## SPEC® CPU2017 Integer Rate Result

**Hewlett Packard Enterprise**  
(Test Sponsor: HPE)  
ProLiant ML30 Gen9  
(3.50 GHz, Intel Xeon E3-1230 v6)  

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<td>Software Availability:</td>
<td>Sep-2017</td>
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**SPECrates**

- **SPECrates2017_int_base** = 26.2  
- **SPECrates2017_int_peak** = Not Run  

### Hardware

- **CPU Name:** Intel Xeon E3-1230 v6  
- **Max MHz.:** 3900  
- **Nominal:** 3500  
- **Enabled:** 4 cores, 1 chip, 2 threads/core  
- **Orderable:** 1 chip  
- **Cache L1:** 32 KB I + 32 KB D on chip per core  
- **L2:** 256 KB I+D on chip per core  
- **L3:** 8 MB I+D on chip per chip  
- **Other:** None  
- **Memory:** 64 GB (4 x 16 GB 2Rx8 PC4-2400T-E)  
- **Storage:** 1 x 800 GB SATA SSD, RAID 0  
- **Other:** None  

### Software

- **OS:** SUSE Linux Enterprise Server 12 (x86_64) SP3  
  Kernel 4.4.73-5-default  
- **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:** No  
- **Firmware:** HPE BIOS version U23 released Oct-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 via jemalloc.net

### SPECrate Results

<table>
<thead>
<tr>
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**CPU2017 License:** 3  
**Test Sponsor:** HPE  
**Test Date:** Nov-2017  
**Hardware Availability:** Oct-2017  
**Tested by:** HPE  
**Software Availability:** Sep-2017

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## Results Table

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**SPECrate2017_int_base =** 26.2  
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Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

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## Submit Notes

The taskset mechanism was used to bind copies to processors. The config file option 'submit' was used to generate taskset commands to bind each copy to a specific processor. For details, please see the config file.

---

## 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
```

---

## General Notes

Environment variables set by runcpu before the start of the run:  
```
LD_LIBRARY_PATH = "/home/cpu2017/lib/ia32:/home/cpu2017/lib/intel64:/home/cpu2017/je5.0.1-32"
LD_LIBRARY_PATH = "$LD_LIBRARY_PATH:/home/cpu2017/je5.0.1-64"
```

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  
Power Profile set to Custom

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

- Power Regulator set to Static High Performance Mode
- Minimum Processor Idle Power Core C-State set to C6 State
- Minimum Processor Idle Power Package C-State set to No Package State
- Energy/Performance Bias set to Maximum Performance
- Collaborative Power Control set to Disabled
- Thermal Configuration set to Maximum Cooling
- Processor Power and Utilization Monitoring set to Disabled
- Memory Refresh set to 1x Refresh
- Sysinfo program /home/cpu2017/bin/sysinfo
- Rev: r5797 of 2017-06-14 96c45e4568ad54c135fd618bcc091c0f running on linux-b589 Fri Nov 10 16:18:41 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) CPU E3-1230 v6 @ 3.50GHz
- 1 "physical id"s (chips)
- 8 "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: 4
- siblings: 8
- physical 0: cores 0 1 2 3

From `lscpu`:
- Architecture: x86_64
- CPU op-mode(s): 32-bit, 64-bit
- Byte Order: Little Endian
- CPU(s): 8
- On-line CPU(s) list: 0-7
- Thread(s) per core: 2
- Core(s) per socket: 4
- Socket(s): 1
- NUMA node(s): 1
- Vendor ID: GenuineIntel
- CPU family: 6
- Model: 158
- Model name: Intel(R) Xeon(R) CPU E3-1230 v6 @ 3.50GHz
- Stepping: 9
- CPU MHz: 3503.947
- BogoMIPS: 7007.89
- Virtualization: VT-x
- L1d cache: 32K
- L1i cache: 32K
- L2 cache: 256K

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

- L3 cache: 6144K
- NUMA node0 CPU(s): 0-7
- 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
  - aperfmpref eagerfpu pni pclmulqdq dtes64 monitor ds cpl vmx smx est tm2 ssse3 sdbg
  - fma cx16 xti pr pdcm pcid sse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer aes
  - xsave avx f16c rdrand lahf_lm abm 3dnowprefetch ida arat epb pni pclmcm dtherm hwp
  - hwp_notify hwp_act_window hwp_epp intel_pt tpr_shadow vnmi flexpriority ept vpid
  - fsgsbse tsc_adjust bmi1 hle avx2 smep bmi2 ets invpcid rdtscp
  - clflushopt xsaveopt xsavec xgetbv1

/web/cpuinfo cache data
- cache size: 6144 KB

From numactl --hardware WARNING: a numactl 'node' might or might not correspond to a physical chip.
- available: 1 nodes (0)
- node 0 cpus: 0 1 2 3 4 5 6 7
- node 0 size: 64211 MB
- node 0 free: 63733 MB
- node distances:
- node 0
  - 0: 10

From /proc/meminfo
- MemTotal: 65752892 kB
- HugePages_Total: 0
- Hugepagesize: 2048 kB

/usr/bin/lsb_release -d
- SUSE Linux Enterprise Server 12 SP3

From /etc/*release* /etc/*version*
- SuSE-release:
  - SUSE Linux Enterprise Server 12 (x86_64)
  - VERSION = 12
  - PATCHLEVEL = 3
  - # This file is deprecated and will be removed in a future service pack or release.
  - # Please check /etc/os-release for details about this release.

os-release:
- NAME="SLES"
- VERSION="12-SP3"
- VERSION_ID="12.3"
- PRETTY_NAME="SUSE Linux Enterprise Server 12 SP3"
- ID="sles"
- ANSI_COLOR="0;32"
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Platform Notes (Continued)

CPE_NAME="cpe:/o:suse:sles:12:sp3"

uname -a:
   Linux linux-b589 4.4.73-5-default #1 SMP Tue Jul 4 15:33:39 UTC 2017 (b7ce4e4) x86_64
   x86_64 x86_64 GNU/Linux

run-level 3 Nov 10 16:17

SPEC is set to: /home/cpu2017

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 HP U23 10/02/2017
Memory:
   4x HP 862690-091 16 GB 2 rank 2400

(End of data from sysinfo program)

Compiler Version Notes

==============================================================================
CC  500.perlbench_r(base) 502.gcc_r(base) 505.mcf_r(base) 525.x264_r(base)
   557.xz_r(base)
------------------------------------------------------------------------------
icc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------
==============================================================================
CXXC 520.omnetpp_r(base) 523.xalancbmk_r(base) 531.deepsjeng_r(base)
   541.leela_r(base)
------------------------------------------------------------------------------
icpc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------
==============================================================================
FC  548.exchange2_r(base)
------------------------------------------------------------------------------
ifort (IFORT) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------
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Base Compiler Invocation

C benchmarks:
icc

C++ benchmarks:
icpc

Fortran benchmarks:
ifort

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:
-W1, -z, muldefs -xCORE-AVX2 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=3 -L/usr/local/je5.0.1-64/lib -ljemalloc

C++ benchmarks:
-W1, -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:
-W1, -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
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#### 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:

- [HPE-Platform-Flags-Intel-V1.2-HSW-revG.html](http://www.spec.org/cpu2017/flags/HPE-Platform-Flags-Intel-V1.2-HSW-revG.html)

You can also download the XML flags sources by saving the following links:

- [HPE-Platform-Flags-Intel-V1.2-HSW-revG.xml](http://www.spec.org/cpu2017/flags/HPE-Platform-Flags-Intel-V1.2-HSW-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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