



# SPEC® CPU2017 Integer Rate Result

Copyright 2017-2018 Standard Performance Evaluation Corporation

## Dell Inc.

PowerEdge R940  
(Intel Xeon Gold 5118, 2.30 GHz)

SPECrate2017\_int\_base = 238

SPECrate2017\_int\_peak = 250

CPU2017 License: 55

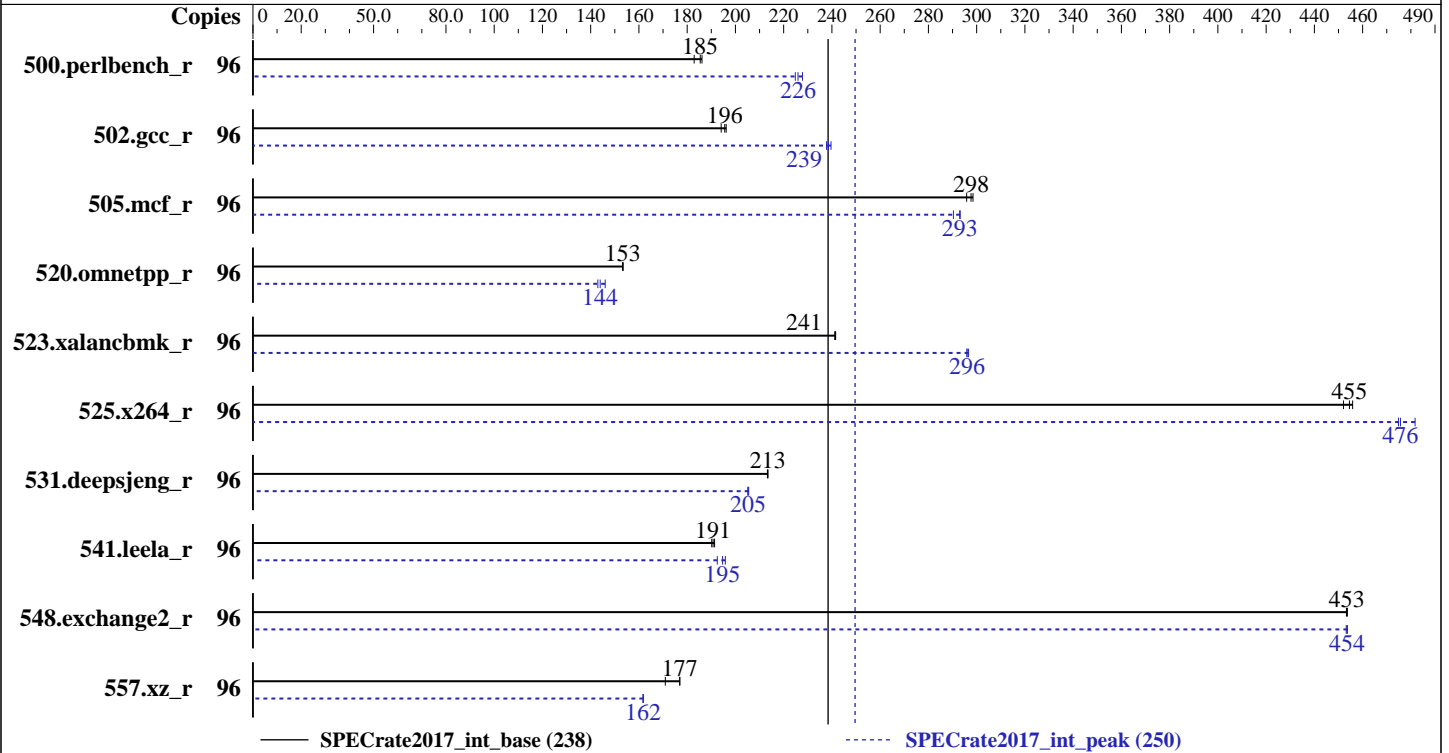
Test Sponsor: Dell Inc.

Tested by: Dell Inc.

