**SPEC® CPU2017 Integer Speed Result**

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**Hewlett Packard Enterprise**
(Test Sponsor: HPE)
ProLiant DL380 Gen10
(2.10 GHz, Intel Xeon Gold 6152)

**SPECspeed2017_int_base = 8.89**

**SPECspeed2017_int_peak = Not Run**

<table>
<thead>
<tr>
<th>Hardware</th>
<th>Software</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU Name: Intel Xeon Gold 6152</td>
<td>OS: Red Hat Enterprise Linux Server release 7.3 (Maipo)</td>
</tr>
<tr>
<td>Max MHz.: 3700</td>
<td>Kernel 3.10.0-514.el7.x86_64</td>
</tr>
<tr>
<td>Nominal: 2100</td>
<td>Compiler: C/C++: Version 18.0.0.128 of Intel C/C++</td>
</tr>
<tr>
<td>Enabled: 44 cores, 2 chips</td>
<td>Compiler for Linux: Fortran: Version 18.0.0.128 of Intel Fortran</td>
</tr>
<tr>
<td>Orderable: 1, 2 chip(s)</td>
<td>Compiler for Linux</td>
</tr>
<tr>
<td>Cache L1: 32 KB I + 32 KB D on chip per core</td>
<td>Parallel: Yes</td>
</tr>
<tr>
<td>L3: 30.25 MB I+D on chip per chip</td>
<td>File System: xfs</td>
</tr>
<tr>
<td>Other: None</td>
<td>System State: Run level 3 (multi-user)</td>
</tr>
<tr>
<td>Memory: 192 GB (24 x 8 GB 2Rx8 PC4-2666V-R)</td>
<td>Base Pointers: 64-bit</td>
</tr>
<tr>
<td>Storage: 1 x 960 GB SSD SATA, RAID 0</td>
<td>Peak Pointers: Not Applicable</td>
</tr>
<tr>
<td>Other: None</td>
<td>Other: jemalloc: jemalloc memory allocator library V5.0.1;</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tool</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>600.perlbench_s</td>
<td>6.18</td>
</tr>
<tr>
<td>602.gcc_s</td>
<td>9.12</td>
</tr>
<tr>
<td>605.mcf_s</td>
<td>11.2</td>
</tr>
<tr>
<td>620.omnetpp_s</td>
<td>6.92</td>
</tr>
<tr>
<td>623.xalan_chmk_s</td>
<td>9.36</td>
</tr>
<tr>
<td>625.x264_s</td>
<td>11.8</td>
</tr>
<tr>
<td>631.deepsjeng_s</td>
<td>5.07</td>
</tr>
<tr>
<td>641.leela_s</td>
<td>4.32</td>
</tr>
<tr>
<td>648.exchange2_s</td>
<td>13.4</td>
</tr>
<tr>
<td>657.xz_s</td>
<td>21.9</td>
</tr>
</tbody>
</table>

**Threads**

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

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**Software**

- **OS:** Red Hat Enterprise Linux Server release 7.3 (Maipo)
- **Kernel:** 3.10.0-514.el7.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:** HPE BIOS Version U30 released Oct-2017 (tested with U30 9/29/2017)
- **File System:** xfs
- **System State:** Run level 3 (multi-user)
- **Base Pointers:** 64-bit
- **Peak Pointers:** Not Applicable
- **Other:** jemalloc: jemalloc memory allocator library V5.0.1; 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 from jemalloc.net or releases
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SPECspeed2017_int_base = 8.89
SPECspeed2017_int_peak = Not Run

Test Date: Oct-2017
Hardware Availability: Oct-2017
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Results Table

<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>
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<tbody>
<tr>
<td>600.perlbench_s</td>
<td>44</td>
<td>288</td>
<td>6.17</td>
<td>286</td>
<td>6.22</td>
<td>287</td>
<td>6.18</td>
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<tr>
<td>602.gcc_s</td>
<td>44</td>
<td>436</td>
<td>9.12</td>
<td>435</td>
<td>9.16</td>
<td>439</td>
<td>9.07</td>
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<tr>
<td>605.mcf_s</td>
<td>44</td>
<td>421</td>
<td>9.99</td>
<td>420</td>
<td>9.11</td>
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<tr>
<td>620.omnetpp_s</td>
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<td>236</td>
<td>6.90</td>
<td>234</td>
<td>6.96</td>
<td>236</td>
<td>6.92</td>
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<tr>
<td>623.xalancbmk_s</td>
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<td>151</td>
<td>4.36</td>
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<td>4.36</td>
<td>152</td>
<td>4.31</td>
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<tr>
<td>625.x264_s</td>
<td>44</td>
<td>149</td>
<td>11.8</td>
<td>149</td>
<td>11.8</td>
<td>150</td>
<td>11.8</td>
</tr>
<tr>
<td>631.deepsjeng_s</td>
<td>44</td>
<td>283</td>
<td>5.43</td>
<td>283</td>
<td>5.43</td>
<td>283</td>
<td>5.07</td>
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<tr>
<td>641.leela_s</td>
<td>44</td>
<td>394</td>
<td>4.33</td>
<td>395</td>
<td>4.32</td>
<td>395</td>
<td>4.32</td>
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<td>648.exchange2_s</td>
<td>44</td>
<td>220</td>
<td>13.4</td>
<td>220</td>
<td>13.4</td>
<td>220</td>
<td>13.3</td>
</tr>
<tr>
<td>657.xz_s</td>
<td>44</td>
<td>283</td>
<td>21.8</td>
<td>283</td>
<td>21.9</td>
<td>280</td>
<td>22.0</td>
</tr>
</tbody>
</table>

