# SPEC CPU®2017 Integer Speed Result

**Hewlett Packard Enterprise**  
(Test Sponsor: HPE)  
ProLiant DL360 Gen10 Plus  
(3.20 GHz, Intel Xeon Gold 5315Y)

<table>
<thead>
<tr>
<th>Software</th>
<th>Hardware</th>
</tr>
</thead>
<tbody>
<tr>
<td>OS: Red Hat Enterprise Linux 8.3 (Ootpa)</td>
<td>CPU Name: Intel Xeon Gold 5315Y</td>
</tr>
</tbody>
</table>
| Compiler: C/C++: Version 2021.1 of Intel oneAPI DPC++/C++ Compiler Build 20201113 for Linux; Fortran: Version 2021.1 of Intel Fortran Compiler Classic Build 20201112 for Linux; C/C++: Version 2021.1 of Intel C/C++ Compiler Classic Build 20201112 for Linux | Max MHz: 3600  
Nominal: 3200 |
| Parallel: Yes | Enabled: 16 cores, 2 chips |
| Firmware: HP BIOS Version U46 v1.42 05/16/2021 released May-2021 | Orderable: 1, 2 chip(s) |
| File System: xfs | Cache L1: 32 KB I + 48 KB D on chip per core |
| System State: Run level 3 (multi-user) | L2: 1.25 MB I+D on chip per core |
| Base Pointers: 64-bit | L3: 12 MB I+D on chip per chip |
| Peak Pointers: 64-bit | Other: None |
| Other: jemalloc memory allocator V5.0.1 | Memory: 2 TB (32 x 64 GB 2Rx4 PC4-3200AA-R, running at 2933) |
| Power Management: BIOS set to prefer performance at the cost of additional power usage | Storage: 1 x 400 GB SAS SSD, RAID 0 |

---

**SPECspeed®2017_int_base = 11.1**  
**SPECspeed®2017_int_peak = 11.3**  

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>600.perlbench_s</td>
<td>7.07</td>
</tr>
<tr>
<td>602.gcc_s</td>
<td>8.04</td>
</tr>
<tr>
<td>605.mcf_s</td>
<td>10.0</td>
</tr>
<tr>
<td>620.omnetpp_s</td>
<td>7.31</td>
</tr>
<tr>
<td>623.xalancbmk_s</td>
<td>13.5</td>
</tr>
<tr>
<td>625.x264_s</td>
<td>16.8</td>
</tr>
<tr>
<td>631.deepsjeng_s</td>
<td>4.99</td>
</tr>
<tr>
<td>641.leela_s</td>
<td>6.04</td>
</tr>
<tr>
<td>648.exchange2_s</td>
<td>17.5</td>
</tr>
<tr>
<td>657.xz_s</td>
<td>19.7</td>
</tr>
</tbody>
</table>

---

**Threads**  
Test Date: Jun-2021  
Hardware Availability: Jun-2021}

---

© Copyright 2017-2021 Standard Performance Evaluation Corporation
## SPEC CPU®2017 Integer Speed Result

### Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL360 Gen10 Plus
(3.20 GHz, Intel Xeon Gold 5315Y)

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

---

### 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>
</tr>
</thead>
<tbody>
<tr>
<td>600.perlbench_s</td>
<td>16</td>
<td>251</td>
<td>7.07</td>
<td>250</td>
<td>7.10</td>
<td>251</td>
<td>7.07</td>
</tr>
<tr>
<td>602.gcc_s</td>
<td>16</td>
<td>395</td>
<td>10.1</td>
<td>397</td>
<td>10.0</td>
<td>399</td>
<td>9.99</td>
</tr>
<tr>
<td>605.mcf_s</td>
<td>16</td>
<td>240</td>
<td>19.7</td>
<td>241</td>
<td>19.6</td>
<td>240</td>
<td>19.7</td>
</tr>
<tr>
<td>620.omnetpp_s</td>
<td>16</td>
<td>227</td>
<td>7.18</td>
<td>223</td>
<td>7.31</td>
<td>223</td>
<td>7.32</td>
</tr>
<tr>
<td>623.xalanchmk_s</td>
<td>16</td>
<td>105</td>
<td>13.5</td>
<td>105</td>
<td>13.5</td>
<td>105</td>
<td>13.5</td>
</tr>
<tr>
<td>625.x264_s</td>
<td>16</td>
<td>105</td>
<td>16.8</td>
<td>105</td>
<td>16.7</td>
<td>105</td>
<td>16.8</td>
</tr>
<tr>
<td>631.deepsjeng_s</td>
<td>16</td>
<td>236</td>
<td>6.07</td>
<td>237</td>
<td>6.04</td>
<td>237</td>
<td>6.04</td>
</tr>
<tr>
<td>641.leela_s</td>
<td>16</td>
<td>342</td>
<td>4.98</td>
<td>342</td>
<td>4.99</td>
<td>342</td>
<td>4.99</td>
</tr>
<tr>
<td>648.exchange2_s</td>
<td>16</td>
<td>148</td>
<td>19.9</td>
<td>149</td>
<td>19.8</td>
<td>149</td>
<td>19.9</td>
</tr>
<tr>
<td>657.xz_s</td>
<td>16</td>
<td>313</td>
<td>19.7</td>
<td>314</td>
<td>19.7</td>
<td>314</td>
<td>19.7</td>
</tr>
</tbody>
</table>

