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

Hewlett Packard Enterprise
(Test Sponsor: HPE)
Superdome Flex 280
(2.80 GHz, Intel Xeon Gold 6328HL)

SPECspeed®2017_int_base = 11.7
SPECspeed®2017_int_peak = 12.0

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

Test Date: Nov-2020
Hardware Availability: Nov-2020
Software Availability: Apr-2020

Threads

<table>
<thead>
<tr>
<th>Test</th>
<th>Threads</th>
<th>SPECspeed®2017_int_base</th>
<th>SPECspeed®2017_int_peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>600.perlbench_s</td>
<td>64</td>
<td>8.46</td>
<td>10.0</td>
</tr>
<tr>
<td>602.gcc_s</td>
<td>64</td>
<td>10.0</td>
<td>18.9</td>
</tr>
<tr>
<td>605.mcf_s</td>
<td>64</td>
<td>9.11</td>
<td>14.8</td>
</tr>
<tr>
<td>620.omnetpp_s</td>
<td>64</td>
<td></td>
<td></td>
</tr>
<tr>
<td>623.xalancbmk_s</td>
<td>64</td>
<td></td>
<td></td>
</tr>
<tr>
<td>625.x264_s</td>
<td>64</td>
<td>6.29</td>
<td>17.4</td>
</tr>
<tr>
<td>631.deepsjeng_s</td>
<td>64</td>
<td></td>
<td></td>
</tr>
<tr>
<td>641.leela_s</td>
<td>64</td>
<td>5.30</td>
<td>18.2</td>
</tr>
<tr>
<td>648.exchange2_s</td>
<td>64</td>
<td></td>
<td></td>
</tr>
<tr>
<td>657.xz_s</td>
<td>64</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SPECspeed®2017_int_base (11.7) --- SPECspeed®2017_int_peak (12.0)

Hardware
CPU Name: Intel Xeon Gold 6328HL
Max MHz: 4300
Nominal: 2800
Enabled: 64 cores, 4 chips
Orderable: 2, 4, 8 chip(s)
Cache L1: 32 KB I + 32 KB D on chip per core
L2: 1 MB I+D on chip per core
L3: 22 MB I+D on chip per chip
Other: None
Memory: 3 TB (24 x 128 GB 4Rx4 PC4-3200AA-L, running at 2933)
Storage: 1 x 1 TB SATA HDD, 7.2K RPM
Other: None

Software
OS: Red Hat Enterprise Linux 8.2 (Ootpa)
Kernel 4.18.0-193.el8.x86_64
Compiler: C/C++; Version 19.1.1.217 of Intel C/C++
Compiler Build 20200306 for Linux;
Fortran: Version 19.1.1.217 of Intel Fortran
Compiler Build 20200306 for Linux;
Parallel: Yes
Firmware: HPE Firmware Bundle Version 1.0.142 released Oct-2020
File System: xfs
System State: Run level 3 (multi-user)
Base Pointers: 64-bit
Peak Pointers: 64-bit
Other: jemalloc memory allocator V5.0.1;
HPE Foundation Software 2.4,
Build 734.0820.200723T0100.a.rhel82hpe-200723T0100
Power Management: BIOS set to prefer performance at the cost of additional power usage
Hewlett Packard Enterprise
(Test Sponsor: HPE)
Superdome Flex 280
(2.80 GHz, Intel Xeon Gold 6328HL)

