SPEC ACCEL™ ACC Result

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IBM Corporation
(Test Sponsor: NVIDIA Corporation)

Tesla P100

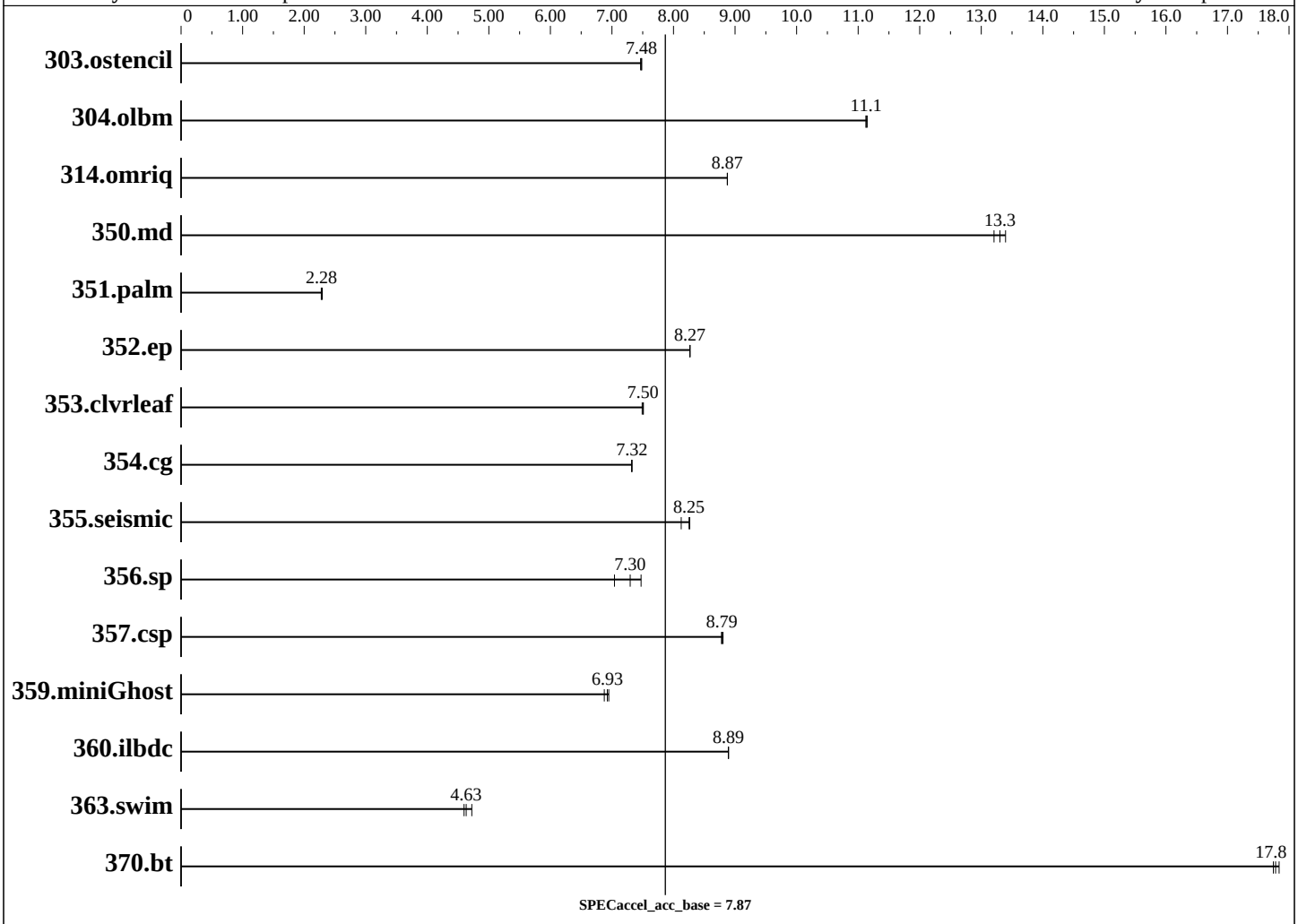
IBM Power Systems S822LC for High Performance Computing (8335-GTB)

SPECaccel_acc_peak = Not Run

SPECaccel_acc_base = 7.87

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

Test date: Sep-2016
Hardware Availability: Sep-2016
Software Availability: Sep-2016



Hardware

CPU Name:	POWER8 with NVLink
CPU Characteristics:	
CPU MHz:	3259
CPU MHz Maximum:	3857
FPU:	Integrated
CPU(s) enabled:	16 cores, 2 chips, 8 cores/chip, 8 threads/core
CPU(s) orderable:	2 chips
Primary Cache:	32 KB I + 64 KB D on chip per core
Secondary Cache:	512 KB I+D on chip per core
L3 Cache:	8 MB I+D on chip per chip
Other Cache:	16 MB I+D off chip per 4 DIMMs

Continued on next page

Accelerator

Accel Model Name:	Tesla P100
Accel Vendor:	NVIDIA
Accel Name:	Tesla P100
Type of Accel:	GPU
Accel Connection:	NVLink
Does Accel Use ECC:	Yes
Accel Description:	See Notes
Accel Driver:	NVIDIA UNIX ppc64le Kernel Module 361.85

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Hardware (Continued)

Memory: 512 GB (16 x 32 GB RDIMMs) DDR4 1600 MHz
Disk Subsystem: 2x 1TB SATA 6.0Gb/s 7200 RPM
Other Hardware: No