**SPECspeed®2017_int_base = 11.1**

**SPECspeed®2017_int_peak = 11.3**

---

### 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:
  - KMP_AFFINITY = "granularity=fine,scatter"
  - LD_LIBRARY_PATH = 
    - "/home/cpu2017_1.1.8/lib/intel64:/home/cpu2017_1.1.8/je5.0.1-64"
  - MALLOC_CONF = "retain:true"
  - OMP_STACKSIZE = "192M"

---

### General Notes

- Binaries compiled on a system with 1x Intel Core i9-7980XE CPU + 64GB RAM memory using Redhat Enterprise Linux 8.0
- 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.
- jemalloc, a general purpose malloc implementation
**SPEC CPU®2017 Integer Speed Result**

**Hewlett Packard Enterprise**
(Test Sponsor: HPE)
ProLiant DL360 Gen10 Plus
(3.20 GHz, Intel Xeon Gold 5315Y)

**SPECspeed®2017_int_base = 11.1**

**SPECspeed®2017_int_peak = 11.3**

<table>
<thead>
<tr>
<th>CPU2017 License: 3</th>
<th>Test Date: Jun-2021</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Sponsor: HPE</td>
<td>Hardware Availability: Jun-2021</td>
</tr>
<tr>
<td>Tested by: HPE</td>
<td>Software Availability: Dec-2020</td>
</tr>
</tbody>
</table>

---

**General Notes (Continued)**

built with the RedHat Enterprise 7.5, and the system compiler gcc 4.8.5

Submitted by: "Bhatnagar, Prateek" <prateek.bhatnagar@hpe.com>
Submitted: Mon Jul 5 07:59:51 EDT 2021
Submission: cpu2017-20210705-27730.sub

---

**Platform Notes**

The system ROM used for this result contains Intel microcode version 0xd0002a0 for the Intel Xeon Gold 5315Y processor.

BIOS Configuration:
- Workload Profile set to General Peak Frequency Compute
- Intel Hyper-Threading set to Disabled
- Thermal Configuration set to Maximum Cooling
- Memory Patrol Scrubbing set to Disabled
- Advanced Memory Protection set to Advanced ECC
- Last Level Cache (LLC) Prefetch set to Enabled
- Last Level Cache (LLC) Dead Line Allocation set to Disabled
- Enhanced Processor Performance set to Enabled
- Workload Profile set to Custom
  - Energy/Performance Bias set to Balanced Power
  - DCU Stream Prefetcher set to Disabled
  - Adjacent Sector Prefetch set to Disabled
  - Minimum Processor Idle Power Package C-State set to No Package State
  - Numa Group Size Optimization set to Flat

Sysinfo program /home/cpu2017_1.1.8/bin/sysinfo
Rev: r6622 of 2021-04-07 982a61ec0915b55891ef0e16aca61e07
running on localhost.localdomain Tue Jun 29 10:01:42 2021

