## CPU2017 Integer Rate Result

### Hardware

<table>
<thead>
<tr>
<th>Description</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU Name</td>
<td>Intel Xeon Platinum 8260L</td>
</tr>
<tr>
<td>Max MHz.</td>
<td>3900</td>
</tr>
<tr>
<td>Nominal</td>
<td>2400</td>
</tr>
<tr>
<td>Enabled</td>
<td>48 cores, 2 chips, 2 threads/core</td>
</tr>
<tr>
<td>Orderable</td>
<td>1, 2 chip(s)</td>
</tr>
<tr>
<td>Cache L1</td>
<td>32 KB I + 32 KB D on chip per core</td>
</tr>
<tr>
<td>L2:</td>
<td>1 MB I+D on chip per core</td>
</tr>
<tr>
<td>L3:</td>
<td>35.75 MB I+D on chip per chip</td>
</tr>
<tr>
<td>Other:</td>
<td>None</td>
</tr>
<tr>
<td>Memory</td>
<td>384 GB (24 x 16 GB 2Rx8 PC4-2933Y-R)</td>
</tr>
<tr>
<td>Storage</td>
<td>1 x 960 GB SATA SSD, RAID 0</td>
</tr>
<tr>
<td>Other:</td>
<td>None</td>
</tr>
</tbody>
</table>

### Software

<table>
<thead>
<tr>
<th>Description</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>OS</td>
<td>SUSE Linux Enterprise Server 15 (x86_64)</td>
</tr>
<tr>
<td>Kernel</td>
<td>4.12.14-23-default</td>
</tr>
<tr>
<td>Compiler</td>
<td>C/C++: Version 19.0.1.144 of Intel C/C++</td>
</tr>
<tr>
<td></td>
<td>Compiler Build 20181018 for Linux;</td>
</tr>
<tr>
<td></td>
<td>Fortran: Version 19.0.1.144 of Intel Fortran</td>
</tr>
<tr>
<td></td>
<td>Compiler Build 20181018 for Linux</td>
</tr>
<tr>
<td>Parallel</td>
<td>No</td>
</tr>
<tr>
<td>Firmware</td>
<td>HPE BIOS Version U30 04/18/2019 released Apr-2019</td>
</tr>
<tr>
<td>File System</td>
<td>btrfs</td>
</tr>
<tr>
<td>System State</td>
<td>Run level 3 (multi-user)</td>
</tr>
<tr>
<td>Base Pointers</td>
<td>64-bit</td>
</tr>
<tr>
<td>Peak Pointers</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>Other:</td>
<td>None</td>
</tr>
</tbody>
</table>

### SPECrate2017_int_base = 287

### SPECrate2017_int_peak = Not Run

---

Test Sponsor: HPE

Hardware Availability: Apr-2019

Software Availability: Nov-2018

Test Date: May-2019
## SPEC CPU2017 Integer Rate Result

### Hewlett Packard Enterprise

**Test Sponsor:** HPE  
**ProLiant DL380 Gen10**  
**(2.40 GHz, Intel Xeon Platinum 8260L)**

<table>
<thead>
<tr>
<th>CPU2017 License: 3</th>
<th>Test Date: May-2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tested by: HPE</td>
<td>Hardware Availability: Apr-2019</td>
</tr>
</tbody>
</table>

**SPECrate2017_int_base = 287**  
**SPECrate2017_int_peak = Not Run**

### Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Copies</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>500.perlbench_r</td>
<td>96</td>
<td>680</td>
<td>225</td>
<td>675</td>
<td>226</td>
<td>676</td>
<td>226</td>
</tr>
<tr>
<td>502.gcc_r</td>
<td>96</td>
<td>579</td>
<td>235</td>
<td>585</td>
<td>232</td>
<td>583</td>
<td>233</td>
</tr>
<tr>
<td>505.mcf_r</td>
<td>96</td>
<td>412</td>
<td>377</td>
<td>412</td>
<td>376</td>
<td>415</td>
<td>374</td>
</tr>
<tr>
<td>520.omnetpp_r</td>
<td>96</td>
<td>681</td>
<td>185</td>
<td>680</td>
<td>185</td>
<td>681</td>
<td>185</td>
</tr>
<tr>
<td>523.xalancbmk_r</td>
<td>96</td>
<td>328</td>
<td>309</td>
<td>328</td>
<td>309</td>
<td>328</td>
<td>309</td>
</tr>
<tr>
<td>525.x264_r</td>
<td>96</td>
<td>294</td>
<td>572</td>
<td>294</td>
<td>571</td>
<td>294</td>
<td>572</td>
</tr>
<tr>
<td>531.deepsjeng_r</td>
<td>96</td>
<td>448</td>
<td>246</td>
<td>446</td>
<td>247</td>
<td>447</td>
<td>246</td>
</tr>
<tr>
<td>541.leela_r</td>
<td>96</td>
<td>684</td>
<td>232</td>
<td>683</td>
<td>233</td>
<td>686</td>
<td>232</td>
</tr>
<tr>
<td>548.exchange2_r</td>
<td>96</td>
<td>480</td>
<td>524</td>
<td>480</td>
<td>524</td>
<td>490</td>
<td>514</td>
</tr>
<tr>
<td>557.xz_r</td>
<td>96</td>
<td>533</td>
<td>195</td>
<td>535</td>
<td>194</td>
<td>539</td>
<td>192</td>
</tr>
</tbody>
</table>

