## SPEC® CPU2017 Integer Speed Result

### Hewlett Packard Enterprise

**Test Sponsor:** HPE

**ProLiant DL380 Gen10**

(2.20 GHz, Intel Xeon Silver 4214Y)

### SPECspeed2017_int_base = 8.12

### SPECspeed2017_int_peak = Not Run

**CPU2017 License:** 3

**Test Date:** Apr-2019

**Test Sponsor:** HPE

**Hardware Availability:** Apr-2019

**Tested by:** HPE

**Software Availability:** Nov-2018

### Threads

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
<th>SPECspeed2017_int_base</th>
<th>SPECspeed2017_int_peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>600.perlbench_s</td>
<td>24</td>
<td>5.87</td>
<td>Not Run</td>
</tr>
<tr>
<td>602.gcc_s</td>
<td>24</td>
<td>7.91</td>
<td>Not Run</td>
</tr>
<tr>
<td>605.mcf_s</td>
<td>24</td>
<td>10.7</td>
<td>Not Run</td>
</tr>
<tr>
<td>620.omnetpp_s</td>
<td>24</td>
<td>5.81</td>
<td>Not Run</td>
</tr>
<tr>
<td>623.xalancbmk_s</td>
<td>24</td>
<td>10.3</td>
<td>Not Run</td>
</tr>
<tr>
<td>625.x264_s</td>
<td>24</td>
<td>11.8</td>
<td>Not Run</td>
</tr>
<tr>
<td>631.deepsjeng_s</td>
<td>24</td>
<td>4.58</td>
<td>Not Run</td>
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<tr>
<td>641.leela_s</td>
<td>24</td>
<td>3.91</td>
<td>Not Run</td>
</tr>
<tr>
<td>648.exchange2_s</td>
<td>24</td>
<td>11.5</td>
<td>Not Run</td>
</tr>
<tr>
<td>657.xz_s</td>
<td>24</td>
<td>18.1</td>
<td>Not Run</td>
</tr>
</tbody>
</table>

---

### Hardware

- **CPU Name:** Intel Xeon Silver 4214Y
- **Max MHz.:** 3200
- **Nominal:** 2200
- **Enabled:** 24 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:** 16.5 MB I+D on chip per chip
- **Other:** None
- **Memory:** 384 GB (24 x 16 GB 2Rx4 PC4-2666V-R, running at 2400)
- **Storage:** 1 x 960 GB SATA SSD, RAID 0
- **Other:** None

### Software

- **OS:** SUSE Linux Enterprise Server 15 (x86_64)
- **Kernel:** 4.12.14-23-default
- **Compiler:** C/C++: Version 19.0.1.144 of Intel C/C++ Compiler Build 20181018 for Linux;
  Fortran: Version 19.0.1.144 of Intel Fortran Compiler Build 20181018 for Linux;
- **Parallel:** Yes
- **Firmware:** HPE BIOS Version U30 02/02/2019 released Apr-2019
- **File System:** xfs
- **System State:** Run level 3 (multi-user)
- **Base Pointers:** 64-bit
- **Peak Pointers:** Not Applicable
- **Other:** jemalloc memory allocator V5.0.1
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SPECspeed2017_int_base = 8.12
SPECspeed2017_int_peak = Not Run

Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Base Threads</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Peak Threads</th>
<th>Seconds</th>
<th>Ratio</th>
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<td>18.1</td>
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</tbody>
</table>

SPECspeed2017_int_base = 8.12
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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
Prior to runcpu invocation
Filesystem page cache synced and cleared with:
    sync; echo 3> /proc/sys/vm/drop_caches

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:/home/cpu2017/je5.0.1-64"
OMP_STACKSIZE = "192M"

Binaries compiled on a system with 1x Intel Core i9-7900X CPU + 32GB RAM
memory using Redhat Enterprise Linux 7.5

NA: The test sponsor attests, as of date of publication, that CVE-2017-5754 (Meltdown) is mitigated in the system as tested and documented.
Yes: 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.
Yes: The test sponsor attests, as of date of publication, that CVE-2017-5715 (Spectre variant 2) is mitigated in the system as tested and documented.
Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL380 Gen10
(2.20 GHz, Intel Xeon Silver 4214Y)

SPECspeed2017_int_base = 8.12
SPECspeed2017_int_peak = Not Run

Platform Notes

BIOS Configuration:
Hyper-Threading set to Disabled
Thermal Configuration set to Maximum Cooling
Memory Patrol Scrubbing set to Disabled
LLC Prefetch set to Enabled
LLC Dead Line Allocation set to Disabled
Enhanced Processor Performance set to Enabled
Workload Profile set to General Peak Frequency Compute
Minimum Processor Idle Power Core C-State set to C1E State
Energy/Performance Bias set to Balanced Power
Workload Profile set to Custom
Numa Group Size Optimization set to Flat

Sysinfo program /home/cpu2017_B0/bin/sysinfo
Rev: r5974 of 2018-05-19 9bcde8f2999c33d61f6d4985e45859ea9
running on linux-9mbf Tue Apr 23 19:08:15 2019

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) Silver 4214C CPU @ 2.20GHz
2 "physical id"s (chips)
24 "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 : 12
physical 0: cores 0 1 2 3 4 5 8 9 10 11 12 13
physical 1: cores 0 1 2 3 4 5 8 9 10 11 12 13

