Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL380 Gen10
(2.00 GHz, Intel Xeon Gold 6138)

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

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<tr>
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**Threads**

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<td>6.20</td>
</tr>
<tr>
<td>602.gcc_s 40</td>
<td>9.04</td>
</tr>
<tr>
<td>605.mcf_s 40</td>
<td>11.1</td>
</tr>
<tr>
<td>620.omnetpp_s 40</td>
<td>6.74</td>
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<tr>
<td>623.xalancbmk_s 40</td>
<td>9.35</td>
</tr>
<tr>
<td>625.x264_s 40</td>
<td>11.8</td>
</tr>
<tr>
<td>631.deepsjeng_s 40</td>
<td>5.06</td>
</tr>
<tr>
<td>641.lleea_s 40</td>
<td>4.72</td>
</tr>
<tr>
<td>648.exchange2_s 40</td>
<td>13.4</td>
</tr>
<tr>
<td>657.xz_s 40</td>
<td>21.6</td>
</tr>
</tbody>
</table>

**Hardware**

CPU Name: Intel Xeon Gold 6138
Max MHz.: 3700
Nominal: 2000
Enabled: 40 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: 27.5 MB I+D on chip per chip
Other: None
Memory: 192 GB (24 x 8 GB 2Rx8 PC4-2666V-R)
Storage: 1 x 960 GB SATA SSD, RAID 0
Other: None

**Software**

OS: Red Hat Enterprise Linux Server release 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 (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
SPEC CPU2017 Integer Speed Result

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Results Table

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<th>Seconds</th>
<th>Ratio</th>
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<th>Seconds</th>
<th>Ratio</th>
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<tr>
<td>600.perlbench_s</td>
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<td>6.19</td>
<td>286</td>
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<td>11.1</td>
<td>425</td>
<td>11.1</td>
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<td>620.omnetpp_s</td>
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<td>6.76</td>
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<tr>
<td>625.x264_s</td>
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<td>149</td>
<td>11.8</td>
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<td>283</td>
<td>5.06</td>
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<td>283</td>
<td>5.06</td>
<td></td>
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<tr>
<td>641.leela_s</td>
<td>40</td>
<td>394</td>
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<td>4.32</td>
<td>395</td>
<td>4.32</td>
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<tr>
<td>648.exchange2_s</td>
<td>40</td>
<td>220</td>
<td>13.4</td>
<td>223</td>
<td>13.2</td>
<td>220</td>
<td>13.4</td>
<td></td>
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<tr>
<td>657.xz_s</td>
<td>40</td>
<td>287</td>
<td>21.6</td>
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<td>287</td>
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</tr>
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</table>

SPECSpeed2017_int_base = 8.84
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 = "/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
LLC Prefetcher set to Enabled
LLC Dead Line Allocation set to Disabled
Stale A to S set to Disabled
Memory Patrol Scrubbing set to disabled

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Platform Notes (Continued)

Workload Profile set to General Peak Frequency Compute
Energy/Performance Bias set to Maximum Performance
Workload Profile set to Custom
NUMA Group Size Optimization set to Flat
Sysinfo program /home/cpu2017/bin/sysinfo
Rev: r5797 of 2017-06-14 96c45e4568ad54c135fd618bcc091c0f
running on DL380Gen10-2 Mon Oct 30 21:43:35 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 6138 CPU @ 2.00GHz
  2 "physical id"s (chips)
  40 "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 : 20
siblings : 20
physical 0: cores 0 1 2 3 4 8 9 10 11 12 16 17 18 19 20 24 25 26 27 28
physical 1: cores 0 1 2 3 4 8 9 10 11 12 16 17 18 19 20 24 25 26 27 28

From lscpu:
Architecture: x86_64
CPU op-mode(s): 32-bit, 64-bit
Byte Order: Little Endian
CPU(s): 40
On-line CPU(s) list: 0-39
Thread(s) per core: 1
Core(s) per socket: 20
Socket(s): 2
NUMA node(s): 2
Vendor ID: GenuineIntel
CPU family: 6
Model: 85
Model name: Intel(R) Xeon(R) Gold 6138 CPU @ 2.00GHz
Stepping: 4
CPU MHz: 2000.000
BogoMIPS: 4004.66
Virtualization: VT-x
L1d cache: 32K
L1i cache: 32K
L2 cache: 1024K
L3 cache: 28160K
NUMA node0 CPU(s): 0-19
NUMA node1 CPU(s): 20-39

(Continued on next page)
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Platform Notes (Continued)

/proc/cpuinfo cache data
  cache size : 28160 KB

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

From /proc/meminfo
  MemTotal:       197571144 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 30 21:40

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 SMBIOS" 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.  
==============================================================================  

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  
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631.deepsjeng_s: -DSPEC_LP64  

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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 -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](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](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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