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 5315Y CPU @ 3.20GHz
  2 "physical id" s (chips)
  16 "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 : 8
  siblings : 8
  physical 0: cores 0 1 2 3 4 5 6 7
  physical 1: cores 0 1 2 3 4 5 6 7
```

(Continued on next page)
Platform Notes (Continued)

From lscpu from util-linux 2.32.1:
Architecture: x86_64
CPU op-mode(s): 32-bit, 64-bit
Byte Order: Little Endian
CPU(s): 16
On-line CPU(s) list: 0-15
Thread(s) per core: 1
Core(s) per socket: 8
Socket(s): 2
NUMA node(s): 2
Vendor ID: GenuineIntel
CPU family: 6
Model: 106
Model name: Intel(R) Xeon(R) Gold 5315Y CPU @ 3.20GHz
Stepping: 6
CPU MHz: 1641.691
BogoMIPS: 6400.00
Virtualization: VT-x
L1d cache: 48K
L1i cache: 32K
L2 cache: 1280K
L3 cache: 12288K
NUMA node0 CPU(s): 0-7
NUMA node1 CPU(s): 8-15
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 rdtsscp
lm constant_tsc 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
xtpre pdcm pcid dca sse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer aes xsave
avx f16c rdrand lahf_lm abm 3nowprefetch cpuid_fault epb cat_l3 invvpidd_single ssbd
mba ibrs ibpb ibrs_enhanced tpr_shadow vnmi flexpriority ept vpid ept_ad
fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2  brms invpcid cqm rdt_a avx512f avx512dq
rdseed adx smap avx512idfma clflushopt clwb intel_pt avx512cd sha ni avx512bw
avx512vl xsaveopt xsaves xsaveopt xgetbv1 xsaves cmpx_long cmpx_cx0 cmpx_cx1
cpu info
From 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
node 0 size: 1022497 MB
node 0 free: 1031131 MB

/proc/cpuinfo cache data
 cache size : 12288 KB

(Continued on next page)
Platform Notes (Continued)

node 1 cpus: 8 9 10 11 12 13 14 15
node 1 size: 1022874 MB
node 1 free: 1031692 MB
node distances:
node 0 1
0: 10 20
1: 20 10

From /proc/meminfo
MemTotal: 2113499260 kB
HugePages_Total: 0
Hugepagesize: 2048 kB

/sbin/tuned-adm active
  Current active profile: throughput-performance

From /etc/*release* /etc/*version*
  os-release:
    NAME="Red Hat Enterprise Linux"
    VERSION="8.3 (Ootpa)"
    ID="rheil"
    ID_LIKE="fedora"
    VERSION_ID="8.3"
    PLATFORM_ID="platform:el8"
    PRETTY_NAME="Red Hat Enterprise Linux 8.3 (Ootpa)"
    ANSI_COLOR="0;31"
  redhat-release: Red Hat Enterprise Linux release 8.3 (Ootpa)
  system-release: Red Hat Enterprise Linux release 8.3 (Ootpa)
  system-release-cpe: cpe:/o:redhat:enterprise_linux:8.3:ga

uname -a:
Linux localhost.localdomain 4.18.0-240.el8.x86_64 #1 SMP Wed Sep 23 05:13:10 EDT 2020
x86_64 x86_64 x86_64 GNU/Linux

Kernel self-reported vulnerability status:

CVE-2018-12207 (iTLB Multihit): Not affected
CVE-2018-3620 (L1 Terminal Fault): Not affected
Microarchitectural Data Sampling: Not affected
CVE-2017-5754 (Meltdown): Mitigation: Speculative Store Bypass disabled via prctl and seccomp
CVE-2018-3639 (Speculative Store Bypass): Mitigation: usercopy/swapsgs barriers and __user pointer sanitization
CVE-2017-5753 (Spectre variant 1): Mitigation: Enhanced IBRS, IBPB:
SPEC CPU®2017 Integer Speed Result

Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL360 Gen10 Plus
(3.20 GHz, Intel Xeon Gold 5315Y)

| SPECspeed®2017_int_base = 11.1 |
| SPECspeed®2017_int_peak = 11.3 |

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

Platform Notes (Continued)

conditional, RSB filling
CVE-2020-0543 (Special Register Buffer Data Sampling): Not affected
CVE-2019-11135 (TSX Asynchronous Abort): Not affected

run-level 3 Jun 29 10:00

SPEC is set to: /home/cpu2017_1.1.8
Filesystem Type Size Used Avail Use% Mounted on
/dev/mapper/rhel00-home xfs 372G 231G 142G 62% /home

From /sys/devices/virtual/dmi/id
Vendor: HPE
Product: ProLiant DL360 Gen10 Plus
Product Family: ProLiant
Serial: CN701108CQ

Additional information from dmidecode 3.2 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:
32x Micron 36ASF8G72PZ-3G2B2 64 GB 2 rank 3200, configured at 2933

BIOS:
BIOS Vendor: HPE
BIOS Version: U46
BIOS Date: 05/16/2021
BIOS Revision: 1.42
Firmware Revision: 2.42

(End of data from sysinfo program)

Compiler Version Notes

==============================================================================
