SPEC® CPU2017 Integer Rate Result

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Dell Inc.

$SPECrate2017\_int\_base =$ 150

PowerEdge C6420 (Intel Xeon Gold 6136, 3.00 GHz)

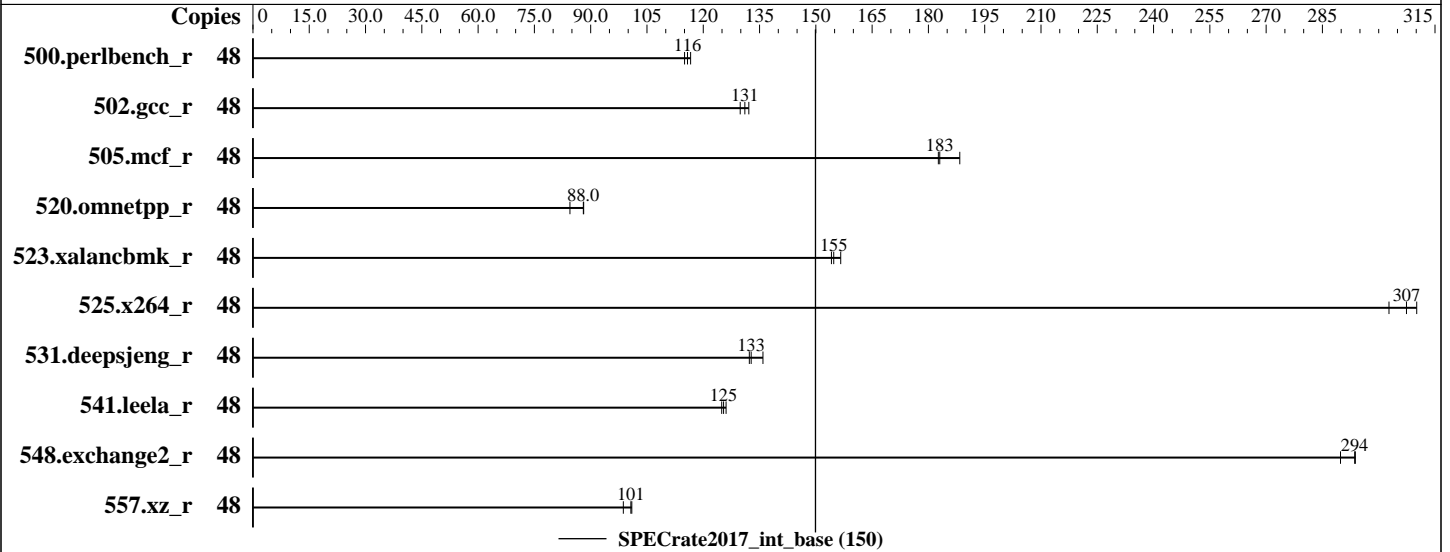$SPECrate2017\_int\_peak =$ Not Run

CPU2017 License: 55
Test Sponsor: Dell Inc.
Tested by: Dell Inc.

Test Date: Dec-2017
Hardware Availability: Sep-2017
Software Availability: Sep-2017

Benchmark	Copies	Result
500.perlbench_r	48	116
502.gcc_r	48	131
505.mcf_r	48	183
520.omnetpp_r	48	88.0
523.xalancbmk_r	48	155
525.x264_r	48	307
531.deepsjeng_r	48	133
541.leela_r	48	125
548.exchange2_r	48	294
557.xz_r	48	101

SPECrate2017_int_base (150)

Hardware

CPU Name: Intel Xeon Gold 6136
 Max MHz.: 3700
 Nominal: 3000
Enabled: 24 cores, 2 chips, 2 threads/core
Orderable: 1,2 chips
Cache L1: 32 KB I + 32 KB D on chip per core
 L2: 1 MB I+D on chip per core
 L3: 24.75 MB I+D on chip per chip
 Other: None
Memory: 192 GB (12 x 16 GB 2Rx8 PC4-2666V-R)
Storage: 480 GB SATA SSD
Other: None

