**SPEC CPU®2017 Integer Rate Result**

**Hewlett Packard Enterprise**  
(Test Sponsor: HPE)  
**Synergy 480 Gen10**  
(2.70 GHz, Intel Xeon Gold 6258R)

<table>
<thead>
<tr>
<th>Test Sponsor: HPE</th>
<th>CPU2017 License: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tested by: HPE</td>
<td></td>
</tr>
</tbody>
</table>

**SPECrate®2017_int_base = 326**  
**SPECrate®2017_int_peak = Not Run**

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Copies</th>
</tr>
</thead>
<tbody>
<tr>
<td>500.perlbench_r</td>
<td>112</td>
</tr>
<tr>
<td>502.gcc_r</td>
<td>112</td>
</tr>
<tr>
<td>505.mcf_r</td>
<td>112</td>
</tr>
<tr>
<td>520.omnetpp_r</td>
<td>112</td>
</tr>
<tr>
<td>523.xalancbmk_r</td>
<td>112</td>
</tr>
<tr>
<td>525.x264_r</td>
<td>112</td>
</tr>
<tr>
<td>531.deepsjeng_r</td>
<td>112</td>
</tr>
<tr>
<td>541.leela_r</td>
<td>112</td>
</tr>
<tr>
<td>548.exchange2_r</td>
<td>112</td>
</tr>
<tr>
<td>557.xz_r</td>
<td>112</td>
</tr>
</tbody>
</table>

**Software**

- **OS:** SUSE Linux Enterprise Server 15 SP1 (x86_64)  
  Kernel 4.12.14-195-default
- **Compiler:** C/C++: Version 19.0.4.227 of Intel C/C++  
  Compiler Build 20190416 for Linux;  
  Fortran: Version 19.0.4.227 of Intel Fortran  
  Compiler Build 20190416 for Linux
- **Firmware:** No
- **File System:** xfs
- **System State:** Run level 3 (multi-user)
- **Base Pointers:** 64-bit
- **Peak Pointers:** Not Applicable
- **Other:** None
- **Power Management:** BIOS set to prefer performance at the cost of additional power usage

**Hardware**

- **CPU Name:** Intel Xeon Gold 6258R
- **Max MHz:** 4000
- **Nominal:** 2700
- **Enabled:** 56 cores, 2 chips, 2 threads/core
- **Orderable:** 1 chip(s)
- **Cache L1:** 32 KB I + 32 KB D on chip per core
- **L2:** 1 MB I+D on chip per core
- **L3:** 38.5 MB I+D on chip per chip
- **Other:** None
- **Memory:** 384 GB (24 x 16 GB 2Rx8 PC4-2933Y-R)
- **Storage:** 1 x 400 GB SATA SSD, RAID 0
- **Other:** None

**Test Date:** Jan-2020  
**Hardware Availability:** Feb-2020  
**Software Availability:** Jun-2019

---

**Power Management:** BIOS set to prefer performance at the cost of additional power usage
Spec CPU® 2017 Integer Rate Result

Hewlett Packard Enterprise
(Test Sponsor: HPE)
Synergy 480 Gen10
(2.70 GHz, Intel Xeon Gold 6258R)

SPEC CPU® 2017_int_base = 326
SPEC CPU® 2017_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>Base</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>500.perlbench_r</td>
<td>112</td>
<td>705</td>
<td>253</td>
<td>706</td>
<td>253</td>
<td>710</td>
<td>251</td>
</tr>
<tr>
<td>502.gcc_r</td>
<td>112</td>
<td>624</td>
<td>254</td>
<td>634</td>
<td>250</td>
<td>630</td>
<td>252</td>
</tr>
<tr>
<td>505.mcf_r</td>
<td>112</td>
<td>455</td>
<td>398</td>
<td>455</td>
<td>397</td>
<td>458</td>
<td>395</td>
</tr>
<tr>
<td>520.omnetpp_r</td>
<td>112</td>
<td>753</td>
<td>195</td>
<td>750</td>
<td>196</td>
<td>750</td>
<td>196</td>
</tr>
<tr>
<td>523.xalancbmk_r</td>
<td>112</td>
<td>359</td>
<td>330</td>
<td>359</td>
<td>330</td>
<td>359</td>
<td>330</td>
</tr>
<tr>
<td>525.x264_r</td>
<td>112</td>
<td>272</td>
<td>720</td>
<td>273</td>
<td>718</td>
<td>273</td>
<td>718</td>
</tr>
<tr>
<td>531.deepsjeng_r</td>
<td>112</td>
<td>445</td>
<td>289</td>
<td>446</td>
<td>288</td>
<td>445</td>
<td>288</td>
</tr>
<tr>
<td>541.leela_r</td>
<td>112</td>
<td>689</td>
<td>269</td>
<td>683</td>
<td>272</td>
<td>686</td>
<td>270</td>
</tr>
<tr>
<td>548.exchange2_r</td>
<td>112</td>
<td>437</td>
<td>672</td>
<td>437</td>
<td>672</td>
<td>437</td>
<td>672</td>
</tr>
<tr>
<td>557.xz_r</td>
<td>112</td>
<td>554</td>
<td>218</td>
<td>556</td>
<td>218</td>
<td>555</td>
<td>218</td>
</tr>
</tbody>
</table>

