SPEC ACCEL™ OCL Result

Copyright 2015-2019 Standard Performance Evaluation Corporation

Lenovo Global Technology

NVIDIA Tesla V100-PCIE-16GB

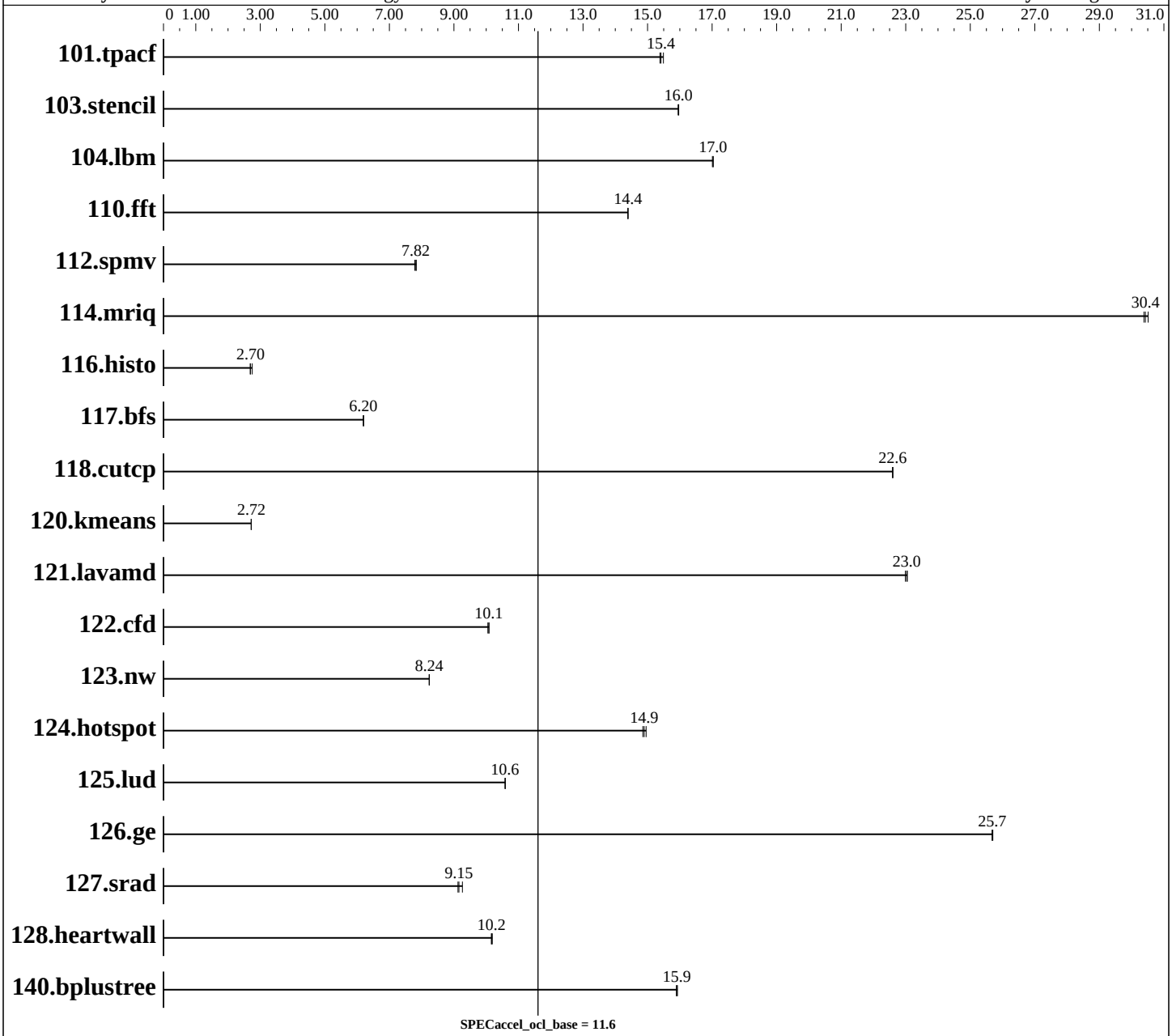
ThinkSystem SR655

SPECaccel_ocl_peak = Not Run

SPECaccel_ocl_base = 11.6

ACCEL license: 28
Test sponsor: Lenovo Global Technology
Tested by: Lenovo Global Technology