Software

OS: CentOS Linux release 7.4.1708 (Core)
 3.10.0-693.5.2.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: No
Firmware: Version 1.0.8 released Jul-2017
File System: xfs
System State: Run level 3 (multi-user)
Base Pointers: 64-bit
Peak Pointers: 32/64-bit
Other: jemalloc: jemalloc memory allocator library
 V5.0.1;

Standard Performance Evaluation Corporation (info@spec.org)
https://www.spec.org/

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Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
500.perlbench_r	48	655	117	**660**	**116**	664	115							
502.gcc_r	48	514	132	**519**	**131**	523	130							
505.mcf_r	48	412	188	425	183	**424**	**183**							
520.omnetpp_r	48	**715**	**88.0**	715	88.1	746	84.5							
523.xalancbmk_r	48	324	157	**328**	**155**	329	154							
525.x264_r	48	271	310	**273**	**307**	278	303							
531.deepsjeng_r	48	405	136	**414**	**133**	416	132							
541.leela_r	48	630	126	**634**	**125**	636	125							
548.exchange2_r	48	**428**	**294**	434	290	428	294							
557.xz_r	48	513	101	525	98.7	**515**	**101**							
SPECrate2017_int_base =		**150**												
SPECrate2017_int_peak =		**Not Run**												

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

Submit Notes

The numactl mechanism was used to bind copies to processors. The config file option 'submit'
was used to generate numactl 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"

General Notes

Environment variables set by runcpu before the start of the run:

LD_LIBRARY_PATH = "/root/cpu2017/lib/ia32:/root/cpu2017/lib/intel64:/root/cpu2017/je5.0.1-32:/root/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
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
runcpu command invoked through numactl i.e.:
numactl --interleave=all runcpu <etc>

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;

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General Notes (Continued)

```
jemalloc: sources available via jemalloc.net

No: The test sponsor attests, as of date of publication, that CVE-2017-5754 (Meltdown)
is mitigated in the system as tested and documented.
No: 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.
No: 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.


This benchmark result is intended to provide perspective on
past performance using the historical hardware and/or
software described on this result page.

The system as described on this result page was formerly
generally available.  At the time of this publication, it may
not be shipping, and/or may not be supported, and/or may fail
to meet other tests of General Availability described in the
SPEC OSG Policy document, http://www.spec.org/osg/policy.html

This measured result may not be representative of the result
that would be measured were this benchmark run with hardware
and software available as of the publication date.
```

Platform Notes

```
BIOS settings:
Virtualization Technology disabled
System Profile set to Custom
CPU Power Management set to Maximum Performance
Memory Frequency set to Maximum Performance
Turbo Boost enabled
C States disabled
Memory Patrol Scrub disabled
PCI ASPM L1 Link Power Management disabled
 Sysinfo program /root/cpu2017/bin/sysinfo
 Rev: r5797 of 2017-06-14 96c45e4568ad54c135fd618bcc091c0f
 running on localhost.localdomain Tue Dec 19 20:57:46 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) Gold 6136 CPU @ 3.00GHz
       2  "physical id"s (chips)
       48 "processors"
```

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Platform Notes (Continued)

```
    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 : 12
      siblings  : 24
      physical 0: cores 0 3 4 5 6 7 16 18 19 20 21 22
      physical 1: cores 0 1 2 3 4 9 10 16 18 19 25 26

  From lscpu:
      Architecture:          x86_64
      CPU op-mode(s):        32-bit, 64-bit
      Byte Order:            Little Endian
      CPU(s):                48
      On-line CPU(s) list:   0-47
      Thread(s) per core:    2
      Core(s) per socket:    12
      Socket(s):             2
      NUMA node(s):          4
      Vendor ID:             GenuineIntel
      CPU family:            6
      Model:                 85
      Model name:            Intel(R) Xeon(R) Gold 6136 CPU @ 3.00GHz
      Stepping:              4
      CPU MHz:               3000.000
      BogoMIPS:              6000.00
      Virtualization:        VT-x
      L1d cache:             32K
      L1i cache:             32K
      L2 cache:              1024K
      L3 cache:              25344K
      NUMA node0 CPU(s):     0,4,8,12,16,20,24,28,32,36,40,44
      NUMA node1 CPU(s):     1,5,9,13,17,21,25,29,33,37,41,45
      NUMA node2 CPU(s):     2,6,10,14,18,22,26,30,34,38,42,46
      NUMA node3 CPU(s):     3,7,11,15,19,23,27,31,35,39,43,47
      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
    aperfmperf eagerfpu pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 fma
    cx16 xtpr pdcm pcid dca sse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer aes
    xsave avx f16c rdrand lahf_lm abm 3dnowprefetch epb cat_l3 cdp_l3 intel_pt
    tpr_shadow vnmi flexpriority ept vpid fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2
    erms invpcid rtm cqm mpx rdt_a avx512f avx512dq rdseed adx smap clflushopt clwb
    avx512cd avx512bw avx512vl xsaveopt xsavec xgetbv1 cqm_llc cqm_occup_llc
    cqm_mbm_total cqm_mbm_local dtherm ida arat pln pts

  /proc/cpuinfo cache data
    cache size : 25344 KB
```