SPECrate® 2017_int_base = 326
SPECrate® 2017_int_peak = Not Run

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

Submit Notes

The config file option 'submit' was used.

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

Environment Variables Notes

Environment variables set by runcpu before the start of the run:
LD_LIBRARY_PATH = "/home/cpu2017/lib/intel64:/home/cpu2017/lib/ia32:/home/cpu2017/je5.0.1-32"

General Notes

Binaries compiled on a system with 1x Intel Core i9-7900X CPU + 32GB RAM
memory using Redhat Enterprise Linux 7.5
LD_LIBRARY_PATH = "/home/cpu2017/lib/ia32:/home/cpu2017/lib/intel64:

NA: The test sponsor attests, as of date of publication, that CVE-2017-5754 (Meltdown)

(Continued on next page)
## SPEC CPU®2017 Integer Rate Result

**Test Sponsor:** HPE  
**Hewlett Packard Enterprise**  
**Synergy 480 Gen10**  
**CPU Model:** Intel(R) Xeon(R) Gold 6258R  
**CPU GHz:** 2.70 GHz

### SPECrate®2017_int_base

<table>
<thead>
<tr>
<th>CPU2017 License: 3</th>
<th>Test Date: Jan-2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Sponsor: HPE</td>
<td>Hardware Availability: Feb-2020</td>
</tr>
<tr>
<td>Tested by: HPE</td>
<td>Software Availability: Jun-2019</td>
</tr>
</tbody>
</table>

**SPECrate®2017_int_peak:** Not Run

---

### General Notes (Continued)

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.

---

### 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/bin/sysinfo`
  - Rev: r6365 of 2019-08-21 295195f88a3d7edeb1e6e46a485a0011
  - running on sy480-sles15sp1-hs Mon Jan 27 10:23:54 2020

- **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](https://www.spec.org/cpu2017/Docs/config.html#sysinfo)

- **From /proc/cpuinfo**
  - model name : Intel(R) Xeon(R) Gold 6258R CPU @ 2.70GHz
  - 2 "physical id"s (chips)
  - 112 "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 : 28
    - siblings : 56
    - physical 0: cores 0 1 2 3 8 9 10 11 12 13 14 16 17 18 19 20 21 22 24 25 26 27 28 29 30
    - physical 1: cores 0 1 2 3 8 9 10 11 12 13 14 16 17 18 19 20 21 22 24 25 26 27 28 29 30

- **From lscpu:**
  - Architecture: x86_64
  - CPU op-mode(s): 32-bit, 64-bit
  - Byte Order: Little Endian
  - Address sizes: 46 bits physical, 48 bits virtual
  - CPU(s): 112

(Continued on next page)
SPEC CPU®2017 Integer Rate Result

Hewlett Packard Enterprise
(Test Sponsor: HPE)
Synergy 480 Gen10
(2.70 GHz, Intel Xeon Gold 6258R)

SPECrater®2017_int_base = 326
SPECrater®2017_int_peak = Not Run

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

Test Date: Jan-2020
Hardware Availability: Feb-2020
Software Availability: Jun-2019

Platform Notes (Continued)