SPECspeed®2017_int_base = 11.7
SPECspeed®2017_int_peak = 12.0

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>
<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>64</td>
<td>239</td>
<td>7.43</td>
<td>240</td>
<td>7.40</td>
<td>240</td>
<td>7.40</td>
<td>64</td>
<td>210</td>
<td>8.46</td>
<td>211</td>
<td>8.43</td>
<td>209</td>
<td>8.48</td>
</tr>
<tr>
<td>602.gcc_s</td>
<td>64</td>
<td>397</td>
<td>10.0</td>
<td>398</td>
<td>10.0</td>
<td>400</td>
<td>9.96</td>
<td>64</td>
<td>374</td>
<td>10.6</td>
<td>381</td>
<td>10.5</td>
<td>377</td>
<td>10.6</td>
</tr>
<tr>
<td>605.mcf_s</td>
<td>64</td>
<td>251</td>
<td>18.8</td>
<td>246</td>
<td>19.2</td>
<td>250</td>
<td>18.9</td>
<td>64</td>
<td>251</td>
<td>18.8</td>
<td>246</td>
<td>19.2</td>
<td>250</td>
<td>18.9</td>
</tr>
<tr>
<td>620.omnetpp_s</td>
<td>64</td>
<td>182</td>
<td>8.95</td>
<td>178</td>
<td>9.15</td>
<td>179</td>
<td>9.11</td>
<td>64</td>
<td>182</td>
<td>8.95</td>
<td>178</td>
<td>9.15</td>
<td>179</td>
<td>9.11</td>
</tr>
<tr>
<td>623.xalanchmk_s</td>
<td>64</td>
<td>95.8</td>
<td>14.8</td>
<td>95.4</td>
<td>14.8</td>
<td>95.8</td>
<td>14.8</td>
<td>64</td>
<td>95.8</td>
<td>14.8</td>
<td>95.4</td>
<td>14.8</td>
<td>95.8</td>
<td>14.8</td>
</tr>
<tr>
<td>625.x264_s</td>
<td>64</td>
<td>101</td>
<td>17.4</td>
<td>101</td>
<td>17.4</td>
<td>101</td>
<td>17.4</td>
<td>64</td>
<td>98.3</td>
<td>17.9</td>
<td>98.4</td>
<td>17.9</td>
<td>98.5</td>
<td>17.9</td>
</tr>
<tr>
<td>631.deepsjeng_s</td>
<td>64</td>
<td>228</td>
<td>6.30</td>
<td>228</td>
<td>6.29</td>
<td>228</td>
<td>6.28</td>
<td>64</td>
<td>228</td>
<td>6.30</td>
<td>228</td>
<td>6.29</td>
<td>228</td>
<td>6.28</td>
</tr>
<tr>
<td>641.leela_s</td>
<td>64</td>
<td>322</td>
<td>5.30</td>
<td>322</td>
<td>5.30</td>
<td>322</td>
<td>5.30</td>
<td>64</td>
<td>322</td>
<td>5.30</td>
<td>322</td>
<td>5.30</td>
<td>322</td>
<td>5.30</td>
</tr>
<tr>
<td>648.exchange2_s</td>
<td>64</td>
<td>162</td>
<td>18.2</td>
<td>161</td>
<td>18.2</td>
<td>162</td>
<td>18.2</td>
<td>64</td>
<td>162</td>
<td>18.2</td>
<td>161</td>
<td>18.2</td>
<td>162</td>
<td>18.2</td>
</tr>
<tr>
<td>657.xz_s</td>
<td>64</td>
<td>248</td>
<td>25.0</td>
<td>247</td>
<td>25.0</td>
<td>242</td>
<td>25.6</td>
<td>64</td>
<td>248</td>
<td>25.0</td>
<td>247</td>
<td>25.0</td>
<td>242</td>
<td>25.6</td>
</tr>
</tbody>
</table>

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

Compiler Notes
The inconsistent Compiler version information under Compiler Version section is due to a discrepancy in Intel Compiler.
The correct version of C/C++ compiler is: Version 19.1.1.217 Build 20200306 Compiler for Linux
The correct version of Fortran compiler is: Version 19.1.1.217 Build 20200306 Compiler for Linux

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
Tuned-adm profile was set to Throughput-Performance using "tuned-adm profile throughput-performance"

HPE Foundation Software (HFS) is a collection of software packages designed to make the HPE Superdome Flex family of
servers easier to use for customers. This software is compatible with RHEL, SLES, and Oracle Linux only. It is
highly recommended all users install HFS for the Superdome Flex system. More details, and a revision history list, can
be found at: https://support.hpe.com/hpsc/swd/public/detail?swItemId=MTX_b48de5f6a8a041f0ae985825a5#tab-history

Environment Variables Notes
Environment variables set by runcpu before the start of the run:
  KMP_AFFINITY = "granularity=fine,scatter"
  LD_LIBRARY_PATH = "/home/cpu2017/lib/intel64:/home/cpu2017/je5.0.1-64"
  MALLOCONF = "retain:4true"
  OMP_STACKSIZE = "192M"
Hewlett Packard Enterprise
(Test Sponsor: HPE)
Superdome Flex 280
(2.80 GHz, Intel Xeon Gold 6328HL)

