# SPEC® CPU2017 Integer Speed Result

**Hewlett Packard Enterprise**  
(Test Sponsor: HPE)  
Synergy 480 Gen10  
(1.70 GHz, Intel Xeon Bronze 3104)

<table>
<thead>
<tr>
<th>SPECspeed2017_int_base</th>
<th>4.03</th>
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<tbody>
<tr>
<td>SPECspeed2017_int_peak</td>
<td>Not Run</td>
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- **CPU2017 License:** 3  
- **Test Sponsor:** HPE  
- **Tested by:** HPE  
- **Test Date:** Dec-2017  
- **Hardware Availability:** Oct-2017  
- **Software Availability:** Sep-2017

<table>
<thead>
<tr>
<th>Threads</th>
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<tr>
<td>600.perlbench_s 12</td>
<td>2.82</td>
</tr>
<tr>
<td>601.gcc_s 12</td>
<td>4.52</td>
</tr>
<tr>
<td>605.mcf_s 12</td>
<td>5.83</td>
</tr>
<tr>
<td>620.omnetpp_s 12</td>
<td>2.90</td>
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<tr>
<td>623.xalancbmk_s 12</td>
<td>4.45</td>
</tr>
<tr>
<td>625.x264_s 12</td>
<td>4.71</td>
</tr>
<tr>
<td>631.deepsjeng_s 12</td>
<td>2.54</td>
</tr>
<tr>
<td>641.leela_s 12</td>
<td>1.98</td>
</tr>
<tr>
<td>648.exchange2_s 12</td>
<td>6.17</td>
</tr>
<tr>
<td>657.xz_s 12</td>
<td>8.07</td>
</tr>
</tbody>
</table>

## Hardware

- **CPU Name:** Intel Xeon Bronze 3104  
- **Max MHz.:** 1700  
- **Nominal:** 1700  
- **Enabled:** 12 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:** 8.25 MB I+D on chip per chip  
- **Other:** None  
- **Memory:** 384 GB (24 x 16 GB 2Rx8 PC4-2666V-R, running at 2133)  
- **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 09/27/2017)  
- **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 gcc 4.8.5;  
  jemalloc: sources available from jemalloc.net or releases
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SPECspeed2017_int_peak = Not Run

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Results Table

<table>
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<tr>
<th>Benchmark</th>
<th>Threads</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
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<tr>
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<td>625.x264_s</td>
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<td>631.deepsjeng_s</td>
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<td>565</td>
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<tr>
<td>641.leela_s</td>
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<td>8.07</td>
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<td>767</td>
<td>8.06</td>
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</tbody>
</table>

SPECspeed2017_int_base = 4.03
SPECspeed2017_int_peak = Not Run

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
Filesystem page cache cleared with:
shell invocation of 'sync; echo 3 > /proc/sys/vm/drop_caches' prior to run
irqbalance disabled with "systemctl stop irqbalance"
tuned profile set with "tuned-adm profile throughput-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:
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
Energy/Performance Bias set to Maximum Performance

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Platform Notes (Continued)

Workload Profile set to Custom
NUMA Group Size Optimization set to Flat
Sysinfo program /home/cpu2017/bin/sysinfo
Rev: r5797 of 2017-06-14 96c45e4568ad54c135fd618bce091c0f
running on SY480_Hjp_RHEL Fri Dec 8 19:45:14 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) Bronze 3104 CPU @ 1.70GHz
  2 "physical id"'s (chips)
  12 "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 : 6
siblings : 6
physical 0: cores 0 1 2 3 4 5
physical 1: cores 0 1 2 3 4 5

From lscpu:
Architecture: x86_64
CPU op-mode(s): 32-bit, 64-bit
Byte Order: Little Endian
CPU(s): 12
On-line CPU(s) list: 0-11
Thread(s) per core: 1
Core(s) per socket: 6
Socket(s): 2
NUMA node(s): 2
Vendor ID: GenuineIntel
CPU family: 6
Model: 85
Model name: Intel(R) Xeon(R) Bronze 3104 CPU @ 1.70GHz
Stepping: 4
CPU MHz: 1700.000
BogoMIPS: 3405.49
Virtualization: VT-x
L1d cache: 32K
L1i cache: 32K
L2 cache: 1024K
L3 cache: 8448K
NUMA node0 CPU(s): 0-2, 6-8
NUMA node1 CPU(s): 3-5, 9-11

/proc/cpuinfo cache data

(Continued on next page)
Platform Notes (Continued)

cache size : 8448 KB

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

From /proc/meminfo
   MemTotal: 395933616 kB
   HugePages_Total: 0
   Hugepagesize: 2048 kB

From /etc/*release*/etc/*version*
   os-release:
      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 Dec 8 19:41

SPEC is set to: /home/cpu2017
   Filesystem Type Size Used Avail Use% Mounted on
   /dev/mapper/rhel-home xfs 392G 29G 363G 8% /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, configured at 2133

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

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<thead>
<tr>
<th>Compiler</th>
<th>Version</th>
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<tr>
<td><strong>icc (ICC)</strong></td>
<td>18.0.0 20170811</td>
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### Base Compiler Invocation

- **C benchmarks:** icc
- **C++ benchmarks:** icpc
- **Fortran benchmarks:** ifort

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### 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

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### 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-revH.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-revH.xml
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Tested with SPEC CPU2017 v1.0.2 on 2017-12-08 19:45:13-0500.  