**SPECrate2017_int_base = 287**  
**SPECrate2017_int_peak = Not Run**

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

### Submit Notes

The numactl mechanism was used to bind copies to processors. The config file option 'submit' was used to generate numactl commands to bind each copy to a specific processor. For details, please see the config file.

### 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`
- Runcpu command invoked through numactl i.e.: `numactl --interleave=all runcpu <etc>`

### General Notes

- Environment variables set by runcpu before the start of the run: `LD_LIBRARY_PATH = "/home/cpu2017/lib/ia32:/home/cpu2017/lib/intel64"`
- 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)

(Continued on next page)
SPEC CPU2017 Integer Rate Result

Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL380 Gen10
(2.40 GHz, Intel Xeon Platinum 8260L)

SPECrate2017_int_base = 287
SPECrate2017_int_peak = Not Run

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

Test Date: May-2019
Hardware Availability: Apr-2019
Software Availability: Nov-2018

General Notes (Continued)

is mitigated in the system as tested and documented.

Platform Notes

BIOS Configuration:
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 Throughput Compute
Workload Profile set to Custom
Energy/Performance Bias set to Balanced Performance
Sysinfo program /home/cpu2017_B0/bin/sysinfo
Rev: r5974 of 2018-05-19 9bcde8f2999c33d61f64985e45859ea9
running on linux-9mbf Wed May 29 02:40:02 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) Platinum 8260L CPU @ 2.40GHz
  2  "physical id"s (chips)
  96 "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 : 24
       siblings : 48
       physical 0: cores 0 1 2 3 4 8 9 10 11 12 13 16 17 18 19 20 21 25 26 27 28 29
       physical 1: cores 0 1 2 3 4 8 9 10 11 12 13 16 17 18 19 20 21 25 26 27 28 29

From lscpu:

    Architecture:     x86_64
    CPU op-mode(s):   32-bit, 64-bit
    Byte Order:       Little Endian
    CPU(s):           96
    On-line CPU(s) list: 0-95
    Thread(s) per core: 2
    Core(s) per socket: 24
    Socket(s):        2
    NUMA node(s):     4
    Vendor ID:        GenuineIntel
    CPU family:       6
    Model:            85
    Model name:       Intel(R) Xeon(R) Platinum 8260L CPU @ 2.40GHz

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

**Hewlett Packard Enterprise**  
(Test Sponsor: HPE)  
ProLiant DL380 Gen10  
(2.40 GHz, Intel Xeon Platinum 8260L)  

<table>
<thead>
<tr>
<th>CPU2017 License:</th>
<th>3</th>
<th>Test Date:</th>
<th>May-2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Sponsor:</td>
<td>HPE</td>
<td>Hardware Availability:</td>
<td>Apr-2019</td>
</tr>
<tr>
<td>Tested by:</td>
<td>HPE</td>
<td>Software Availability:</td>
<td>Nov-2018</td>
</tr>
</tbody>
</table>

### SPECrate2017_int_base = 287

### SPECrate2017_int_peak = Not Run

---

**Platform Notes (Continued)**

- Stepping: 6
- CPU MHz: 2400.000
- BogoMIPS: 4800.00
- Virtualization: VT-x
- L1d cache: 32K
- L1i cache: 32K
- L2 cache: 1024K
- L3 cache: 36608K
- NUMA node0 CPU(s): 0-11, 48-59
- NUMA node1 CPU(s): 12-23, 60-71
- NUMA node2 CPU(s): 24-35, 72-83
- NUMA node3 CPU(s): 36-47, 84-95
- Flags: fpu vme de pse mce cmov pat pse36 clflush dts acpi mmx fxsr sse sse2 ss ht tm pbe syscall nx pdpe1gb rdtscp lm constant_tsc arch_perfmon pebs bts rep_good nopl xtopology nonstop_tsc cpuid aperfmperf tsc_known_freq pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 sdbg fma cx16 xtpr pdcm pcd dca sse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer aes xsave avx f16c rdrand lahf_lm abm 3dnowprefetch cpuid_fault ebp cat_l3 cdp_l3 invpcid_single intel_ppi mba tpr_shadow vnmi flexpriority ept vpid fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2 erms invpcid rtm cqm mpx rdt_a avx512f avx512dq rdseed adx smap clflushopt clwb intel_pt avx512cd avx512bw avx512vl xsaveopt xsavec xsaves cqm_llc cqm Occup_llc cqm_mbm_total cqm_mbm_local ibpb stibp dti therm ida arat pln pts pkup ospe avx512_vnni arch_capabilities ssbd