SPECspeed®2017_int_base = 11.7
SPECspeed®2017_int_peak = 12.0

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

Platform Notes

BIOS Configuration:
- Workload Profile set to HPC
- Intel Hyper-Threading set to Disabled
- Workload Profile set to Custom
- Minimum Processor Idle Power Core C-State set to C6 State
- Minimum Processor Idle Power Package C-State set to Package C6 (non-retention) State
- LLC Prefetch set to Enabled

Sysinfo program /home/cpu2017/bin/sysinfo
Rev: r6365 of 2019-08-21 295195f888a3d7ed1be6e46a485a0011
running on ch-620.fchst.rdlabs.hpecorp.net Wed Dec 2 17:40:43 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

From /proc/cpuinfo
- model name : Intel(R) Xeon(R) Gold 6328HL CPU @ 2.80GHz
- 4 "physical id"s (chips)
- 64 "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 : 16
- siblings : 16
- physical 0: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
- physical 1: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
- physical 2: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
- physical 3: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

From lscpu:
- Architecture: x86_64
- CPU op-mode(s): 32-bit, 64-bit

(Continued on next page)
Hewlett Packard Enterprise
(Test Sponsor: HPE)
Superdome Flex 280
(2.80 GHz, Intel Xeon Gold 6328HL)

SPEC CPU®2017 Integer Speed Result

Copyright 2017-2020 Standard Performance Evaluation Corporation

SPECspeed®2017_int_base = 11.7
SPECspeed®2017_int_peak = 12.0

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

Test Date: Nov-2020
Hardware Availability: Nov-2020
Software Availability: Apr-2020

Platform Notes (Continued)

Byte Order: Little Endian
CPU(s): 64
On-line CPU(s) list: 0-63
Thread(s) per core: 1
Core(s) per socket: 16
Socket(s): 4
NUMA node(s): 4
Vendor ID: GenuineIntel
CPU family: 6
Model: 85
Model name: Intel(R) Xeon(R) Gold 6328HL CPU @ 2.80GHz
Stepping: 11
CPU MHz: 3549.995
CPU max MHz: 4300.0000
CPU min MHz: 1000.0000
BogoMIPS: 5600.13
Virtualization: VT-x
L1d cache: 32K
L1i cache: 32K
L2 cache: 1024K
L3 cache: 22528K
NUMA node0 CPU(s): 0-15
NUMA node1 CPU(s): 16-31
NUMA node2 CPU(s): 32-47
NUMA node3 CPU(s): 48-63
Flags: fpu vme de pse tsc msr pae mca 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 pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 sdbg fma cx16 xtrunc 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_ppin ssbd mba ibrs ibpb ibrs_enhanced tpr_shadow vnmi flexpriority ept vpid fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2 rops invpcid rtm cqm mpx rdt_a avx512f avx512dq rdseed adx smap clflushopt c鞠ibw intel_pt avx512cd avx512bw avx512vl xsavesopt xsaveopt xsaves xgetbv1 xsavec qcm llc qcm_occup llc qcm_mbm_total qcm_mbm_local avx512_bf16 dtherm ida arat pln pts pku ospke avx512_vni md_clear flush_l1d arch_capabilities

/platform/cpuinfo cache data
cache size: 22528 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
node 0 size: 772622 MB
node 0 free: 763836 MB

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

Hewlett Packard Enterprise
(Test Sponsor: HPE)
Superdome Flex 280
(2.80 GHz, Intel Xeon Gold 6328HL)

SPECspeed®2017_int_base = 11.7
SPECspeed®2017_int_peak = 12.0

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

Test Date: Nov-2020
Hardware Availability: Nov-2020
Software Availability: Apr-2020

Platform Notes (Continued)

node 1 cpus: 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
node 1 size: 774139 MB
node 1 free: 771658 MB
node 2 cpus: 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47
node 2 size: 774112 MB
node 2 free: 770952 MB
node 3 cpus: 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63
node 3 size: 773619 MB
node 3 free: 772071 MB
node distances:
node 0 1 2 3
0: 10 16 16 24
1: 16 10 24 16
2: 16 24 10 16
3: 24 16 16 10