Test Date: Oct-2017

Hardware Availability: Sep-2017

Software Availability: Sep-2017



### Hardware

CPU Name: Intel Xeon Gold 5118  
 Max MHz.: 3200  
 Nominal: 2300  
 Enabled: 48 cores, 4 chips, 2 threads/core  
 Orderable: 2,4 chip  
 Cache L1: 32 KB I + 32 KB D on chip per core  
 L2: 1 MB I+D on chip per core  
 L3: 16.5 MB I+D on chip per chip  
 Other: None  
 Memory: 768 GB (48 x 16 GB 2Rx8 PC4-2666V-R, running at 2400)  
 Storage: 1 x 900 GB 15K RPM SAS12  
 Other: None

### Software

OS: SUSE Linux Enterprise Server 12 SP2 4.4.21-69-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: Version 1.1.7 released Sep-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;  
 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



# SPEC CPU2017 Integer Rate Result

Copyright 2017-2018 Standard Performance Evaluation Corporation

## Dell Inc.

PowerEdge R940  
(Intel Xeon Gold 5118, 2.30 GHz)

SPECrate2017\_int\_base = 238

SPECrate2017\_int\_peak = 250

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

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

## Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
500.perlbench_r	96	821	186	<b>824</b>	<b>185</b>	836	183	96	671	228	680	225	<b>676</b>	<b>226</b>
502.gcc_r	96	700	194	<b>695</b>	<b>196</b>	693	196	96	572	238	<b>570</b>	<b>239</b>	567	240
505.mcf_r	96	520	298	<b>521</b>	<b>298</b>	524	296	96	534	290	529	293	<b>530</b>	<b>293</b>
520.omnetpp_r	96	<b>821</b>	<b>153</b>	821	153	822	153	96	863	146	881	143	<b>875</b>	<b>144</b>
523.xalancbmk_r	96	<b>420</b>	<b>241</b>	420	241	420	242	96	<b>342</b>	<b>296</b>	342	297	343	296
525.x264_r	96	369	456	<b>370</b>	<b>455</b>	372	452	96	<b>353</b>	<b>476</b>	354	475	349	482
531.deepsjeng_r	96	515	213	516	213	<b>515</b>	<b>213</b>	96	536	205	<b>536</b>	<b>205</b>	535	205
541.leela_r	96	831	191	<b>833</b>	<b>191</b>	836	190	96	812	196	826	192	<b>817</b>	<b>195</b>
548.exchange2_r	96	<b>555</b>	<b>453</b>	555	453	554	454	96	555	453	<b>555</b>	<b>454</b>	554	454
557.xz_r	96	586	177	<b>586</b>	<b>177</b>	607	171	96	<b>641</b>	<b>162</b>	641	162	641	162

SPECrate2017\_int\_base = 238

SPECrate2017\_int\_peak = 250

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 = "/home/cpu2017/lib/ia32:/home/cpu2017/lib/intel64:/home/cpu2017/je5.0.1-32:/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

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>



# SPEC CPU2017 Integer Rate Result

Copyright 2017-2018 Standard Performance Evaluation Corporation

**Dell Inc.**

PowerEdge R940  
(Intel Xeon Gold 5118, 2.30 GHz)

SPECrate2017\_int\_base = 238

SPECrate2017\_int\_peak = 250

**CPU2017 License:** 55

**Test Sponsor:** Dell Inc.

**Tested by:** Dell Inc.

**Test Date:** Oct-2017

**Hardware Availability:** Sep-2017

**Software Availability:** Sep-2017

## Platform Notes

BIOS settings:

```

Logical Processor Enabled
Virtualization Technology Disabled
Sub NUMA Cluster Enabled
System Profile set to Custom
CPU Performance set to Maximum Performance
C1E Disabled
C States set to Autonomous
Uncore Frequency set to Dynamic
Memory Patrol Scrub Disabled
Energy Efficiency Policy set to Performance
CPU Interconnect Bus Link Power Management Disabled
PCI ASPM L1 Link Power Management Disabled
Sysinfo program /home/cpu2017/bin/sysinfo
Rev: r5797 of 2017-06-14 96c45e4568ad54c135fd618bcc091c0f
running on linux-apb2 Thu Oct 26 04:27:15 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 5118 CPU @ 2.30GHz
 4 "physical id"s (chips)
 96 "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 : 12
siblings : 24
physical 0: cores 0 1 2 3 4 5 8 9 10 11 12 13
physical 1: cores 0 1 2 3 4 5 8 9 10 11 12 13
physical 2: cores 0 1 2 3 4 5 8 9 10 11 12 13
physical 3: cores 0 1 2 3 4 5 8 9 10 11 12 13