Test date: Jul-2019
Hardware Availability: Aug-2019
Software Availability: Aug-2019



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Hardware

CPU Name:	AMD EPYC 7742 64-Core
CPU Characteristics:	Turbo up to 3.4 GHz
CPU MHz:	2250
CPU MHz Maximum:	3400
FPU:	Integrated
CPU(s) enabled:	64 cores, 1 chip, 64 cores/chip, 2 threads/core
CPU(s) orderable:	1 chip
Primary Cache:	32 KB I + 32 KB D on chip per core
Secondary Cache:	512 KB I+D on chip per core
L3 Cache:	256 MB I+D on chip per chip 16 MB shared / 4 cores
Other Cache:	None
Memory:	256 GB (8 x 32 GB 2Rx8 PC4-3200AA-R)
Disk Subsystem:	1 x 480 GB SATA 2.5" SSD
Other Hardware:	None

Accelerator

Accel Model Name:	Tesla V100
Accel Vendor:	NVIDIA Corporation
Accel Name:	NVIDIA Tesla V100-PCIE-16GB
Type of Accel:	GPU
Accel Connection:	PCIe 3.0 16x
Does Accel Use ECC:	Yes
Accel Description:	NVIDIA Tesla V100-PCIE-16GB
Accel Driver:	NVIDIA UNIX x86_64 Kernel Module 418.39

Software

Operating System:	SUSE Linux Enterprise Server 12 SP4 4.12.14-94.41-default
Compiler:	PGI Accelerator Server Complete, Release 19.5
File System:	xfs
System State:	Multi-user, run level 3
Other Software:	CUDA 10.1 SDK

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Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
101.tpacf	6.91	15.5	**6.94**	**15.4**	6.96	15.4						
103.stencil	**7.83**	**16.0**	7.83	16.0	7.84	15.9						
104.lbm	6.58	17.0	**6.58**	**17.0**	6.57	17.0						
110.fft	7.71	14.4	7.71	14.4	**7.71**	**14.4**						
112.spmv	18.8	7.83	18.9	7.79	**18.8**	**7.82**						
114.mriq	3.57	30.5	**3.58**	**30.4**	3.59	30.4						
116.histo	42.4	2.69	41.5	2.75	**42.3**	**2.70**						
117.bfs	**18.9**	**6.20**	18.9	6.20	18.9	6.19						
118.cutcp	4.38	22.6	**4.38**	**22.6**	4.38	22.6						
120.kmeans	36.7	2.72	**36.7**	**2.72**	36.8	2.71						
121.lavamd	**4.73**	**23.0**	4.73	23.1	4.74	23.0						
122.cfd	12.5	10.1	12.5	10.1	**12.5**	**10.1**						
123.nw	14.0	8.24	**14.0**	**8.24**	14.0	8.24						
124.hotspot	7.62	15.0	**7.65**	**14.9**	7.67	14.9						
125.lud	**11.2**	**10.6**	11.2	10.6	11.2	10.6						
126.ge	6.03	25.7	6.04	25.7	**6.04**	**25.7**						
127.srad	**12.5**	**9.15**	12.5	9.13	12.3	9.26						
128.heartwall	**10.4**	**10.2**	10.4	10.2	10.4	10.2						
140.bplustree	6.78	15.9	**6.79**	**15.9**	6.80	15.9						

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.
```

Platform Notes

```
Sysinfo program /home/ACCEL1.2/Docs/sysinfo
$Rev: 6965 $ $Date:: 2015-04-21 #$ c05a7f14b1b1765e3fe1df68447e8a35
running on bannerrh75 Wed Mar 27 00:21:09 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 : AMD EPYC 7742 64-Core Processor
```

Continued on next page

Platform Notes (Continued)