From /proc/meminfo
MemTotal: 3168761828 kB
HugePages_Total: 0
Hugepagesize: 2048 kB
/usr/bin/lsb_release -d
Red Hat Enterprise Linux release 8.2 (Ootpa)

From /etc/*release* /etc/*version*
  hpe-foundation-release: HPE Foundation Software 2.4, Build 734.0820.200723T0100.a.rhel182hpe-200723T0100
  os-release:
    NAME="Red Hat Enterprise Linux"
    VERSION="8.2 (Ootpa)"
    ID="rhel"
    ID_LIKE="fedora"
    VERSION_ID="8.2"
    PLATFORM_ID="platform:el8"
    PRETTY_NAME="Red Hat Enterprise Linux 8.2 (Ootpa)"
    ANSI_COLOR="0;31"
  redhat-release: Red Hat Enterprise Linux release 8.2 (Ootpa)
  system-release: Red Hat Enterprise Linux release 8.2 (Ootpa)
  system-release-cpe: cpe:/o:redhat:enterprise_linux:8.2:ga

uname -a:
Linux ch-620.fchst.rdlabs.hpecorp.net 4.18.0-193.el8.x86_64 #1 SMP Fri Mar 27 14:35:58 UTC 2020 x86_64 x86_64 x86_64 GNU/Linux

Kernel self-reported vulnerability status:

itlb_multihit: Not affected

(Continued on next page)
**Platform Notes (Continued)**

- 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: usercopy/swapgs barriers and __user pointer sanitization
- CVE-2017-5715 (Spectre variant 2): Mitigation: Enhanced IBRS, IBPB: conditional, RSB filling
- tsx_async_abort: Not affected

run-level 3 Dec 2 06:58

SPEC is set to: /home/cpu2017

From /sys/devices/virtual/dmi/id
BIOS: HPE Bundle:1.0.142 SFW:008.000.189.000.2010080501 10/08/2020
Vendor: HPE
Product: Superdome Flex 280
Product Family: 1590PID02020001
Serial: 5UF0130953

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 Hynix HMABAGL7ABR4N-XN 128 GB 4 rank 3200
- 24x NO DIMM NO DIMM

(End of data from sysinfo program)

**Compiler Version Notes**

```
==============================================================================
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)
==============================================================================
Intel(R) C Compiler for applications running on Intel(R) 64, Version 2021.1
   NextGen Build 20200304
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.
```

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

**Hewlett Packard Enterprise**  
(Test Sponsor: HPE)  
Superdome Flex 280  
(2.80 GHz, Intel Xeon Gold 6328HL)

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

**SPECspeed®2017_int_base = 11.7**  
**SPECspeed®2017_int_peak = 12.0**

---

### Compiler Version Notes (Continued)

<table>
<thead>
<tr>
<th>Language</th>
<th>Benchmark(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>600.perlbench_s(peak)</td>
</tr>
</tbody>
</table>
|          | Intel(R) C Intel(R) 64 Compiler for applications running on Intel(R) 64, Version 19.1.1.217 Build 20200306  
|          | Copyright (C) 1985-2020 Intel Corporation. All rights reserved. |
|          | 600.perlbench_s(base) 602.gcc_s(base, peak) 605.mcf_s(base, peak) 625.x264_s(base, peak) 657.xz_s(base, peak) |
|          | Intel(R) C Compiler for applications running on Intel(R) 64, Version 2021.1 NextGen Build 20200304  
|          | Copyright (C) 1985-2020 Intel Corporation. All rights reserved. |
| C++      | 620.omnetpp_s(base, peak) 623.xalancbmk_s(base, peak) 631.deepsjeng_s(base, peak) 641.leela_s(base, peak) |
|          | Intel(R) C++ Compiler for applications running on Intel(R) 64, Version 2021.1 NextGen Build 20200304  
|          | Copyright (C) 1985-2020 Intel Corporation. All rights reserved. |
| Fortran  | 648.exchange2_s(base, peak)               |
|          | Intel(R) Fortran Intel(R) 64 Compiler for applications running on Intel(R) 64, Version 19.1.1.217 Build 20200306  
|          | Copyright (C) 1985-2020 Intel Corporation. All rights reserved. |

