SPEC ACCEL™ ACC Result

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IBM
(Test Sponsor: Oak Ridge National Laboratory)

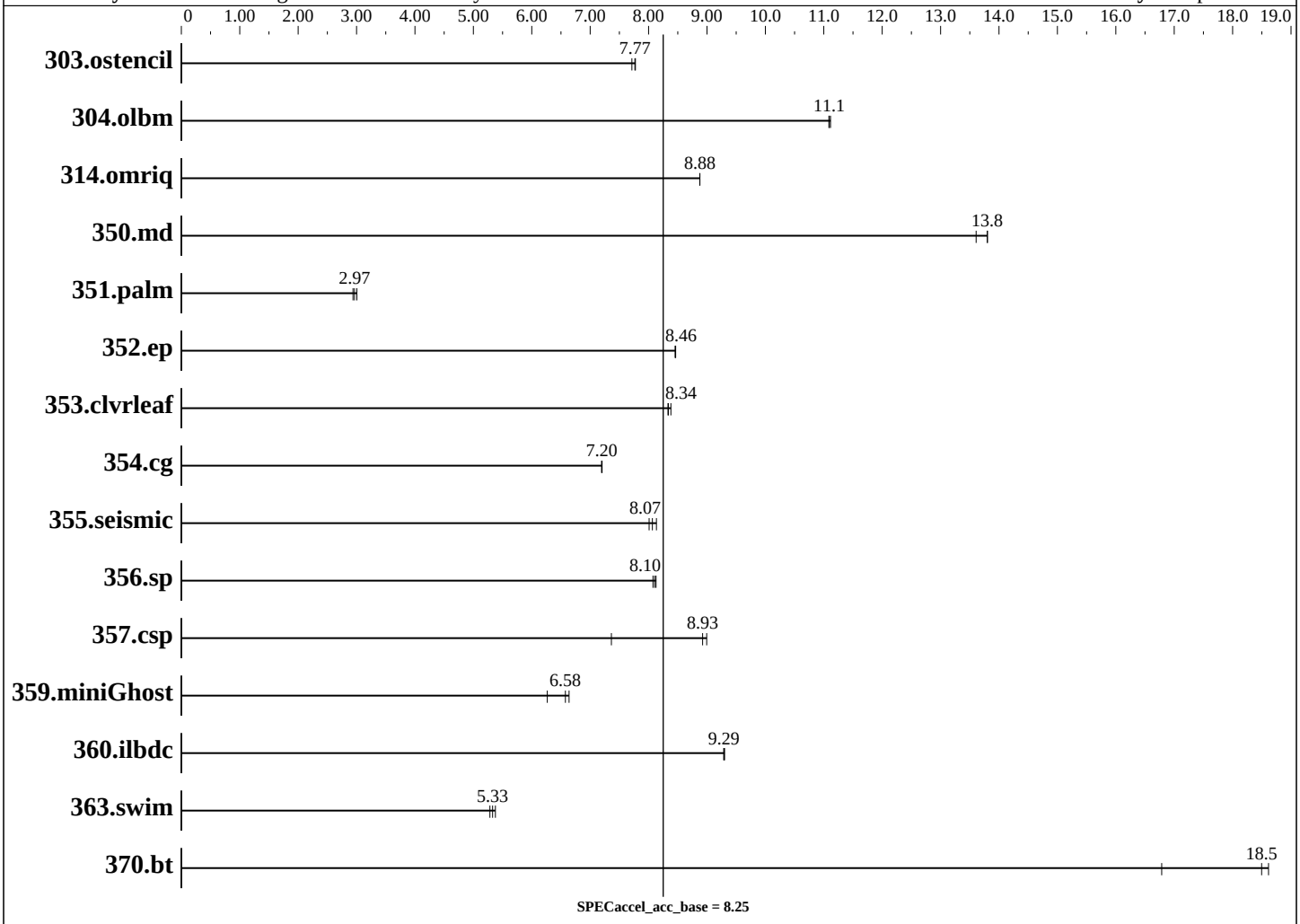
NVIDIA Tesla P100
IBM POWER8 S822LC

SPECaccel_acc_peak = Not Run

SPECaccel_acc_base = 8.25

ACCEL license: 054A
Test sponsor: Oak Ridge National Laboratory
Tested by: Oak Ridge National Laboratory

Test date: May-2017
Hardware Availability: Dec-2016
Software Availability: Apr-2017



Hardware

CPU Name:	POWER8NVL (raw), altivec supported
CPU Characteristics:	Simultaneous Multithreading (SMT) on
CPU MHz:	3259
CPU MHz Maximum:	3857
FPU:	Integrated
CPU(s) enabled:	20 cores, 2 chips, 10 cores/chip, 8 threads/core
CPU(s) orderable:	1,2 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

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Accelerator

Accel Model Name:	Tesla P100
Accel Vendor:	NVIDIA
Accel Name:	NVIDIA Tesla P100
Type of Accel:	GPU
Accel Connection:	NVLink 1.0
Does Accel Use ECC:	yes
Accel Description:	NVIDIA Tesla P100 "Pascal" GPU
Accel Driver:	NVIDIA CUDA driver 375.51

