Dell Inc.

PowerEdge M640 (Intel Xeon Gold 6136, 3.00 GHz)

CPU2017 License: 55
Test Sponsor: Dell Inc.
Tested by: Dell Inc.

Dell Inc.

PowerEdge M640 (Intel Xeon Gold 6136, 3.00 GHz)

SPECspeed2017_int_base = 8.81
SPECspeed2017_int_peak = Not Run

Test Date: Nov-2017
Hardware Availability: Sep-2017
Software Availability: Sep-2017

Threads

<table>
<thead>
<tr>
<th>600.perlbench_s</th>
<th>48</th>
</tr>
</thead>
<tbody>
<tr>
<td>602.gcc_s</td>
<td>48</td>
</tr>
<tr>
<td>605.mcf_s</td>
<td>48</td>
</tr>
<tr>
<td>620.omnetpp_s</td>
<td>48</td>
</tr>
<tr>
<td>623.xalancbmk_s</td>
<td>48</td>
</tr>
<tr>
<td>625.x264_s</td>
<td>48</td>
</tr>
<tr>
<td>631.deepsjeng_s</td>
<td>48</td>
</tr>
<tr>
<td>641.leela_s</td>
<td>48</td>
</tr>
<tr>
<td>648.exchange2_s</td>
<td>48</td>
</tr>
<tr>
<td>657.xz_s</td>
<td>48</td>
</tr>
</tbody>
</table>

Hardware

CPU Name: Intel Xeon Gold 6136
Max MHz.: 3700
Nominal: 3000
Enabled: 24 cores, 2 chips, 2 threads/core
Orderable: 1,2 chips
Cache L1: 32 KB I + 32 KB D on chip per core
L2: 1 MB I+D on chip per core
L3: 24.75 MB I+D on chip per chip
Other: None
Memory: 192 GB (12 x 16 GB 2Rx8 PC4-2666V-R)
Storage: 960 GB SATA SSD
Other: None

Software

OS: SUSE Linux Enterprise Server 12 SP3 (x86_64)
Compiler: C/C++: Version 18.0.0.128 of Intel C/C++ Compiler for Linux;
Fortran: Version 18.0.0.128 of Intel Fortran Compiler for Linux
Parallel: Yes
Firmware: Version 1.0.0 released Aug-2017
File System: btrfs
System State: Run level 3 (multi-user)
Base Pointers: 64-bit
Peak Pointers: 32/64-bit
Other: jemalloc: jemalloc memory allocator library V5.0.1;
Dell Inc.
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<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>600.perlbench_s</td>
<td>48</td>
<td>287</td>
<td>6.18</td>
<td>289</td>
<td>6.14</td>
<td>286</td>
<td>6.20</td>
</tr>
<tr>
<td>602.gcc_s</td>
<td>48</td>
<td>418</td>
<td>9.52</td>
<td>421</td>
<td>9.47</td>
<td>424</td>
<td>9.39</td>
</tr>
<tr>
<td>605.mcf_s</td>
<td>48</td>
<td>435</td>
<td>10.9</td>
<td>425</td>
<td>11.1</td>
<td>435</td>
<td>10.8</td>
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<tr>
<td>620.omnetpp_s</td>
<td>48</td>
<td>251</td>
<td>6.49</td>
<td>263</td>
<td>6.19</td>
<td>273</td>
<td>5.98</td>
</tr>
<tr>
<td>623.xalancbmk_s</td>
<td>48</td>
<td>148</td>
<td>9.55</td>
<td>149</td>
<td>9.49</td>
<td>149</td>
<td>9.51</td>
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<tr>
<td>625.x264_s</td>
<td>48</td>
<td>150</td>
<td>11.7</td>
<td>151</td>
<td>11.7</td>
<td>151</td>
<td>11.7</td>
</tr>
<tr>
<td>631.deepsjeng_s</td>
<td>48</td>
<td>284</td>
<td>5.04</td>
<td>284</td>
<td>5.04</td>
<td>284</td>
<td>5.04</td>
</tr>
<tr>
<td>641.leela_s</td>
<td>48</td>
<td>394</td>
<td>4.33</td>
<td>394</td>
<td>4.33</td>
<td>394</td>
<td>4.34</td>
</tr>
<tr>
<td>648.exchange2_s</td>
<td>48</td>
<td>220</td>
<td>13.4</td>
<td>221</td>
<td>13.3</td>
<td>221</td>
<td>13.3</td>
</tr>
<tr>
<td>657.xz_s</td>
<td>48</td>
<td>282</td>
<td>21.9</td>
<td>280</td>
<td>22.1</td>
<td>281</td>
<td>22.0</td>
</tr>
</tbody>
</table>

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

Operating System Notes

Stack size set to unlimited using "ulimit -s unlimited"

