## SPEC ACCEL™ ACC Result

### Dell

(Test Sponsor: NVIDIA Corporation)

#### Tesla V100-PCIE-16GB

### PowerEdge R7425

**SPECaccel_acc_peak** = 12.3  
**SPECaccel_acc_base** = 12.3

<table>
<thead>
<tr>
<th>ACCEL License</th>
<th>Test Date</th>
<th>Test Sponsor</th>
<th>Hardware Availability</th>
<th>Software Availability</th>
</tr>
</thead>
<tbody>
<tr>
<td>019</td>
<td>May-2019</td>
<td>NVIDIA Corporation</td>
<td>Nov-2017</td>
<td>Apr-2019</td>
</tr>
</tbody>
</table>

### Hardware

- **CPU Name:** AMD EPYC 7451 24-Core
- **CPU Characteristics:**
  - **CPU MHz:** 2900
  - **CPU MHz Maximum:** 3200
  - **FPU:** Integrated
  - **CPU(s) enabled:** 48 cores, 2 chips, 24 cores/chip, 2 threads/core
  - **CPU(s) orderable:** 1,2 chips
  - **Primary Cache:** 64 KB I + 32 KB D on chip per core
  - **Secondary Cache:** 512 KB I+D on chip per core
  - **L3 Cache:** 64 MB I+D on chip per chip
  - **Other Cache:** None

### 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 410.66

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*Continued on next page*
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ACCEL license: 019
Test sponsor: NVIDIA Corporation
Tested by: NVIDIA Corporation

Hardware (Continued)
Memory: 256 GB (16 x 16GB PC4-21300 2666MHz DDR4)
Disk Subsystem: Samsung 1 x 960 GB SATA SSD
Other Hardware: None

Software
Operating System: CentOS Linux release 7.5.1804 (Core)
Compiler: PGI Community Edition, Release 19.4
File System: xfs
System State: Run level 3 (multi-user)
Other Software: None

Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
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<td>25.8</td>
<td>8.46</td>
<td>26.4</td>
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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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PowerEdge R7425  

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### Platform Notes

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: AMD EPYC 7451 24-Core Processor
- 2 "physical id"s (chips)
- 96 "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: 24
  - siblings: 48
- physical 0: cores 0 1 8 9 10 12 13 14 16 17 18 20 21 22 24 25 26 28 29 30
- physical 1: cores 0 1 8 9 10 12 13 14 16 17 18 20 21 22 24 25 26 28 29 30
- cache size: 512 KB

From `/proc/meminfo`

- MemTotal: 263857152 kB
- HugePages_Total: 20
- Hugepagesize: 2048 kB

From `/usr/bin/lsb_release -d`

- CentOS Linux release 7.5.1804 (Core)

From `/etc/*release*`

- centos-release: CentOS Linux release 7.5.1804 (Core)
- centos-release-upstream: Derived from Red Hat Enterprise Linux 7.5 (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 7.5.1804 (Core)
- system-release: CentOS Linux release 7.5.1804 (Core)
- system-release-cpe: cpe:/o:centos:centos:7

uname -a:

```
Linux perf-epyc4 4.19.0-1.el7.elrepo.x86_64 #1 SMP Mon Oct 22 10:40:32 EDT 2018 x86_64 x86_64 x86_64 GNU/Linux
```
## Platform Notes (Continued)

run-level 3 Nov 20 11:12

SPEC is set to: /local/home/toepfer/SPECACCEL

Filesystem | Type | Size | Used | Avail | Use% | Mounted on
---|---|---|---|---|---|---
/dev/mapper/centos_epyc4-root | xfs | 890G | 49G | 841G | 6% | /

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 SMIBOS" standard.

(End of data from sysinfo program)

Information from pgaccelinfo

<table>
<thead>
<tr>
<th>CUDA Driver Version:</th>
<th>10000</th>
</tr>
</thead>
<tbody>
<tr>
<td>NVRM version:</td>
<td>NVIDIA UNIX x86_64 Kernel Module 410.66 Wed Oct 10 12:01:53 CDT 2018</td>
</tr>
</tbody>
</table>

| 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 |
| Max Threads Per SMP: | 2048 |
| Async Engines: | 7 |
| Unified Addressing: | Yes |
| Managed Memory: | Yes |
| Concurrent Managed Memory: | Yes |
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Hardware Availability: Nov-2017
Software Availability: Apr-2019

Platform Notes (Continued)

Preemption Supported: Yes
Cooperative Launch: Yes
Multi-Device: Yes
PGI Default Target: -ta=tesla:cc70

General Notes

Environment variables set by runspec before the start of the run:
HUGETLB_PATH = "/mnt/hugetlb"

Base Compiler Invocation

C benchmarks:
pgcc

Fortran benchmarks:
pgfortran

Benchmarks using both Fortran and C:
pgcc pgfortran

Base Optimization Flags

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

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

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

Peak Optimization Flags

C benchmarks:
303.ostencil: basepeak = yes

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Peak Optimization Flags (Continued)

304.olbm: basepeak = yes
314.omriq: basepeak = yes
352.cp: 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.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.