```

From lscpu:

```

Architecture:          x86_64
CPU op-mode(s):        32-bit, 64-bit
Byte Order:            Little Endian
CPU(s):                96
On-line CPU(s) list:   0-95
Thread(s) per core:    2
Core(s) per socket:    12
Socket(s):              4
NUMA node(s):          8
Vendor ID:              GenuineIntel
CPU family:             6
Model:                 85

```

(Continued on next page)



# SPEC CPU2017 Integer Rate Result

Copyright 2017-2018 Standard Performance Evaluation Corporation

**Dell Inc.**

PowerEdge R940  
(Intel Xeon Gold 5118, 2.30 GHz)

SPECrate2017\_int\_base = 238

SPECrate2017\_int\_peak = 250

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

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

## Platform Notes (Continued)

```

Model name:          Intel(R) Xeon(R) Gold 5118 CPU @ 2.30GHz
Stepping:            4
CPU MHz:             2294.623
BogoMIPS:            4589.24
Virtualization:     VT-x
L1d cache:          32K
L1i cache:          32K
L2 cache:           1024K
L3 cache:           16896K
NUMA node0 CPU(s):  0, 8, 16, 24, 32, 40, 48, 56, 64, 72, 80, 88
NUMA node1 CPU(s):  1, 9, 17, 25, 33, 41, 49, 57, 65, 73, 81, 89
NUMA node2 CPU(s):  2, 10, 18, 26, 34, 42, 50, 58, 66, 74, 82, 90
NUMA node3 CPU(s):  3, 11, 19, 27, 35, 43, 51, 59, 67, 75, 83, 91
NUMA node4 CPU(s):  4, 12, 20, 28, 36, 44, 52, 60, 68, 76, 84, 92
NUMA node5 CPU(s):  5, 13, 21, 29, 37, 45, 53, 61, 69, 77, 85, 93
NUMA node6 CPU(s):  6, 14, 22, 30, 38, 46, 54, 62, 70, 78, 86, 94
NUMA node7 CPU(s):  7, 15, 23, 31, 39, 47, 55, 63, 71, 79, 87, 95

```

```

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
aperfmpperf eagerfpu pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 sdbg
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 ida arat epb pln pts dtherm intel_pt
tpr_shadow vnmi flexpriority ept vpid fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2
erms invpcid rtm cqm mpx avx512f avx512dq rdseed adx smap clflushopt clwb avx512cd
avx512bw avx512vl xsaveopt xsavec xgetbv1 cqm_llc cqm_occup_llc

```

```

/proc/cpuinfo cache data
cache size : 16896 KB

```

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

```

available: 8 nodes (0-7)
node 0 cpus: 0 8 16 24 32 40 48 56 64 72 80 88
node 0 size: 95359 MB
node 0 free: 95003 MB
node 1 cpus: 1 9 17 25 33 41 49 57 65 73 81 89
node 1 size: 96760 MB
node 1 free: 96451 MB
node 2 cpus: 2 10 18 26 34 42 50 58 66 74 82 90
node 2 size: 96760 MB
node 2 free: 96447 MB
node 3 cpus: 3 11 19 27 35 43 51 59 67 75 83 91
node 3 size: 96760 MB
node 3 free: 96449 MB
node 4 cpus: 4 12 20 28 36 44 52 60 68 76 84 92
node 4 size: 96760 MB

```

(Continued on next page)



# SPEC CPU2017 Integer Rate Result

Copyright 2017-2018 Standard Performance Evaluation Corporation

**Dell Inc.**

PowerEdge R940  
(Intel Xeon Gold 5118, 2.30 GHz)

SPECrate2017\_int\_base = 238

SPECrate2017\_int\_peak = 250

CPU2017 License: 55

Test Sponsor: Dell Inc.