General Notes

Environment variables set by runcpu before the start of the run:

<table>
<thead>
<tr>
<th>Environment Variable</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>KMP_AFFINITY</td>
<td>&quot;granularity=fine,scatter&quot;</td>
</tr>
<tr>
<td>OMP_STACKSIZE</td>
<td>&quot;192M&quot;</td>
</tr>
</tbody>
</table>

Binaries compiled on a system with 1x Intel Core i7-4790 CPU + 32GB RAM memory using Redhat Enterprise Linux 7.4
Transparent Huge Pages enabled by default
Prior to runcpu invocation
Filesyste page cache synced and cleared with:
sync; echo 3>/proc/sys/vm/drop_caches

jemalloc: configured and built at default for 32bit (i686) and 64bit (x86_64) targets;
jemalloc: built with the RedHat Enterprise 7.4, and the system compiler gcc 4.8.5;
jemalloc: sources available via jemalloc.net

No: The test sponsor attests, as of date of publication, that CVE-2017-5754 (Meltdown) is mitigated in the system as tested and documented.
No: 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.
No: The test sponsor attests, as of date of publication, that CVE-2017-5715 (Spectre variant 2)
SPEC CPU2017 Integer Speed Result

Dell Inc. PowerEdge M640 (Intel Xeon Gold 6136, 3.00 GHz) SPECspeed2017_int_base = 8.81
SPECspeed2017_int_peak = Not Run

CPU2017 License: 55
Test Sponsor: Dell Inc.
Tested by: Dell Inc.

Test Date: Nov-2017
Hardware Availability: Sep-2017
Software Availability: Sep-2017

General Notes (Continued)

is mitigated in the system as tested and documented.

This benchmark result is intended to provide perspective on past performance using the historical hardware and/or software described on this result page.

The system as described on this result page was formerly generally available. At the time of this publication, it may not be shipping, and/or may not be supported, and/or may fail to meet other tests of General Availability described in the SPEC OSG Policy document, http://www.spec.org/osg/policy.html

This measured result may not be representative of the result that would be measured were this benchmark run with hardware and software available as of the publication date.

Platform Notes

BIOS settings:
Virtualization Technology disabled
System Profile set to Custom
CPU Power Management set to Maximum Performance
Memory Frequency set to Maximum Performance
Turbo Boost enabled
C States disabled
Memory Patrol Scrub disabled
PCI ASPM L1 Link Power Management disabled
Sysinfo program /root/cpu2017/bin/sysinfo
Rev: r5797 of 2017-06-14 96c45e4568ad54c135fd618bdc091c0f
running on linux-ejwa Wed Nov 1 01:47:48 2017

SUT (System Under Test) info as seen by some common utilities.
For more information on this section, see
https://www.spec.org/cpu2017/Docs/config.html#sysinfo

From /proc/cpuinfo
model name : Intel(R) Xeon(R) Gold 6136 CPU @ 3.00GHz
  2 "physical id"s (chips)
  48 "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 : 12
siblings : 24
physical 0: cores 0 1 2 3 4 9 10 16 18 19 25 26
physical 1: cores 0 1 2 3 8 9 10 11 18 19 24 27

(Continued on next page)
Dell Inc. PowerEdge M640 (Intel Xeon Gold 6136, 3.00 GHz)

SPEC CPU2017 Integer Speed Result

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Platform Notes (Continued)

From lscpu:
Architecture: x86_64
CPU op-mode(s): 32-bit, 64-bit
Byte Order: Little Endian
CPU(s): 48
On-line CPU(s) list: 0-47
Thread(s) per core: 2
Core(s) per socket: 12
Socket(s): 2
NUMA node(s): 2
Vendor ID: GenuineIntel
CPU family: 6
Model: 85
Model name: Intel(R) Xeon(R) Gold 6136 CPU @ 3.00GHz
Stepping: 4
CPU MHz: 2993.033
BogoMIPS: 5986.06
Virtualization: VT-x
L1d cache: 32K
L1i cache: 32K
L2 cache: 1024K
L3 cache: 25344K
NUMA node0 CPU(s):
   0,2,4,6,8,10,12,14,16,18,20,22,24,26,28,30,32,34,36,38,40,42,44,46
NUMA node1 CPU(s):
   1,3,5,7,9,11,13,15,17,19,21,23,25,27,29,31,33,35,37,39,41,43,45,47
Flags: fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov
pat pse36 clflush dts acpi mmx fxsr sse sse2 ss ht tm pbe syscall nx pdpe1gb rdtscp
lm constant_tsc art arch_perfmon pebs bts rep_good nopl xtopology nonstop_tsc
aperfmpref eagerfpu pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 sdbg
fma cx16 xtrm pclm cmid clda sse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer aes
xsave avx f16c rdrand lahf_lm abrm stnewprefetch ida arat epb pnb pte dtherm intel_pt
pr_shadow vmmi flexpriority ept vpid fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2
ers invpcid rtm cqm mpx avx512f avx512dq rdseed adx smap clflushopt clwb avx512cd
avx512bw avx512vl xsaveopt xsaves xgetbv1 cqm_llc cqm_occup_llc pku ospke