/proc/cpuinfo cache data

- cache size: 36608 KB

---

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

- available: 4 nodes (0-3)
- node 0 cpus: 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59
- node 0 size: 96277 MB
- node 0 free: 95807 MB
- node 1 cpus: 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59
- node 1 size: 96763 MB
- node 1 free: 96547 MB
- node 2 cpus: 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59
- node 2 size: 96734 MB
- node 2 free: 96584 MB
- node 3 cpus: 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59
- node 3 size: 96564 MB
- node 3 free: 96427 MB
- node distances:
- node 0 1 2 3
- 0: 10 21 31 32
- 1: 21 10 31 32
- 2: 31 31 10 21

(Continued on next page)
SPEC CPU2017 Integer Rate Result

Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL380 Gen10
(2.40 GHz, Intel Xeon Platinum 8260L)

<table>
<thead>
<tr>
<th>CPU2017 License: 3</th>
<th>Test Date: May-2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Sponsor: HPE</td>
<td>Hardware Availability: Apr-2019</td>
</tr>
<tr>
<td>Tested by: HPE</td>
<td>Software Availability: Nov-2018</td>
</tr>
</tbody>
</table>

SPECrate2017_int_base = 287
SPECrate2017_int_peak = Not Run

Platform Notes (Continued)

3: 31 31 21 10

From /proc/meminfo
- MemTotal: 395612636 kB
- HugePages_Total: 0
- Hugepagesize: 2048 kB

From /etc/*release* /etc/*version*
- os-release:
  - NAME="SLES"
  - VERSION="15"
  - VERSION_ID="15"
  - 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 May 29 02:37

SPEC is set to: /home/cpu2017_B0
- Filesystem Type Size Used Avail Use% Mounted on
  /dev/sdb4 xfs 436G 337G 100G 78% /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 04/18/2019
- Memory:
  - 24x UNKNOWN NOT AVAILABLE 16 GB 2 rank 2933

(End of data from sysinfo program)
Hewlett Packard Enterprise  
(Test Sponsor: HPE)  
ProLiant DL380 Gen10  
(2.40 GHz, Intel Xeon Platinum 8260L)  

SPECrate2017_int_base = 287  
SPECrate2017_int_peak = Not Run

CPU2017 License: 3  
Test Date: May-2019

Test Sponsor: HPE  
Hardware Availability: Apr-2019

Tested by: HPE  
Software Availability: Nov-2018

Compiler Version Notes

==============================================================================
CC  500.perlbench_r(base) 502.gcc_r(base) 505.mcf_r(base) 525.x264_r(base)
  557.xz_r(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 520.omnetpp_r(base) 523.xalancbmk_r(base) 531.deepsjeng_r(base)
  541.leela_r(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  548.exchange2_r(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

500.perlbench_r: -DSPEC_LP64 -DSPEC_LINUX_X64  
502.gcc_r: -DSPEC_LP64  
505.mcf_r: -DSPEC_LP64  
520.omnetpp_r: -DSPEC_LP64

(Continued on next page)
SPEC CPU2017 Integer Rate Result

Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL380 Gen10
(2.40 GHz, Intel Xeon Platinum 8260L)

SPECrate2017_int_base = 287
SPECrate2017_int_peak = Not Run

CPU2017 License: 3
Test Sponsor: HPE
Tested by: HPE
Test Date: May-2019
Hardware Availability: Apr-2019
Software Availability: Nov-2018

Base Portability Flags (Continued)

523.xalancbmk_r: -DSPEC_LP64 -DSPEC_LINUX
525.x264_r: -DSPEC_LP64
531.deepsjeng_r: -DSPEC_LP64
541.leela_r: -DSPEC_LP64
548.exchange2_r: -DSPEC_LP64
557.xz_r: -DSPEC_LP64

Base Optimization Flags

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

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:
-Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=4 -nostandard-realloc-lhs -align array32byte
-L/usr/local/IntelCompiler19/compilers_and_libraries_2019.1.144/linux/compiler/lib/intel64
-lqkmalloc

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-revB.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-revB.xml

SPEC is a registered trademark of the Standard Performance Evaluation Corporation. All other brand and product names appearing in this result are trademarks or registered trademarks of their respective holders.

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 2019-05-29 02:40:01-0400.