Tested by: Dell Inc.

Test Date: Oct-2017

Hardware Availability: Sep-2017

Software Availability: Sep-2017

## Platform Notes (Continued)

```

node 4 free: 96454 MB
node 5 cpus: 5 13 21 29 37 45 53 61 69 77 85 93
node 5 size: 96760 MB
node 5 free: 96451 MB
node 6 cpus: 6 14 22 30 38 46 54 62 70 78 86 94
node 6 size: 96760 MB
node 6 free: 96446 MB
node 7 cpus: 7 15 23 31 39 47 55 63 71 79 87 95
node 7 size: 96757 MB
node 7 free: 96441 MB
node distances:
node  0  1  2  3  4  5  6  7
  0: 10 21 31 21 11 21 31 21
  1: 21 10 21 31 21 11 21 31
  2: 31 21 10 21 31 21 11 21
  3: 21 31 21 10 21 31 21 11
  4: 11 21 31 21 10 21 31 21
  5: 21 11 21 31 21 10 21 31
  6: 31 21 11 21 31 21 10 21
  7: 21 31 21 11 21 31 21 10

```

From /proc/meminfo

```

MemTotal:      791224272 kB
HugePages_Total:      0
Hugepagesize:    2048 kB

```

/usr/bin/lsb\_release -d

SUSE Linux Enterprise Server 12 SP2

From /etc/\*release\* /etc/\*version\*

SuSE-release:

```

SUSE Linux Enterprise Server 12 (x86_64)
VERSION = 12
PATCHLEVEL = 2

```

```

# 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-SP2"
VERSION_ID="12.2"
PRETTY_NAME="SUSE Linux Enterprise Server 12 SP2"
ID="sles"
ANSI_COLOR="0;32"
CPE_NAME="cpe:/o:suse:sles:12:sp2"

```

uname -a:

Linux linux-apb2 4.4.21-69-default #1 SMP Tue Oct 25 10:58:20 UTC 2016 (9464f67)

(Continued on next page)



# SPEC CPU2017 Integer Rate Result

Copyright 2017-2018 Standard Performance Evaluation Corporation

**Dell Inc.**

PowerEdge R940  
(Intel Xeon Gold 5118, 2.30 GHz)

SPECrate2017\_int\_base = 238

SPECrate2017\_int\_peak = 250

CPU2017 License: 55

Test Sponsor: Dell Inc.

Tested by: Dell Inc.

Test Date: Oct-2017

Hardware Availability: Sep-2017

Software Availability: Sep-2017

## Platform Notes (Continued)

x86\_64 x86\_64 x86\_64 GNU/Linux

run-level 3 Oct 26 04:26

SPEC is set to: /home/cpu2017

Filesystem	Type	Size	Used	Avail	Use%	Mounted on
/dev/sda4	xfs	796G	17G	779G	3%	/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 Dell Inc. 1.1.7 08/10/2017

Memory:

12x 002C00B3002C 18ASF2G72PDZ-2G6D1 16 GB 2 rank 2666, configured at 2400

12x 00AD00B300AD HMA82GR7AFR8N-VK 16 GB 2 rank 2666, configured at 2400

24x 00CE063200CE M393A2K43BB1-CTD 16 GB 2 rank 2666, configured at 2400

(End of data from sysinfo program)

## 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



# SPEC CPU2017 Integer Rate Result

Copyright 2017-2018 Standard Performance Evaluation Corporation

**Dell Inc.**

PowerEdge R940  
(Intel Xeon Gold 5118, 2.30 GHz)

SPECrate2017\_int\_base = 238

SPECrate2017\_int\_peak = 250

CPU2017 License: 55

Test Sponsor: Dell Inc.

Tested by: Dell Inc.