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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"
Transparent Huge Pages enabled by default
Filesystem page cache cleared with:
    shell invocation of 'sync; echo 3 > /proc/sys/vm/drop_caches' prior to run
irqbalance disabled with "systemctl stop irqbalance"
tuned profile set with "tuned-adm profile throughput-performance"

General Notes

Environment variables set by runcpu before the start of the run:
KMP_AFFINITY = "granularity=fine,compact"
LD_LIBRARY_PATH = "/home/cpu2017/lib/ia32:/home/cpu2017/lib/intel64:/home/cpu2017/je5.0.1-32"
LD_LIBRARY_PATH = "$LD_LIBRARY_PATH:/home/cpu2017/je5.0.1-64"
OMP_STACKSIZE = "192M"

Binaries compiled on a system with 1x Intel Core i7-4790 CPU + 32GB RAM
memory using Redhat Enterprise Linux 7.4

Platform Notes

BIOS Configuration:
    Intel Hyperthreading set to Disabled
    Thermal Configuration set to Maximum Cooling
    Memory Patrol Scrubbing set to Disabled
    LLC Prefetcher set to Enabled
    LLC Dead Line Allocation set to Disabled
    Stale A to S set to Disabled

(Continued on next page)
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Platform Notes (Continued)

Workload Profile set to General Peak Frequency Compute
Energy/Performance Bias set to Maximum Performance
Uncore Frequency Scaling set to Auto
Workload Profile set to General Peak Frequency Compute
NUMA Group Size Optimization set to Flat

Sysinfo program /home/cpu2017/bin/sysinfo
Rev: r5797 of 2017-06-14 96c45e4568ad54c135fd618bcc091c0f
running on DL380Gen10-2 Thu Oct 12 02:57:29 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 6152 CPU @ 2.10GHz
 2 "physical id"s (chips)
 44 "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 : 22
siblings : 22
physical 0: cores 0 1 2 3 4 5 8 9 10 11 12 16 17 18 19 20 21 24 25 26 27 28
physical 1: cores 0 1 2 3 4 5 8 9 10 11 12 16 17 18 19 20 21 24 25 26 27 28

From lscpu:
Architecture: x86_64
CPU op-mode(s): 32-bit, 64-bit
Byte Order: Little Endian
CPU(s): 44
On-line CPU(s) list: 0-43
Thread(s) per core: 1
Core(s) per socket: 22
Socket(s): 2
NUMA node(s): 2
Vendor ID: GenuineIntel
CPU family: 6
Model: 85
Model name: Intel(R) Xeon(R) Gold 6152 CPU @ 2.10GHz
Stepping: 4
CPU MHz: 2100.000
BogoMIPS: 4204.59
Virtualization: VT-x
L1d cache: 32K
L1i cache: 32K
L2 cache: 1024K
L3 cache: 30976K

(Continued on next page)
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**Platform Notes (Continued)**

NUMA node0 CPU(s): 0-21  
NUMA node1 CPU(s): 22-43  

/proc/cpuinfo cache data  
cache size : 30976 KB  

From numactl --hardware WARNING: a numactl 'node' might or might not correspond to a physical chip.  

From /proc/meminfo  
MemTotal: 197570616 kB  
HugePages_Total: 0  
Hugepagesize: 2048 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)  

uname -a:  
Linux DL380Gen10-2 3.10.0-514.el7.x86_64 #1 SMP Wed Oct 19 11:24:13 EDT 2016 x86_64  
x86_64 x86_64 GNU/Linux  
run-level 3 Oct 12 02:54  

SPEC is set to: /home/cpu2017  
Filesystem Type Size Used Avail Use% Mounted on  
/dev/mapper/rhel-home xfs 504G 30G 474G 6% /home  

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 SMI BIOS" standard.

BIOS HPE U30 09/29/2017  
Memory:  
24x UNKNOWN NOT AVAILABLE 8 GB 2 rank 2666  

(End of data from sysinfo program)
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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.xalancbmk_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.
(Continued on next page)
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### Base Portability Flags (Continued)

- 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`  
- `-lipo`  
- `-O3`  
- `-no-prec-div`

**C++** benchmarks:
- `-Wl,-z,muldefs`  
- `-xCORE-AVX512`  
- `-lipo`  
- `-O3`  
- `-no-prec-div`

**Fortran** benchmarks:
- `-Wl,-z,muldefs`  
- `-xCORE-AVX512`  
- `-lipo`  
- `-O3`  
- `-no-prec-div`

### 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:
- [http://www.spec.org/cpu2017/flags/HPE-Platform-Flags-Intel-V1.2-SKX-revD.html](http://www.spec.org/cpu2017/flags/HPE-Platform-Flags-Intel-V1.2-SKX-revD.html)

You can also download the XML flags sources by saving the following links:
- [http://www.spec.org/cpu2017/flags/HPE-Platform-Flags-Intel-V1.2-SKX-revD.xml](http://www.spec.org/cpu2017/flags/HPE-Platform-Flags-Intel-V1.2-SKX-revD.xml)
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For questions about this result, please contact the tester. For other inquiries, please contact info@spec.org.

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