From lscpu:
Architecture:       x86_64
CPU op-mode(s):     32-bit, 64-bit
Byte Order:         Little Endian
CPU(s):             24
On-line CPU(s) list: 0-23
Thread(s) per core: 1
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) Silver 4214C CPU @ 2.20GHz
Stepping:           6
CPU MHz:            2200.000

(Continued on next page)
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(2.20 GHz, Intel Xeon Silver 4214Y)

<table>
<thead>
<tr>
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<tbody>
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<td>Test Sponsor:</td>
<td>HPE</td>
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<tr>
<td>Tested by:</td>
<td>HPE</td>
</tr>
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<td>Test Date:</td>
<td>Apr-2019</td>
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<td>Hardware Availability:</td>
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### SPECspeed2017_int_base = 8.12

### SPECspeed2017_int_peak = Not Run

### Platform Notes (Continued)

- **BogoMIPS:** 4400.00
- **Virtualization:** VT-x
- **L1d cache:** 32K
- **L1i cache:** 32K
- **L2 cache:** 1024K
- **L3 cache:** 16896K
- **NUMA node0 CPU(s):** 0-11
- **NUMA node1 CPU(s):** 12-23
- **Flags:**
  - fpu
  - vme
  - de
  - pse
  - msr
  - pae
  - mce
  - cx8
  - aperfmperf
  - tsc
  - known_freq
  - pni
  - pclmulqdq
  - dtes64
  - monitor
  - ds_cpl
  - vmx
  - smx
  - est
  - tm
  - pbe
  - syscall
  - nx
  - pdpe1gb
  - mca
  - cmov
  - pat
  - pse36
  - clflush
  - dts
  - acpi
  - mmx
  - fxsr
  - sse
  - sse2
  - ss
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  - dts
  - acpi
  - mmx
  - fxsr
  - sse
  - sse2
  - ss
  - ht
  - tm

### /proc/cpuinfo cache data
- **cache size:** 16896 KB

### numactl --hardware
- **WARNING:** a numactl 'node' might or might not correspond to a physical chip.
- **available:** 2 nodes (0-1)
- **node 0 cpus:** 0 1 2 3 4 5 6 7 8 9 10 11
- **node 0 size:** 193019 MB
- **node 0 free:** 192514 MB
- **node 1 cpus:** 12 13 14 15 16 17 18 19 20 21 22 23
- **node 1 size:** 193336 MB
- **node 1 free:** 193059 MB
- **node distances:**
  - 0: 10 21
  - 1: 21 10

### /proc/meminfo
- **MemTotal:** 395628064 KB
- **HugePages_Total:** 0
- **Hugepagesize:** 4096 KB

### /etc/*release*/ /etc/*version*
- **os-release:**
  - **NAME**="SLES"
  - **VERSION="15"
  - **VERSION_ID="15"
Platform Notes (Continued)

PRETTY_NAME="SUSE Linux Enterprise Server 15"
ID="sles"
ID_LIKE="suse"
ANSI_COLOR="0;32"
CPE_NAME="cpe:/o:suse:sles:15"

uname -a:
    Linux linux-9mbf 4.12.14-23-default #1 SMP Tue May 29 21:04:44 UTC 2018 (cd0437b)
    x86_64 x86_64 x86_64 GNU/Linux

Kernel self-reported vulnerability status:
CVE-2017-5754 (Meltdown): Not affected
CVE-2017-5753 (Spectre variant 1): Mitigation: __user pointer sanitization
CVE-2017-5715 (Spectre variant 2): Mitigation: Indirect Branch Restricted Speculation, IBPB, IBRS_FW

run-level 3 Apr 23 19:05

SPEC is set to: /home/cpu2017_B0
    Filesystem     Type  Size  Used Avail Use% Mounted on
    /dev/sdb4      xfs   436G  311G  125G  72% /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 02/02/2019
    Memory:
        24x UNKNOWN NOT AVAILABLE 16 GB 2 rank 2666, configured at 2400

(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)
==============================================================================
Intel(R) C Intel(R) 64 Compiler for applications running on Intel(R) 64,
Version 19.0.1.144 Build 20181018
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.
==============================================================================
CXXC 620.omnetpp_s(base) 623.xalancbmk_s(base) 631.deepsjeng_s(base)

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

### Compiler Version Notes (Continued)

```
641.leela_s(base)
```

Intel(R) C++ Intel(R) 64 Compiler for applications running on Intel(R) 64,  
Version 19.0.1.144 Build 20181018  
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.

```
FC 648.exchange2_s(base)
```

Intel(R) Fortran Intel(R) 64 Compiler for applications running on Intel(R) 64,  
Version 19.0.1.144 Build 20181018  
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.

### Base Compiler Invocation

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

**C++ benchmarks:**  
icpc -m64

**Fortran benchmarks:**  
ifort -m64

### 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.xalancmk_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  
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Test Date: Apr-2019
Hardware Availability: Apr-2019
Software Availability: Nov-2018

Base Optimization Flags

C benchmarks:
-Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=4 -gopenmp -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=4
-L/usr/local/IntelCompiler19/compilers_and_libraries_2019.1.144/linux/compiler/lib/intel64
-lqkmalloc

Fortran benchmarks:
-xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-mem-layout-trans=4
-nostandard-realloc-lhs

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-CLX-revA.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-CLX-revA.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 v1.0.5 on 2019-04-23 19:08:15-0400.