Optimization Flags

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

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

Benchmarks using both Fortran and C:
353.clvrleaf: -fast -Mnouniform -Mfprelaxed -acc -ta=tesla:cc70
359.miniGhost: -fast -Mnouniform -Mfprelaxed -acc -ta=tesla:cc70 -Mnomain

Peak Optimization Flags

C benchmarks:
303.ostencil: basepeak = yes
304.olbm: basepeak = yes
314.omriq: basepeak = yes
352.ep: basepeak = yes
354.cg: basepeak = yes
357.csp: basepeak = yes
370.bt: basepeak = yes

Fortran benchmarks:

Continued on next page
**SPEC ACCEL ACC Result**

IBM
(Test Sponsor: NVIDIA Corporation)

**Tesla V100-SXM2-16GB**
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**Peak Optimization Flags (Continued)**

- 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.clvrleaf: basepeak = yes
- 359.miniGhost: basepeak = yes

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For questions about this result, please contact the tester.
For other inquiries, please contact webmaster@spec.org.

Tested with SPEC ACCEL v1.2.