On-line CPU(s) list: 0-111
Thread(s) per core: 2
Core(s) per socket: 28
Socket(s): 2
NUMA node(s): 4
Vendor ID: GenuineIntel
CPU family: 6
Model: 85
Model name: Intel(R) Xeon(R) Gold 6258R CPU @ 2.70GHz
Stepping: 7
CPU MHz: 2700.000
BoGoMIPS: 5400.00
Virtualization: VT-x
L1d cache: 32K
L1i cache: 32K
L2 cache: 1024K
L3 cache: 3942K
NUMA node0 CPU(s): 0-13,56-69
NUMA node1 CPU(s): 14-27,70-83
NUMA node2 CPU(s): 28-41,84-97
NUMA node3 CPU(s): 42-55,98-111
Flags: fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov
pat pse36 clflush dts acpi mmx fxsr sse sse2 ss ht tm pbe syscall nx pdpe1gb rdtscp
lm constant_tsc art arch_perfmon pebs bts rep_good nopl xtopology nonstop_tsc cpuid
aperfmperf pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 sdbg fma cx16
xtr pdcm pcid dca sse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer aes xsave
avx f16c rdrand lahf_lm abm 3dnowprefetch cpuid_fault epb cat_l3 cdp_l3
invpcid_single intel_pinn ssbd mba ibrs ibpb stibp ibrs_enhanced tpr_shadow vnmi
flexpriority ept vpt fpgasave tsc_adjust bmi1 hl1 avx2 smep bmi2 erms invpcid rtm
cqm mpx rdr_t_a avx512f avx512dq rdseed adx smap clflushopt clwb intel_pt avx512cd
avx512bw avx512vl xsaveopt xsaves xsavec xgetbv1 xsavec cqm_llc cqm_occip_l1c cqm_mbm_total
cqm_mbm_local dtherm ida arat pln pts pkp ospke avx512_vnni md_clear flush_lld
arch_capabilities

/proc/cpuinfo cache data
  cache size: 3942 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 56 57 58 59 60 61 62 63 64 65 66 67 68 69
node 0 size: 96255 MB
node 0 free: 95867 MB
node 1 cpus: 14 15 16 17 18 19 20 21 22 23 24 25 26 27 70 71 72 73 74 75 76 77 78 79 80
81 82 83
node 1 size: 96762 MB
node 1 free: 96315 MB

(Continued on next page)
**SPEC CPU®2017 Integer Rate Result**

**Hewlett Packard Enterprise**
(Test Sponsor: HPE)
Synergy 480 Gen10
(2.70 GHz, Intel Xeon Gold 6258R)

<table>
<thead>
<tr>
<th>CPU2017 License: 3</th>
<th>Test Date: Jan-2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Sponsor: HPE</td>
<td>Hardware Availability: Feb-2020</td>
</tr>
<tr>
<td>Tested by: HPE</td>
<td>Software Availability: Jun-2019</td>
</tr>
</tbody>
</table>

**SPECrate®2017_int_base = 326**

**SPECrate®2017_int_peak = Not Run**

**Platform Notes (Continued)**

```
node 2 cpus: 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 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97

node 2 size: 96762 MB
node 2 free: 96392 MB

node 3 cpus: 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105

node 3 size: 96580 MB
node 3 free: 96298 MB

node distances:
node 0  1  2  3
0:  10  21  21  21
1:  21  10  21  21
2:  21  21  10  21
3:  21  21  21  10
```

From /proc/meminfo
MEMTotal: 395633728 kB
HugePages_Total: 0
Hugepagesize: 2048 kB

From /etc/*release* /etc/*version*
os-release:
NAME="SLES"
VERSION="15-SP1"
VERSION_ID="15.1"
PRETTY_NAME="SUSE Linux Enterprise Server 15 SP1"
ID="sles"
ID_LIKE="suse"
ANSI_COLOR="0;32"
CPE_NAME="cpe:/o:suse:sles:15:sp1"

uname -a:
Linux sy480-sles15sp1-hs 4.12.14-195-default #1 SMP Tue May 7 10:55:11 UTC 2019 (Bfba516) x86_64 x86_64 x86_64 GNU/Linux

Kernel self-reported vulnerability status:

- CVE-2018-3620 (L1 Terminal Fault): Not affected
- Microarchitectural Data Sampling: Not affected
- CVE-2017-5754 (Meltdown): Not affected
- CVE-2018-3639 (Speculative Store Bypass): Mitigation: Speculative Store Bypass disabled via prctl and seccomp
- CVE-2017-5753 (Spectre variant 1): Mitigation: __user pointer sanitization
- CVE-2017-5715 (Spectre variant 2): Mitigation: Enhanced IBRS, IBPB: conditional, RSB filling

run-level 3 Jan 27 10:23

(Continued on next page)
SPEC CPU®2017 Integer Rate Result
Copyright 2017-2020 Standard Performance Evaluation Corporation

Hewlett Packard Enterprise
(Test Sponsor: HPE)
Synergy 480 Gen10
(2.70 GHz, Intel Xeon Gold 6258R)

<table>
<thead>
<tr>
<th>CPU2017 License: 3</th>
<th>Test Date: Jan-2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Sponsor: HPE</td>
<td>Hardware Availability: Feb-2020</td>
</tr>
<tr>
<td>Tested by: HPE</td>
<td>Software Availability: Jun-2019</td>
</tr>
</tbody>
</table>

**SPECrate®2017_int_base** = 326

**SPECrate®2017_int_peak** = Not Run

Platform Notes (Continued)

SPEC is set to: /home/cpu2017

<table>
<thead>
<tr>
<th>Filesystem</th>
<th>Type</th>
<th>Size</th>
<th>Used</th>
<th>Avail</th>
<th>Use%</th>
<th>Mounted on</th>
</tr>
</thead>
<tbody>
<tr>
<td>/dev/sda4</td>
<td>xfs</td>
<td>143G</td>
<td>40G</td>
<td>104G</td>
<td>28%</td>
<td>/home</td>
</tr>
</tbody>
</table>

From /sys/devices/virtual/dmi/id

BIOS: HPE I42 12/10/2019
Vendor: HPE
Product: Synergy 480 Gen10
Product Family: Synergy
Serial: MXQ72204FC

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.

