### SPEC® CPU2017 Integer Speed Result

**Hewlett Packard Enterprise**  
(Test Sponsor: HPE)  
Synergy 480 Gen10  
(2.50 GHz, Intel Xeon Platinum 8180M)

| SPECspeed2017_int_base = | 9.12 |
| SPECspeed2017_int_peak = | Not Run |

| CPU2017 License: | 3 |
| Test Sponsor: | HPE |
| Tested by: | HPE |
| Test Date: | Oct-2017 |
| Hardware Availability: | Oct-2017 |
| Software Availability: | Sep-2017 |

<table>
<thead>
<tr>
<th>Threads</th>
<th>SPECspeed2017_int_base (9.12)</th>
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<tbody>
<tr>
<td>600.perlbench_s</td>
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<tr>
<td>602.gcc_s</td>
<td>56</td>
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<tr>
<td>605.mcf_s</td>
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<tr>
<td>620.omnetpp_s</td>
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<tr>
<td>623.xalanchmk_s</td>
<td>56</td>
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<tr>
<td>625.x264_s</td>
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</tr>
<tr>
<td>631.deepsjeng_s</td>
<td>56</td>
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<tr>
<td>641.leela_s</td>
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<td>648.exchange2_s</td>
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<tr>
<td>657.xz_s</td>
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| SPECspeed2017_int_base = 9.12 |

### Hardware

- **CPU Name:** Intel Xeon Platinum 8180M  
- **Max MHz.:** 3800  
- **Nominal:** 2500  
- **Enabled:** 56 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:** 38.5 MB I+D on chip per chip  
- **Other:** None  
- **Memory:** 384 GB (24 x 16 GB 2Rx8 PC4-2666V-R)  
- **Storage:** 1 x 480 GB SATA SSD, RAID 0  
- **Other:** None

### Software

- **OS:** Red Hat Enterprise Linux Server release 7.3  
  (Maipo)  
  Kernel 3.10.0-514.el7.x86_64  
- **Compiler:** C/C++: Version 18.0.0.128 of Intel C/C++  
  Compiler for Linux: Fortran: Version 18.0.0.128 of Intel Fortran  
  Compiler for Linux
- **Parallel:** Yes  
- **Firmware:** HPE BIOS Version I42 released Oct-2017 (tested with I42 9/27/2017)  
- **File System:** xfs  
- **System State:** Run level 3 (multi-user)  
- **Base Pointers:** 64-bit  
- **Peak Pointers:** Not Applicable  
- **Other:**  
  - jemalloc: jemalloc memory allocator library V5.0.1;  
  - jemalloc: configured and built at default for 32bit (i686) and 64bit (x86_64) targets;  
  - jemalloc: built with the RedHat Enterprise 7.4, and the system compiler g++ 4.8.5;  
  - jemalloc: sources available from jemalloc.net or releases
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Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
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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
IRQ balance service was stop using "service irqbalance stop"
Tuned-adm profile was set to Throughtput-Performance

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 i7-4790 CPU + 32GB RAM
memory using Redhat Enterprise Linux 7.4

Platform Notes
BIOS Configuration:
   Intel Hyperthreading set to Disabled
   Thermal Configuration set to Maximum Cooling
   LLC Prefetch set to Enabled
   LLC Dead Line Allocation set to Disabled
   Memory Patrol Scrubbing set to Disabled
   Workload Profile set to General Peak Frequency Compute

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**Test Date:** Oct-2017  
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**Software Availability:** Sep-2017

### Platform Notes (Continued)

Energy/Performance Bias set to Maximum Performance  
Workload Profile set to Custom  
Sysinfo program /home/cpu2017/bin/sysinfo  
Rev: r5797 of 2017-06-14 96c45e4568ad54c135fd618bccc091c0f  
running on SY480_Hjp_RHEL Thu Nov 9 01:01:00 2017

