SPEC® CPU2017 Integer Speed Result

Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL360 Gen10
(3.00 GHz, Intel Xeon Gold 6154)

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

SPECspeed2017_int_base = 8.82
SPECspeed2017_int_peak = Not Run

Hardware
CPU Name: Intel Xeon Gold 6154
Max MHz.: 3700
Nominal: 3000
Enabled: 36 cores, 2 chips
Orderable: 1, 2 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: 192 GB (24 x 8 GB 2Rx8 PC4-2666V-R)
Storage: 1 x 480 GB SATA SSD, RAID 0
Other: None

Software
OS: Red Hat Enterprise Linux Server 7.3 (Maipo)
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
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 (x866) 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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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>36</td>
<td>290</td>
<td>6.11</td>
<td>286</td>
<td>6.20</td>
<td>287</td>
<td>6.19</td>
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<td>602.gcc_s</td>
<td>36</td>
<td>440</td>
<td>9.06</td>
<td>435</td>
<td>9.15</td>
<td>441</td>
<td>9.04</td>
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<td>605.mcf_s</td>
<td>36</td>
<td>421</td>
<td>11.2</td>
<td>420</td>
<td>11.2</td>
<td>424</td>
<td>11.1</td>
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<tr>
<td>620.omnetpp_s</td>
<td>36</td>
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<td>6.40</td>
<td>255</td>
<td>6.40</td>
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<tr>
<td>623.xalancbmk_s</td>
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<td>152</td>
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<td>9.38</td>
<td>152</td>
<td>9.32</td>
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<tr>
<td>625.x264_s</td>
<td>36</td>
<td>150</td>
<td>11.7</td>
<td>150</td>
<td>11.8</td>
<td>150</td>
<td>11.8</td>
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<tr>
<td>631.deepsjeng_s</td>
<td>36</td>
<td>283</td>
<td>5.07</td>
<td>283</td>
<td>5.09</td>
<td>283</td>
<td>5.06</td>
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<tr>
<td>641.leela_s</td>
<td>36</td>
<td>394</td>
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<td>394</td>
<td>4.33</td>
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<tr>
<td>648.exchange2_s</td>
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<td>221</td>
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<td>220</td>
<td>13.4</td>
<td>222</td>
<td>13.2</td>
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<tr>
<td>657.xz_s</td>
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<td>22.1</td>
<td>280</td>
<td>22.1</td>
<td>280</td>
<td>22.1</td>
</tr>
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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/specuser/cpu2017/lib/ia32:/home/specuser/cpu2017/lib/intel64"
    LD_LIBRARY_PATH = "$LD_LIBRARY_PATH:/home/specuser/cpu2017/jem5.0.1-32:/home/specuser/cpu2017/jem5.0.1-64"
    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
    Memory Patrol Scrubbing set to Disabled
    Workload Profile set to General Peak Frequency Compute

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Platform Notes (Continued)

Energy/Performance Bias set to Maximum Performance
Workload Profile set to Custom
NUMA Group Size Optimization set to Flat
Sysinfo program /home/specuser/cpu2017/bin/sysinfo
Rev: r5797 of 2017-06-14 96c45e4568ad54c135fd618bccc091c0f
running on dl360gen10rhe173 Wed Nov 1 04:37:03 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 6154 CPU @ 3.00GHz
- 2 "physical id"s (chips)
- 36 "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

From lscpu:
- Architecture: x86_64
- CPU op-mode(s): 32-bit, 64-bit
- Byte Order: Little Endian
- CPU(s): 36
- On-line CPU(s) list: 0-35
- Thread(s) per core: 1
- Core(s) per socket: 18
- Socket(s): 2
- NUMA node(s): 2
- Vendor ID: GenuineIntel
- CPU family: 6
- Model: 85
- Model name: Intel(R) Xeon(R) Gold 6154 CPU @ 3.00GHz
- Stepping: 4
- CPU MHz: 3000.000
- BogoMIPS: 6006.01
- Virtualization: VT-x
- L1d cache: 32K
- L1i cache: 32K
- L2 cache: 1024K
- L3 cache: 25344K
- NUMA node0 CPU(s): 0-17
- NUMA node1 CPU(s): 18-35

(Continued on next page)
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**SPECspeed2017_int_peak = Not Run**  
**SPECspeed2017_int_base = 8.82**

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### Platform Notes (Continued)

/proc/cpuinfo cache data  
- cache size : 25344 KB

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

From /proc/meminfo  
- MemTotal: 197571680 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 dl360gen10rhel73 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 Nov 1 03:31

SPEC is set to: /home/specuser/cpu2017

Filesystem | Type | Size | Used | Avail | Use% | Mounted on
---|---|---|---|---|---|---
/dev/mapper/rhel-home | xfs | 392G | 37G | 356G | 10% | /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 SMBIOS" standard.

- BIOS HPE U32 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

```plaintext
==============================================================================
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)
```

### Base Compiler Invocation

- **C benchmarks:**
  - icc

- **C++ benchmarks:**
  - icpc

- **Fortran benchmarks:**
  - ifort

### Base Portability Flags

```plaintext
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
```

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**Base Portability Flags (Continued)**

641.leea_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
http://www.spec.org/cpu2017/flags/HPE-Platform-Flags-Intel-V1.2-SKX-revF.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-revF.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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