Memory:
24x UNKNOWN NOT AVAILABLE 16 GB 2 rank 2933

(End of data from sysinfo program)

Compiler Version Notes

===============================================================================================================
<table>
<thead>
<tr>
<th>C</th>
<th>500.perlbench_r(base) 502.gcc_r(base) 505.mcf_r(base)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>525.x264_r(base) 557.xz_r(base)</td>
</tr>
<tr>
<td>---------</td>
<td>--------------------------------------------------------</td>
</tr>
</tbody>
</table>

Intel(R) C Intel(R) 64 Compiler for applications running on Intel(R) 64,
Version 19.0.4.227 Build 20190416
Copyright (C) 1985-2019 Intel Corporation. All rights reserved.

===============================================================================================================
<table>
<thead>
<tr>
<th>C++</th>
<th>520.omnetpp_r(base) 523.xalancbmk_r(base) 531.deepsjeng_r(base)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>541.leela_r(base)</td>
</tr>
<tr>
<td>---------</td>
<td>----------------------------------------------------------------</td>
</tr>
</tbody>
</table>

Intel(R) C++ Intel(R) 64 Compiler for applications running on Intel(R) 64,
Version 19.0.4.227 Build 20190416
Copyright (C) 1985-2019 Intel Corporation. All rights reserved.

===============================================================================================================
<table>
<thead>
<tr>
<th>Fortran</th>
<th>548.exchange2_r(base)</th>
</tr>
</thead>
</table>

Intel(R) Fortran Intel(R) 64 Compiler for applications running on Intel(R) 64,
Version 19.0.4.227 Build 20190416

(Continued on next page)
Hewlett Packard Enterprise  
(Test Sponsor: HPE)  
Synergy 480 Gen10  
(2.70 GHz, Intel Xeon Gold 6258R)  

SPEC CPU®2017 Integer Rate Result  
Copyright 2017-2020 Standard Performance Evaluation Corporation

SPECrate®2017_int_base = 326  
SPECrate®2017_int_peak = Not Run

<table>
<thead>
<tr>
<th>CPU2017 License: 3</th>
<th>Test Date: Jan-2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Sponsor: HPE</td>
<td>Hardware Availability: Feb-2020</td>
</tr>
<tr>
<td>Tested by: HPE</td>
<td>Software Availability: Jun-2019</td>
</tr>
</tbody>
</table>

Compiler Version Notes (Continued)

Copyright (C) 1985-2019 Intel Corporation. All rights reserved.

Base Compiler Invocation

C benchmarks:
```bash
icc -m64 -std=c11
```

C++ benchmarks:
```bash
icpc -m64
```

Fortran benchmarks:
```bash
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  
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:
```bash
-W1,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=4
-L/usr/local/IntelCompiler19/compilers_and_libraries_2019.4.227/linux/compiler/lib/intel64
-lqkmalloc
```

C++ benchmarks:
```bash
-W1,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=4
-L/usr/local/IntelCompiler19/compilers_and_libraries_2019.4.227/linux/compiler/lib/intel64
-lqkmalloc
```

(Continued on next page)
**SPEC CPU®2017 Integer Rate Result**

**Hewlett Packard Enterprise**
(Test Sponsor: HPE)
Synergy 480 Gen10
(2.70 GHz, Intel Xeon Gold 6258R)

<table>
<thead>
<tr>
<th>SPECrate®2017_int_base =</th>
<th>326</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECrate®2017_int_peak =</td>
<td>Not Run</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CPU2017 License:</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Sponsor:</td>
<td>HPE</td>
</tr>
<tr>
<td>Tested by:</td>
<td>HPE</td>
</tr>
</tbody>
</table>

**Test Date:** Jan-2020  
**Hardware Availability:** Feb-2020  
**Software Availability:** Jun-2019

---

**Base Optimization Flags (Continued)**

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_2019.4.227/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 CPU and SPECrate are registered trademarks 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 CPU®2017 v1.1.0 on 2020-01-27 10:23:53-0500.
Originally published on 2020-03-03.