C | 600.perlbench_s(peak)

==============================================================================

Intel(R) C Intel(R) 64 Compiler Classic for applications running on Intel(R) 64, Version 2021.1 Build 20201112_000000
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

==============================================================================

C | 600.perlbench_s(base) 602.gcc_s(base, peak) 605.mcf_s(base, peak)
   625.x264_s(base, peak) 657.xz_s(base, peak)

(Continued on next page)
Hewlett Packard Enterprise  
(Test Sponsor: HPE)  
ProLiant DL360 Gen10 Plus  
(3.20 GHz, Intel Xeon Gold 5315Y)  

<table>
<thead>
<tr>
<th>SPECspeed®2017_int_base</th>
<th>11.1</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECspeed®2017_int_peak</td>
<td>11.3</td>
</tr>
</tbody>
</table>

**Compiled by:** HPE  
**Hardware Availability:** Jun-2021  
**Test Sponsor:** HPE  
**Software Availability:** Dec-2020

---

## Compiler Version Notes (Continued)

Intel® oneAPI DPC++/C++ Compiler for applications running on Intel® 64,  
Version 2021.1 Build 20201113  
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

---

### Base Compiler Invocation

<table>
<thead>
<tr>
<th>C benchmarks:</th>
<th>icx</th>
</tr>
</thead>
<tbody>
<tr>
<td>C++ benchmarks:</td>
<td>icpx</td>
</tr>
</tbody>
</table>

(Continued on next page)
Base Compiler Invocation (Continued)

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
625.x264_s: -DSPEC_LP64
631.deepsjeng_s: -DSPEC_LP64
641.leela_s: -DSPEC_LP64
648.exchange2_s: -DSPEC_LP64
657.xz_s: -DSPEC_LP64

Base Optimization Flags

C benchmarks:
-DSPEC_OPENMP -std=c11 -m64 -fiopenmp -Wl,-z,muldefs -xCORE-AVX512
-03 -ffast-math -flto -mfpmath=sse -funroll-loops
-qopt-mem-layout-trans=4 -mbranches-within-32B-boundaries
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc

C++ benchmarks:
-DSPEC_OPENMP -m64 -Wl,-z,muldefs -xCORE-AVX512 -03 -ffast-math
-flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-mbranches-within-32B-boundaries
-L/opt/intel/oneapi/compiler/2021.1.1/linux/compiler/lib/intel64_lin/
-lqkmalloc

Fortran benchmarks:
-m64 -xCORE-AVX512 -03 -ipo -no-prec-div -qopt-mem-layout-trans=4
-nostandard-realloc-lhs -align array32byte -auto
-mbranches-within-32B-boundaries
## Peak Compiler Invocation

C benchmarks (except as noted below):
- icx
- 600.perlbench_s: icc

C++ benchmarks:
- icpx

Fortran benchmarks:
- ifort

## Peak Portability Flags

Same as Base Portability Flags

## Peak Optimization Flags

C benchmarks:
- 600.perlbench_s: -Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2)
- -xCORE-AVX512 -ipo -O3 -no-prec-div
- -qopt-mem-layout-trans=4 -fno-strict-overflow
- -mbranches-within-32B-boundaries
- -L/usr/local/jemalloc64-5.0.1/lib -ljemalloc

- 602.gcc_s: -m64 -std=c11 -Wl,-z,muldefs -fprofile-generate(pass 1)
- -fprofile-use=default.profdump(pass 2) -xCORE-AVX512 -flto
- -Ofast(pass 1) -O3 -ffast-math -qopt-mem-layout-trans=4
- -mbranches-within-32B-boundaries
- -L/usr/local/jemalloc64-5.0.1/lib -ljemalloc

- 605.mcf_s: basepeak = yes

- 625.x264_s: -DSPEC_OpenMP -fiopenmp -std=c11 -m64 -Wl,-z,muldefs
- -xCORE-AVX512 -flto -O3 -ffast-math
- -qopt-mem-layout-trans=4 -fno-alias
- -mbranches-within-32B-boundaries
- -L/usr/local/jemalloc64-5.0.1/lib -ljemalloc

- 657.xz_s: basepeak = yes

(Continued on next page)
Hewlett Packard Enterprise  
ProLiant DL360 Gen10 Plus  
(3.20 GHz, Intel Xeon Gold 5315Y)  

| SPECspeed®2017_int_base = 11.1 |
| SPECspeed®2017_int_peak = 11.3 |

C++ benchmarks:
- 620.omnetpp_s: basepeak = yes
- 623.xalancbmk_s: basepeak = yes
- 631.deepsjeng_s: basepeak = yes
- 641.leela_s: basepeak = yes

Fortran benchmarks:
- 648.exchange2_s: basepeak = yes

Peak Optimization Flags (Continued)

The flags files that were used to format this result can be browsed at:
- http://www.spec.org/cpu2017/flags/HPE-Platform-Flags-Intel-V1.0-ICX-revE.html

You can also download the XML flags sources by saving the following links:
- http://www.spec.org/cpu2017/flags/HPE-Platform-Flags-Intel-V1.0-ICX-revE.xml

For questions about this result, please contact the tester. For other inquiries, please contact info@spec.org.