**Hewlett Packard Enterprise**  
(2.70 GHz, Intel Xeon Gold 6150)

<table>
<thead>
<tr>
<th>SPECspeed2017_int_base = 8.75</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECspeed2017_int_peak = Not Run</td>
</tr>
</tbody>
</table>

**CPU2017 License:** 3  
**Test Sponsor:** HPE  
**Tested by:** HPE  
**Test Date:** Dec-2017  
**Hardware Availability:** Oct-2017  
**Software Availability:** Sep-2017

### Hardware

- **CPU Name:** Intel Xeon Gold 6150  
- **Max MHz.:** 3700  
- **Nominal:** 2700  
- **Enabled:** 72 cores, 4 chips  
- **Orderable:** 1, 2, 4 chip(s)  
- **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:** 768 GB (48 x 16 GB 2Rx8 PC4-2666V-R)  
- **Storage:** 1 x 480 GB SATA SSD, RAID 0  
- **Other:** None

### 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 U34 released Oct-2017 (tested with U34 09/29/2017)  
- **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;  
- **Other:** jemalloc: configured and built at default for 32bit (i686) and 64bit (x86_64) targets;  
- **Other:** jemalloc: built with the RedHat Enterprise 7.4, and the system compiler gcc 4.8.5;  
- **Other:** jemalloc: sources available via jemalloc.net  

---

<table>
<thead>
<tr>
<th>Threads</th>
<th>SPECspeed2017_int_base (8.75)</th>
</tr>
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<tbody>
<tr>
<td>600.perlbench_s 72</td>
<td>6.19</td>
</tr>
<tr>
<td>602.gcc_s 72</td>
<td>8.81</td>
</tr>
<tr>
<td>605.mcf_s 72</td>
<td>10.9</td>
</tr>
<tr>
<td>620.omnetpp_s 72</td>
<td>6.27</td>
</tr>
<tr>
<td>623.xalancbmk_s 72</td>
<td>9.45</td>
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<tr>
<td>625.x264_s 72</td>
<td>11.4</td>
</tr>
<tr>
<td>631.deepsjeng_s 72</td>
<td>5.08</td>
</tr>
<tr>
<td>641.leela_s 72</td>
<td>4.30</td>
</tr>
<tr>
<td>648.exchange2_s 72</td>
<td>13.4</td>
</tr>
<tr>
<td>657.xz_s 72</td>
<td>22.4</td>
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---

Page 1
SPEC CPU2017 Integer Speed Result

Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL560 Gen10
(2.70 GHz, Intel Xeon Gold 6150)

SPECcpu2017_int_base = 8.75
SPECcpu2017_int_peak = Not Run

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>
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<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
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<tr>
<td>perlbench_s</td>
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<td>288</td>
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<td>447</td>
<td>8.91</td>
<td>453</td>
<td>8.79</td>
<td>452</td>
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<tr>
<td>mcf_s</td>
<td>72</td>
<td>435</td>
<td>10.9</td>
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<td>6.27</td>
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<td>leela_s</td>
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<td>4.30</td>
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<tr>
<td>exchange2_s</td>
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<td>13.4</td>
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<td>13.4</td>
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<tr>
<td>xz_s</td>
<td>72</td>
<td>276</td>
<td>22.4</td>
<td>276</td>
<td>22.4</td>
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<td></td>
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<td></td>
</tr>
</tbody>
</table>

SPECspeed2017_int_base = 8.75
SPECspeed2017_int_peak = Not Run

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 = "/cpu2017/lib/ia32:/cpu2017/lib/intel64:/cpu2017/je5.0.1-32:/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
LLC Prefetch set to Enabled
LLC Dead Line Allocation set to Disabled
Stale A to S set to Enabled
Memory Patrol Scrubbing set to Disabled
Workload Profile set to General Peak Frequency Compute

(Continued on next page)
Hewlett Packard Enterprise  
(Test Sponsor: HPE)  
ProLiant DL560 Gen10  
(2.70 GHz, Intel Xeon Gold 6150)  

SPECspeed2017_int_base = 8.75  
SPECspeed2017_int_peak = Not Run

Platform Notes (Continued)

Energy/Performance Bias set to Maximum Performance  
Workload Profile set to Custom  
Sysinfo program /cpu2017/bin/sysinfo  
Rev: r5797 of 2017-06-14 96c45e4568ad54c135fd618bccc91c0f  
running on DL560-Gen10 Sat Dec 2 11:31:29 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 6150 CPU @ 2.70GHz  
  4 "physical id"s (chips)  
  72 "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 : 18  
  siblings : 18  
  physical 0: cores 0 1 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27  
  physical 1: cores 0 1 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27  
  physical 2: cores 0 1 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27  
  physical 3: cores 0 1 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27

From lscpu:

  Architecture:          x86_64  
  CPU op-mode(s):        32-bit, 64-bit  
  Byte Order:            Little Endian  
  CPU(s):                72  
  On-line CPU(s) list:   0-71  
  Thread(s) per core:    1  
  Core(s) per socket:    18  
  Socket(s):             4  
  NUMA node(s):          4  
  Vendor ID:             GenuineIntel  
  CPU family:            6  
  Model:                 85  
  Model name:            Intel(R) Xeon(R) Gold 6150 CPU @ 2.70GHz  
  Stepping:              4  
  CPU MHz:               2700.000  
  BogoMIPS:              5405.67  
  Virtualization:        VT-x  
  L1d cache:             32K  
  L1i cache:             32K  
  L2 cache:              1024K  
  L3 cache:              25344K  
  NUMA node0 CPU(s):     0-17