Test Date: Oct-2017

Hardware Availability: Sep-2017

Software Availability: Sep-2017

## Base Optimization Flags

C benchmarks:

```
-Wl,-z,muldefs -xCORE-AVX2 -ipo -O3 -no-prec-div  
-gopt-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  
-gopt-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  
-gopt-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
```

## Peak Compiler Invocation

C benchmarks:

```
icc
```

C++ benchmarks:

```
icpc
```

Fortran benchmarks:

```
ifort
```

## Peak Portability Flags

```
500.perlbench_r: -DSPEC_LP64 -DSPEC_LINUX_X64
```

```
502.gcc_r: -D_FILE_OFFSET_BITS=64
```

(Continued on next page)



# SPEC CPU2017 Integer Rate Result

Copyright 2017-2018 Standard Performance Evaluation Corporation

**Dell Inc.**

PowerEdge R940  
(Intel Xeon Gold 5118, 2.30 GHz)

SPECrate2017\_int\_base = 238

SPECrate2017\_int\_peak = 250

CPU2017 License: 55

Test Sponsor: Dell Inc.

Tested by: Dell Inc.

Test Date: Oct-2017

Hardware Availability: Sep-2017

Software Availability: Sep-2017

## Peak Portability Flags (Continued)

```
505.mcf_r: -DSPEC_LP64
520.omnetpp_r: -DSPEC_LP64
523.xalancbmk_r: -D_FILE_OFFSET_BITS=64 -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
```

## Peak Optimization Flags

C benchmarks:

```
500.perlbench_r: -Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -ipo
-xCORE-AVX2 -O3 -no-prec-div -qopt-mem-layout-trans=3
-fno-strict-overflow -L/usr/local/je5.0.1-64/lib
-ljemalloc
```

```
502.gcc_r: -L/opt/intel/compilers_and_libraries_2018/linux/lib/ia32
-Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -ipo
-xCORE-AVX2 -O3 -no-prec-div -qopt-mem-layout-trans=3
-L/usr/local/je5.0.1-32/lib -ljemalloc
```

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

```
525.x264_r: -Wl,-z,muldefs -xCORE-AVX2 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=3 -fno-alias
-L/usr/local/je5.0.1-64/lib -ljemalloc
```

```
557.xz_r: Same as 505.mcf_r
```

C++ benchmarks:

```
520.omnetpp_r: -Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -ipo
-xCORE-AVX2 -O3 -no-prec-div -qopt-mem-layout-trans=3
-L/usr/local/je5.0.1-64/lib -ljemalloc
```

```
523.xalancbmk_r: -L/opt/intel/compilers_and_libraries_2018/linux/lib/ia32
-Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -ipo
-xCORE-AVX2 -O3 -no-prec-div -qopt-mem-layout-trans=3
-L/usr/local/je5.0.1-32/lib -ljemalloc
```

(Continued on next page)





# SPEC CPU2017 Integer Rate Result

Copyright 2017-2018 Standard Performance Evaluation Corporation

**Dell Inc.**

PowerEdge R940  
(Intel Xeon Gold 5118, 2.30 GHz)

SPECrate2017\_int\_base = 238

SPECrate2017\_int\_peak = 250

CPU2017 License: 55

Test Sponsor: Dell Inc.

Tested by: Dell Inc.

Test Date: Oct-2017

Hardware Availability: Sep-2017

Software Availability: Sep-2017

## Peak Optimization Flags (Continued)

531.deepsjeng\_r: Same as 520.omnetpp\_r

541.leela\_r: Same as 520.omnetpp\_r

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
```

## Peak Other Flags

C benchmarks (except as noted below):

```
-m64 -std=c11
```

502.gcc\_r: -m32 -std=c11

C++ benchmarks (except as noted below):

```
-m64
```

523.xalancbmk\_r: -m32

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.html>

<http://www.spec.org/cpu2017/flags/Dell-Platform-Flags-PowerEdge14G-revC.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.xml>

<http://www.spec.org/cpu2017/flags/Dell-Platform-Flags-PowerEdge14G-revC.xml>

SPEC is a registered trademark 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](mailto:info@spec.org).

Tested with SPEC CPU2017 v1.0.2 on 2017-10-26 07:27:14-0400.

Report generated on 2018-02-12 17:17:37 by CPU2017 PDF formatter v5865.

Originally published on 2017-12-21.