```
      1 "physical id"s (chips)
      64 "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 : 64
      siblings  : 64
      physical 0: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21
      22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46
      47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63
   cache size : 512 KB

From /proc/meminfo
   MemTotal:       264016424 kB
   HugePages_Total:       0
   Hugepagesize:       2048 kB

/usr/bin/lsb_release -d
   SUSE Linux Enterprise Server 12 SP4

From /etc/*release* /etc/*version*
   SuSE-release:
      SUSE Linux Enterprise Server 12 (x86_64)
      VERSION = 12
      PATCHLEVEL = 4
      # This file is deprecated and will be removed in a future service pack or
      release.
      # Please check /etc/os-release for details about this release.
   os-release:
      NAME="SLES"
      VERSION="12-SP4"
      VERSION_ID="12.4"
      PRETTY_NAME="SUSE Linux Enterprise Server 12 SP4"
      ID="sles"
      ANSI_COLOR="0;32"
      CPE_NAME="cpe:/o:suse:sles:12:sp4"

uname -a:
   Linux bannerrh75 4.12.14-94.41-default #1 SMP Wed Oct 31 12:25:04 UTC 2018
   (3090901) x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Jul 3 10:26

SPEC is set to: /home/ACCEL1.2
   Filesystem     Type  Size  Used Avail Use% Mounted on
   /dev/sda4      xfs   245G   72G  174G  30% /home
Additional information from dmidecode:

   Warning: Use caution when you interpret this section. The 'dmidecode' program
```

Continued on next page

Platform Notes (Continued)

```
     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.

    BIOS Lenovo CFE101Y 06/22/2019
    Memory:
     8x Samsung M393A4K40DB2-CWE 32 GB 2 rank 3200 MHz
     8x Unknown Unknown

  (End of data from sysinfo program)
```

General Notes

```
Yes: The test sponsor attests, as of date of publication,
that CVE-2017-5754 (Meltdown) is mitigated in the system as tested and documented.
Yes: The test sponsor attests, as of date of publication,
that CVE-2017-5753 (Spectre variant 1) is mitigated in the system as tested and documented.
Yes: The test sponsor attests, as of date of publication,
that CVE-2017-5715 (Spectre variant 2) is mitigated in the system as tested and documented.
```

Base Runtime Environment

C benchmarks:

```
OpenCL Platform: NVIDIA CUDA, OpenCL 1.2 CUDA 10.1.105
OpenCL Device #0: Tesla V100-PCIE-16GB, v 418.39
```

C++ benchmarks:

```
OpenCL Platform: NVIDIA CUDA, OpenCL 1.2 CUDA 10.1.105
OpenCL Device #0: Tesla V100-PCIE-16GB, v 418.39
```

Base Compiler Invocation

C benchmarks:

```
pgcc
```

C++ benchmarks:

```
pgc++
```

Base Portability Flags

116.histo: `-DSPEC_LOCAL_MEMORY_HEADROOM=1`

Continued on next page

Base Portability Flags (Continued)

118.cutcp: `-D__GNUC__`

Base Optimization Flags

C benchmarks:
`-fast -Mfprelaxed`

C++ benchmarks:
`-fast -Mfprelaxed`

Base Other Flags

C benchmarks:
`-I/usr/local/cuda-10.1/targets/x86_64-linux/include`
`-L/usr/local/cuda-10.1/lib64 -lOpenCL`

C++ benchmarks:
`-I/usr/local/cuda-10.1/targets/x86_64-linux/include`
`-L/usr/local/cuda-10.1/lib64 -lOpenCL`

The flags files that were used to format this result can be browsed at
`https://www.spec.org/accel/flags/pgi2014_flags.20190321.html`
`https://www.spec.org/accel/flags/Lenovo-SPECACCEL1.2_Platform_Flags.20190807.html`

You can also download the XML flags sources by saving the following links:
`https://www.spec.org/accel/flags/pgi2014_flags.20190321.xml`
`https://www.spec.org/accel/flags/Lenovo-SPECACCEL1.2_Platform_Flags.20190807.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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