Software

Operating System: Ubuntu 16.04.1 LTS 4.4.0-34-generic
Compiler: PGI Accelerator Fortran/C/C++ Server, Release 16.9
File System: ext4
System State: Run level 5 (multi-user)
Other Software: None

Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
303.ostencil	**19.4**	**7.48**	19.4	7.47	19.4	7.48						
304.olbm	**40.9**	**11.1**	40.9	11.1	40.8	11.1						
314.omriq	108	8.87	108	8.88	**108**	**8.87**						
350.md	18.8	13.4	**18.9**	**13.3**	19.1	13.2						
351.palm	**162**	**2.28**	162	2.28	161	2.29						
352.ep	64.1	8.27	64.1	8.27	**64.1**	**8.27**						
353.clvrleaf	59.2	7.51	59.4	7.49	**59.3**	**7.50**						
354.cg	**55.7**	**7.32**	55.7	7.33	55.7	7.32						
355.seismic	**44.8**	**8.25**	44.8	8.26	45.5	8.13						
356.sp	36.9	7.47	**37.8**	**7.30**	39.2	7.04						
357.csp	**30.7**	**8.79**	30.7	8.81	30.8	8.78						
359.miniGhost	**53.3**	**6.93**	53.1	6.95	53.7	6.88						
360.ilbdc	**41.3**	**8.89**	41.3	8.89	41.3	8.89						
363.swim	50.0	4.60	**49.7**	**4.63**	48.7	4.72						
370.bt	**12.5**	**17.8**	12.6	17.7	12.5	17.8						

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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SPECaccel_acc_base = 7.87

ACCEL license:	019	**Test date:**	Sep-2016
Test sponsor:	NVIDIA Corporation	**Hardware Availability:**	Sep-2016
Tested by:	IBM Corporation	**Software Availability:**	Sep-2016

Platform Notes

```
Sysinfo program /home/user/SPECACCEL/Docs/sysinfo
$Rev: 6874 $ $Date:: 2013-11-20 #$ 0953404ef7e75a5f9bbb534c6de3f831
running on gar1 Fri Sep  2 21:51:47 2016

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 : 2061.000000MHz
   clock : 2094.000000MHz
   clock : 2360.000000MHz
   clock : 2593.000000MHz
   clock : 2693.000000MHz
   clock : 4023.000000MHz
   machine : PowerNV 8335-GTB
   model : 8335-GTB
   platform : PowerNV
   revision : 1.0 (pvr 004c 0100)
   cpu : POWER8NVL (raw), 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.
*
      128 "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:       535690880 kB
   HugePages_Total:       0
   Hugepagesize:      16384 kB

/usr/bin/lsb_release -d
   Ubuntu 16.04.1 LTS

From /etc/*release* /etc/*version*
   debian_version: stretch/sid
   os-release:
      NAME="Ubuntu"
      VERSION="16.04.1 LTS (Xenial Xerus)"
      ID=ubuntu
      ID_LIKE=debian
      PRETTY_NAME="Ubuntu 16.04.1 LTS"
      VERSION_ID="16.04"
      HOME_URL="http://www.ubuntu.com/"
      SUPPORT_URL="http://help.ubuntu.com/"
```

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Platform Notes (Continued)

```
uname -a:
   Linux gar1 4.4.0-34-generic #53-Ubuntu SMP Wed Jul 27 16:04:07 UTC 2016
   ppc64le ppc64le ppc64le GNU/Linux

run-level 5 Sep 2 16:36

SPEC is set to: /home/user/SPECACCEL
   Filesystem                Type  Size  Used Avail Use% Mounted on
   /dev/mapper/g82L--vg-root ext4  788G  232G  517G  31% /

(End of data from sysinfo program)
Information from pgaccelinfo
CUDA Driver Version:           8000
NVRM version:                  NVIDIA UNIX ppc64le Kernel Module  361.85
Device Number:                 0
Device Name:                   Tesla P100-SXM2-16GB
Device Revision Number:        6.0
Global Memory Size:            17071669248
Number of Multiprocessors:     56
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:                    1480 MHz
Execution Timeout:             No
Integrated Device:             No
Can Map Host Memory:           Yes
Compute Mode:                  default
Concurrent Kernels:            Yes
ECC Enabled:                   Yes
Memory Clock Rate:             715 MHz
Memory Bus Width:              4096 bits
L2 Cache Size:                 4194304 bytes
Max Threads Per SMP:           2048
Async Engines:                 3
Unified Addressing:            Yes
Managed Memory:                Yes
PGI Compiler Option:           -ta=tesla:cc60
```

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Base Compiler Invocation

C benchmarks:
`pgcc`

Fortran benchmarks:
`pgfortran`

Benchmarks using both Fortran and C:
`pgcc pgfortran`

Base Optimization Flags

C benchmarks:
`-fast -acc -ta=tesla:cc60`

Fortran benchmarks:
`-fast -acc -ta=tesla:cc60`

Benchmarks using both Fortran and C:

353.clvrleaf: `-fast -acc -ta=tesla:cc60`

359.miniGhost: `-fast -acc -ta=tesla:cc60 -Mnomain`

The flags file that was used to format this result can be browsed at
`http://www.spec.org/accel/flags/pgi2016_flags.html`

You can also download the XML flags source by saving the following link:
`http://www.spec.org/accel/flags/pgi2016_flags.xml`

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

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