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Hardware (Continued)

Memory: 256 GB DDR4 1600 MHz
Disk Subsystem: 14P Lustre
Other Hardware: --

Software

Operating System: Red Hat Enterprise Linux Server release 7.3 (Maipo)
3.10.0-514.el7.ppc64le
Compiler: PGI Premier Edition, Release 17.4
File System: lustre
System State: Run level 5 (Multi-user, graphical)
Other Software: NVIDIA CUDA Toolkit 8.0.54

Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
303.ostencil	18.6	7.77	**18.7**	**7.77**	18.8	7.71						
304.olbm	41.0	11.1	**41.0**	**11.1**	40.9	11.1						
314.omriq	108	8.88	108	8.88	**108**	**8.88**						
350.md	18.5	13.6	18.3	13.8	**18.3**	**13.8**						
351.palm	126	2.94	123	3.01	**125**	**2.97**						
352.ep	62.6	8.46	62.7	8.46	**62.7**	**8.46**						
353.clvrleaf	**53.4**	**8.34**	53.4	8.33	53.1	8.38						
354.cg	56.6	7.20	**56.7**	**7.20**	56.7	7.20						
355.seismic	45.5	8.13	46.2	8.01	**45.9**	**8.07**						
356.sp	**34.1**	**8.10**	34.2	8.07	34.0	8.13						
357.csp	**30.3**	**8.93**	36.7	7.36	30.0	9.00						
359.miniGhost	**56.1**	**6.58**	58.9	6.27	55.6	6.64						
360.ilbdc	**39.5**	**9.29**	39.5	9.29	39.5	9.30						
363.swim	42.8	5.38	43.5	5.28	**43.2**	**5.33**						
370.bt	12.0	18.6	13.3	16.8	**12.1**	**18.5**						

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

Platform Notes

```
Sysinfo program
/lustre/atlas2/stf006/scratch/vgv/spec/accel/kit75summitdev/Docs/sysinfo
$Rev: 6965 $ $Date:: 2015-04-21 #$ c05a7f14b1b1765e3fe1df68447e8a35
running on summitdev-r0c2n09 Tue May  9 19:25:53 2017

This section contains SUT (System Under Test) info as seen by
```

Continued on next page

Platform Notes (Continued)

```
some common utilities.  To remove or add to this section, see:
  http://www.spec.org/accel/Docs/config.html#sysinfo

From /proc/cpuinfo
   clock : 2394.000000MHz
   clock : 2427.000000MHz
   clock : 2460.000000MHz
   clock : 2626.000000MHz
   clock : 2726.000000MHz
   clock : 2926.000000MHz
   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.
*
      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:       266799296 kB
   HugePages_Total:       0
   Hugepagesize:      16384 kB

From /etc/*release* /etc/*version*
   os-release:
      NAME="Red Hat Enterprise Linux Server"
      VERSION="7.3 (Maipo)"
      ID="rhel"
      ID_LIKE="fedora"
      VERSION_ID="7.3"
      PRETTY_NAME="Red Hat Enterprise Linux Server 7.3 (Maipo)"
      ANSI_COLOR="0;31"
      CPE_NAME="cpe:/o:redhat:enterprise_linux:7.3:GA:server"
   redhat-release: Red Hat Enterprise Linux Server release 7.3 (Maipo)
   system-release: Red Hat Enterprise Linux Server release 7.3 (Maipo)
   system-release-cpe: cpe:/o:redhat:enterprise_linux:7.3:ga:server

uname -a:
   Linux summitdev-r0c2n09 3.10.0-514.el7.ppc64le #1 SMP Wed Oct 19 11:27:06 EDT
   2016 ppc64le ppc64le ppc64le GNU/Linux

run-level 5 Apr 26 16:49
```

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Platform Notes (Continued)

```
 SPEC is set to: /lustre/atlas2/stf006/scratch/vgv/spec/accel/kit75summitdev
    Filesystem                Type    Size  Used Avail Use% Mounted on
    10.36.226.77@o2ib:/atlas2 lustre   14P  7.3P  5.9P  56% /lustre/atlas2

 (End of data from sysinfo program)
```

Base Compiler Invocation

C benchmarks:
pgcc

Fortran benchmarks:
pgfortran

Benchmarks using both Fortran and C:
pgcc pgfortran

Base Optimization Flags

C benchmarks:
-fast -Mfprelaxed -acc -ta=tesla:cc60 -ta=tesla:cuda8.0

Fortran benchmarks:
-fast -Mfprelaxed -acc -ta=tesla:cc60 -ta=tesla:cuda8.0

Benchmarks using both Fortran and C:

353.clvrleaf: -fast -Mfprelaxed -acc -ta=tesla:cc60 -ta=tesla:cuda8.0

359.miniGhost: -fast -Mfprelaxed -acc -ta=tesla:cc60 -ta=tesla:cuda8.0 -Mnomain

The flags file that was used to format this result can be browsed at
https://www.spec.org/accel/flags/pgi2017_flags.20170621.html

You can also download the XML flags source by saving the following link:
https://www.spec.org/accel/flags/pgi2017_flags.20170621.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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