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 8180M CPU @ 2.50GHz
2  "physical id"s (chips)
56 "processors"
cores, siblings (counting these is hw and system dependent. The following excerpts from /proc/cpuinfo might not be reliable. Use with caution.)
cpu cores : 28
siblings : 28
physical 0: cores 0 1 2 3 4 5 6 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 4 5 6 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
CPU(s): 56
On-line CPU(s) list: 0-55
Thread(s) per core: 1
Core(s) per socket: 28
Socket(s): 2
NUMA node(s): 2
Vendor ID: GenuineIntel
CPU family: 6
Model: 85
Model name: Intel(R) Xeon(R) Platinum 8180M CPU @ 2.50GHz
Stepping: 4
CPU MHz: 2500.000
BogoMIPS: 5005.35
Virtualization: VT-x
L1d cache: 32K
L1i cache: 32K
L2 cache: 1024K
L3 cache: 39424K
NUMA node0 CPU(s): 0-27
```

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Platform Notes (Continued)

NUMA node CPU(s): 28-55

/proc/cpuinfo cache data
  cache size : 39424 KB

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

From /proc/meminfo
  MemTotal: 395926720 kB
  HugePages_Total: 0
  Hugepagesize: 2048 kB

From /etc/*release* /etc/*version*
  NAME="Red Hat Enterprise Linux Server"
  VERSION="7.3 (Maipo)"
  ID="rhel"
  ID_LIKE="fedora"
  VERSION_ID="7.3"
  PRETTY_NAME="Red Hat Enterprise Linux Server 7.3 (Maipo)"
  ANSI_COLOR="0;31"
  CPE_NAME="cpe:/o:redhat:enterprise_linux:7.3:GA:server"
  redhat-release: Red Hat Enterprise Linux Server release 7.3 (Maipo)
  system-release: Red Hat Enterprise Linux Server release 7.3 (Maipo)

uname -a:
  Linux SY480_Hjp_RHEL 3.10.0-514.el7.x86_64 #1 SMP Wed Oct 19 11:24:13 EDT 2016 x86_64
  x86_64 x86_64 GNU/Linux

run-level 3 Nov 9 00:57

SPEC is set to: /home/cpu2017

Filesystem Type Size Used Avail Use% Mounted on
/dev/mapper/rhel-home xfs 392G 28G 365G 7% /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 I42 09/27/2017
  Memory:
    24x UNKNOWN NOT AVAILABLE 16 GB 2 rank 2666

(End of data from sysinfo program)
### Compiler Version Notes

<table>
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<td>648.exchange2_s</td>
<td>ifort (IFORT)</td>
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Base Compiler Invocation

- **C benchmarks:**
  - icc
- **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`

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### Base Portability Flags (Continued)

- `641.leela_s`: -DSPEC_LP64
- `648.exchange2_s`: -DSPEC_LP64
- `657.xz_s`: -DSPEC_LP64

### Base Optimization Flags

#### C benchmarks:
- `-Wl,-z,muldefs -xCORE-AVX2 -ipo -O3 -no-prec-div`
- `-qopt-mem-layout-trans=3 -qopenmp -DSPEC_OPENMP`
- `-L/usr/local/je5.0.1-64/lib -ljemalloc`

#### C++ benchmarks:
- `-Wl,-z,muldefs -xCORE-AVX2 -ipo -O3 -no-prec-div`
- `-qopt-mem-layout-trans=3 -L/usr/local/je5.0.1-64/lib -ljemalloc`

#### Fortran benchmarks:
- `-Wl,-z,muldefs -xCORE-AVX2 -ipo -O3 -no-prec-div`
- `-qopt-mem-layout-trans=3 -nostandard-realloc-lhs -align array32byte`
- `-L/usr/local/je5.0.1-64/lib -ljemalloc`

### Base Other Flags

#### C benchmarks:
- `-m64 -std=c11`

#### C++ benchmarks:
- `-m64`

#### Fortran benchmarks:
- `-m64`

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-SKX-revG.html](http://www.spec.org/cpu2017/flags/HPE-Platform-Flags-Intel-V1.2-SKX-revG.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-SKX-revG.xml](http://www.spec.org/cpu2017/flags/HPE-Platform-Flags-Intel-V1.2-SKX-revG.xml)
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For questions about this result, please contact the tester. For other inquiries, please contact info@spec.org.

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