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

### Hewlett Packard Enterprise

(Test Sponsor: HPE)
ProLiant DL560 Gen10
(2.70 GHz, Intel Xeon Gold 6150)

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<td>Oct-2017</td>
</tr>
<tr>
<td>Software Availability</td>
<td>Sep-2017</td>
</tr>
</tbody>
</table>

### Platform Notes (Continued)

- NUMA node1 CPU(s): 18-35
- NUMA node2 CPU(s): 36-53
- NUMA node3 CPU(s): 54-71

/proc/cpuinfo cache data

cache size : 25344 KB

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

<table>
<thead>
<tr>
<th>available: 4 nodes (0-3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>node 0 cpus: 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17</td>
</tr>
<tr>
<td>node 0 size: 196266 MB</td>
</tr>
<tr>
<td>node 0 free: 191506 MB</td>
</tr>
<tr>
<td>node 1 cpus: 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35</td>
</tr>
<tr>
<td>node 1 size: 196608 MB</td>
</tr>
<tr>
<td>node 1 free: 191234 MB</td>
</tr>
<tr>
<td>node 2 cpus: 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53</td>
</tr>
<tr>
<td>node 2 size: 196608 MB</td>
</tr>
<tr>
<td>node 2 free: 192213 MB</td>
</tr>
<tr>
<td>node 3 cpus: 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71</td>
</tr>
<tr>
<td>node 3 size: 196607 MB</td>
</tr>
<tr>
<td>node 3 free: 192036 MB</td>
</tr>
</tbody>
</table>

node distances:

<table>
<thead>
<tr>
<th>node</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>0:</td>
<td>10</td>
<td>21</td>
<td>21</td>
<td>21</td>
</tr>
<tr>
<td>1:</td>
<td>21</td>
<td>10</td>
<td>21</td>
<td>21</td>
</tr>
<tr>
<td>2:</td>
<td>21</td>
<td>21</td>
<td>10</td>
<td>21</td>
</tr>
<tr>
<td>3:</td>
<td>21</td>
<td>21</td>
<td>21</td>
<td>10</td>
</tr>
</tbody>
</table>

From /proc/meminfo

| MemTotal:       | 792072580 kB |
| HugePages_Total: | 0 |
| Hugepagesize:   | 2048 kB |

From /etc/*release*/etc/*version*

<table>
<thead>
<tr>
<th>os-release:</th>
</tr>
</thead>
<tbody>
<tr>
<td>NAME=Red Hat Enterprise Linux Server</td>
</tr>
<tr>
<td>VERSION=7.3 (Maipo)</td>
</tr>
<tr>
<td>ID=rhel</td>
</tr>
<tr>
<td>ID_LIKE=fedora</td>
</tr>
<tr>
<td>VERSION_ID=7.3</td>
</tr>
<tr>
<td>PRETTY_NAME=Red Hat Enterprise Linux Server 7.3 (Maipo)</td>
</tr>
<tr>
<td>ANSI_COLOR=0;31</td>
</tr>
<tr>
<td>CPE_NAME=cpe:/o:redhat:enterprise_linux:7.3:GA:server</td>
</tr>
<tr>
<td>redhat-release: Red Hat Enterprise Linux Server release 7.3 (Maipo)</td>
</tr>
<tr>
<td>system-release: Red Hat Enterprise Linux Server release 7.3 (Maipo)</td>
</tr>
</tbody>
</table>

(Continued on next page)
SPEC CPU2017 Integer Speed Result

Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL560 Gen10
(2.70 GHz, Intel Xeon Gold 6150)

SPECspeed2017_int_base = 8.75
SPECspeed2017_int_peak = Not Run

CPU2017 License: 3
Test Sponsor: HPE
Tested by: HPE

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

Platform Notes (Continued)

uname -a:
    Linux DL560-Gen10 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

SPEC is set to: /cpu2017
    Filesystem Type Size Used Avail Use% Mounted on
    /dev/sdb1 xfs 447G 46G 402G 11% /

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 SM BIOS" standard.
    BIOS HPE U34 09/29/2017
    Memory:
        48x UNKNOWN NOT AVAILABLE 16 GB 2 rank 2666

(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.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.
------------------------------------------------------------------------------
# SPEC CPU2017 Integer Speed Result

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## 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  
605.mcf_s: -DSPEC_LP64  
620.omnetpp_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-AVX2 -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-AVX2 -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-AVX2 -ipo -O3 -no-prec-div  
-qopt-mem-layout-trans=3 -nostandard-realloc-lhs -align array32byte  
-L/usr/local/je5.0.1-64/lib -ljemalloc
## SPEC CPU2017 Integer Speed Result

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</tr>
</tbody>
</table>

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

---

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

Tested with SPEC CPU2017 v1.0.2 on 2017-12-02 12:31:28-0500.  
Report generated on 2018-10-31 17:12:51 by CPU2017 PDF formatter v6067.  