---

### Base Compiler Invocation

C benchmarks:  

```shell
icc
```

(Continued on next page)
Hewlett Packard Enterprise  
Superdome Flex 280  
(2.80 GHz, Intel Xeon Gold 6328HL)

SPEC®2017_int_base = 11.7
SPEC®2017_int_peak = 12.0

CPU2017 License: 3  
Test Sponsor: HPE  
Test Date: Nov-2020

Tested by: HPE  
Hardware Availability: Nov-2020  
Software Availability: Apr-2020

### Base Compiler Invocation (Continued)

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

### Base Optimization Flags

C benchmarks:  
-m64 -qnextgen -std=c11  
-Wl,-plugin-opt=-x86-branches-within-32B-boundaries -Wl,-z,muldefs  
-xCORE-AVX512 -O3 -ffast-math -ftlo -mfpmath=sse -funroll-loops  
-fuse-ld=gold -qopt-mem-layout-trans=4 -fopenmp -DSPEC_OPENMP  
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc

C++ benchmarks:  
-m64 -qnextgen -Wl,-plugin-opt=-x86-branches-within-32B-boundaries -Wl,-z,muldefs -xCORE-AVX512 -O3 -ffast-math -ftlo -mfpmath=sse  
-funroll-loops -fuse-ld=gold -qopt-mem-layout-trans=4  
-L/usr/local/IntelCompiler19/compilers_and_libraries_2020.1.217/linux/compiler/lib/intel64_lin -ljqkmalloc

Fortran benchmarks:  
-m64 -Wl,-plugin-opt=-x86-branches-within-32B-boundaries -xCORE-AVX512 -O3 -ipo -no-prec-div -qopt-mem-layout-trans=4  
-nostandard-realloc-lhs -align array32byte  
-mbranches-within-32B-boundaries
# SPEC CPU®2017 Integer Speed Result

## Hewlett Packard Enterprise

*(Test Sponsor: HPE)*

Superdome Flex 280

*(2.80 GHz, Intel Xeon Gold 6328HL)*

---

<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>

---

### Peak Compiler Invocation

C benchmarks:

- icc

C++ benchmarks:

- icpc

Fortran benchmarks:

- ifort

---

### Peak Portability Flags

- `600.perlbench_s`: `-DSPEC_LP64 -DSPEC_LINUX_X64`
- `602.gcc_s`: `-DSPEC_LP64(*) -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`

(*) Indicates a portability flag that was found in a non-portability variable.

---

### 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 -qnextgen -std=c11 -fuse-ld=gold -Wl,-plugin-opt=-x86-branches-within-32B-boundaries -Wl,-z,muldefs -fprofile-generate(pass 1) -fprofile-use=default.profdata(pass 2) -xCORE-AVX512 -flto -Ofast(pass 1) -O3 -ffast-math -qopt-mem-layout-trans=4 -L/usr/local/jemalloc64-5.0.1/lib -ljemalloc`

---

(Continued on next page)
Hewlett Packard Enterprise  
(Test Sponsor: HPE)  
Superdome Flex 280  
(2.80 GHz, Intel Xeon Gold 6328HL)  

SPECspeed®2017_int_base = 11.7  
SPECspeed®2017_int_peak = 12.0

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

Test Date: Nov-2020  
Hardware Availability: Nov-2020  
Software Availability: Apr-2020

Peak Optimization Flags (Continued)

605.mcf_s: basepeak = yes

625.x264_s: -m64 -qnextgen -std=c11  
-Wl,-plugin-opt=-x86-branches-within-32B-boundaries  
-Wl,-z,muldefs -xCORE-AVX512 -flto -O3 -ffast-math  
-fuse-ld.gold -qopt-mem-layout-trans=4 -fno-alias  
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc

657.xz_s: basepeak = yes

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

The flags files that were used to format this result can be browsed at:  
http://www.spec.org/cpu2017/flags/HPE-Platform-Flags-Intel-V1.3-CLX-revC.html  

You can also download the XML flags sources by saving the following links:  
http://www.spec.org/cpu2017/flags/HPE-Platform-Flags-Intel-V1.3-CLX-revC.xml  

SPEC CPU and SPECspeed 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 2020-12-02 17:40:43-0500.  
Originally published on 2020-12-22.