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SPECrate2017_int_peak =   Not Run

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Software Availability: Sep-2017

Platform Notes (Continued)

```
 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 4 8 12 16 20 24 28 32 36 40 44
   node 0 size: 47813 MB
   node 0 free: 46247 MB
   node 1 cpus: 1 5 9 13 17 21 25 29 33 37 41 45
   node 1 size: 49152 MB
   node 1 free: 47877 MB
   node 2 cpus: 2 6 10 14 18 22 26 30 34 38 42 46
   node 2 size: 49152 MB
   node 2 free: 47799 MB
   node 3 cpus: 3 7 11 15 19 23 27 31 35 39 43 47
   node 3 size: 49152 MB
   node 3 free: 47856 MB
   node distances:
   node   0   1   2   3
     0:  10  21  11  21
     1:  21  10  21  11
     2:  11  21  10  21
     3:  21  11  21  10

 From /proc/meminfo
    MemTotal:       196689516 kB
    HugePages_Total:      128
    Hugepagesize:        2048 kB

 From /etc/*release* /etc/*version*
    centos-release: CentOS Linux release 7.4.1708 (Core)
    centos-release-upstream: Derived from Red Hat Enterprise Linux 7.4 (Source)
    os-release:
       NAME="CentOS Linux"
       VERSION="7 (Core)"
       ID="centos"
       ID_LIKE="rhel fedora"
       VERSION_ID="7"
       PRETTY_NAME="CentOS Linux 7 (Core)"
       ANSI_COLOR="0;31"
       CPE_NAME="cpe:/o:centos:centos:7"
    redhat-release: CentOS Linux release 7.4.1708 (Core)
    system-release: CentOS Linux release 7.4.1708 (Core)
    system-release-cpe: cpe:/o:centos:centos:7

 uname -a:
    Linux localhost.localdomain 3.10.0-693.5.2.el7.x86_64 #1 SMP Fri Oct 20 20:32:50 UTC
    2017 x86_64 x86_64 x86_64 GNU/Linux
```

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Platform Notes (Continued)

```
 run-level 3 Dec 19 20:47

 SPEC is set to: /root/cpu2017
    Filesystem      Type  Size  Used Avail Use% Mounted on
    /dev/sda2       xfs   433G   13G  420G   3% /

 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 Dell Inc. 1.0.8 07/12/2017
   Memory:
    3x 002C00B3002C 18ASF2G72PDZ-2G6D1 16 GB 2 rank 2666
    9x 00AD00B300AD HMA82GR7AFR8N-VK 16 GB 2 rank 2666
    4x Not Specified Not Specified

 (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:
`-Wl,-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:
`-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`

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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

http://www.spec.org/cpu2017/flags/Intel-ic18.0-official-linux64.2017-10-19.html

http://www.spec.org/cpu2017/flags/Dell-Platform-Flags-PowerEdge14G-revD.html

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

http://www.spec.org/cpu2017/flags/Intel-ic18.0-official-linux64.2017-10-19.xml

http://www.spec.org/cpu2017/flags/Dell-Platform-Flags-PowerEdge14G-revD.xml

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

Tested with SPEC CPU2017 v1.0.2 on 2017-12-19 21:57:45-0500.

Report generated on 2018-10-31 16:20:11 by CPU2017 PDF formatter v6067.

Originally published on 2018-02-27.