From numactl --hardware WARNING: a numactl 'node' might or might not correspond to a
physical chip.
available: 2 nodes (0-1)
node 0 cpus: 0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46
node 0 size: 95335 MB
node 0 free: 94711 MB
node 1 cpus: 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33 35 37 39 41 43 45 47
node 1 size: 96736 MB

(Continued on next page)
SPEC CPU2017 Integer Speed Result

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Platform Notes (Continued)

node 1 free: 96334 MB
node distances:
node 0 1
  0: 10 21
  1: 21 10

From /proc/meminfo
MemTotal: 196682072 kB
HugePages_Total: 0
Hugepagesize: 2048 kB

From /etc/*release* /etc/*version*
SuSE-release:
  VERSION = 12
  PATCHLEVEL = 3
  # 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-SP3"
  VERSION_ID="12.3"
  PRETTY_NAME="SUSE Linux Enterprise Server 12 SP3"
  ID="sles"
  ANSI_COLOR="0;32"
  CPE_NAME="cpe:/o:suse:sles:12:sp3"

uname -a:
Linux linux-ejwa 4.4.70-2-default #1 SMP Wed Jun 7 15:12:06 UTC 2017 (4502c76) x86_64
x86_64 x86_64 GNU/Linux

run-level 3 Nov 1 01:43

SPEC is set to: /root/cpu2017
  Filesystem     Type Size Used Avail Use% Mounted on
  /dev/sda3      btrfs  855G  25G  830G   3% /

Additional information from dmidecode follows. 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 SMBIOS" standard.

  BIOS Dell Inc. 1.0.0 08/10/2017
  Memory:
    9x 002C00B3002C 18ASF2G72PDZ-2G6D1 16 GB 2 rank 2666
    3x 00AD00B300AD HMA82GR7AFR8N-VK 16 GB 2 rank 2666
    4x Not Specified Not Specified

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Platform Notes (Continued)
(End of data from sysinfo program)

Compiler Version Notes

==============================================================================
 CC  600.perlbench_s(base) 602.gcc_s(base) 605.mcf_s(base) 625.x264_s(base)  
     657.xz_s(base)  
------------------------------------------------------------------------------
icc (ICC) 18.0.0 20170811  
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.  
------------------------------------------------------------------------------

==============================================================================
 CXXC 620.omnetpp_s(base) 623.xalanchmk_s(base) 631.deepsjeng_s(base)  
     641.leela_s(base)  
------------------------------------------------------------------------------
icpc (ICC) 18.0.0 20170811  
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.  
------------------------------------------------------------------------------

==============================================================================
 FC  648.exchange2_s(base)  
------------------------------------------------------------------------------
ifort (IFORT) 18.0.0 20170811  
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.  
------------------------------------------------------------------------------

Base Compiler Invocation

C benchmarks:
icc

C++ benchmarks:
icpc

Fortran benchmarks:
ifort

Base Portability Flags

600.perlbench_s: -DSPEC_LP64 -DSPEC_LINUX_X64
602.gcc_s: -DSPEC_LP64

(Continued on next page)
### SPEC CPU2017 Integer Speed Result

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### Base Portability Flags (Continued)

605.mcf_s: -DSPEC_LP64  
623.xalancbmk_s: -DSPEC_LP64 -DSPEC_LINUX  
625.x264_s: -DSPEC_LP64  
631.deepsjeng_s: -DSPEC_LP64  
641.leela_s: -DSPEC_LP64  
648.exchange2_s: -DSPEC_LP64  
657.xz_s: -DSPEC_LP64

### Base Optimization Flags

**C benchmarks:**  
-Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div  
-qopt-mem-layout-trans=3 -qopenmp -DSPEC_OPENMP  
-L/usr/local/je5.0.1-64/lib -ljemalloc

**C++ benchmarks:**  
-Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div  
-qopt-mem-layout-trans=3 -L/usr/local/je5.0.1-64/lib -ljemalloc

**Fortran benchmarks:**  
-Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div  
-qopt-mem-layout-trans=3 -nostandard-realloc-lhs -align array32byte  
-L/usr/local/je5.0.1-64/lib -ljemalloc

### Base Other Flags

**C benchmarks:**  
-m64 -std=c11

**C++ benchmarks:**  
-m64

**Fortran benchmarks:**  
-m64

The flags files that were used to format this result can be browsed at  
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You can also download the XML flags sources by saving the following links:

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