



# SPEC® CPU2017 Integer Rate Result

Copyright 2017-2018 Standard Performance Evaluation Corporation

## NEC Corporation

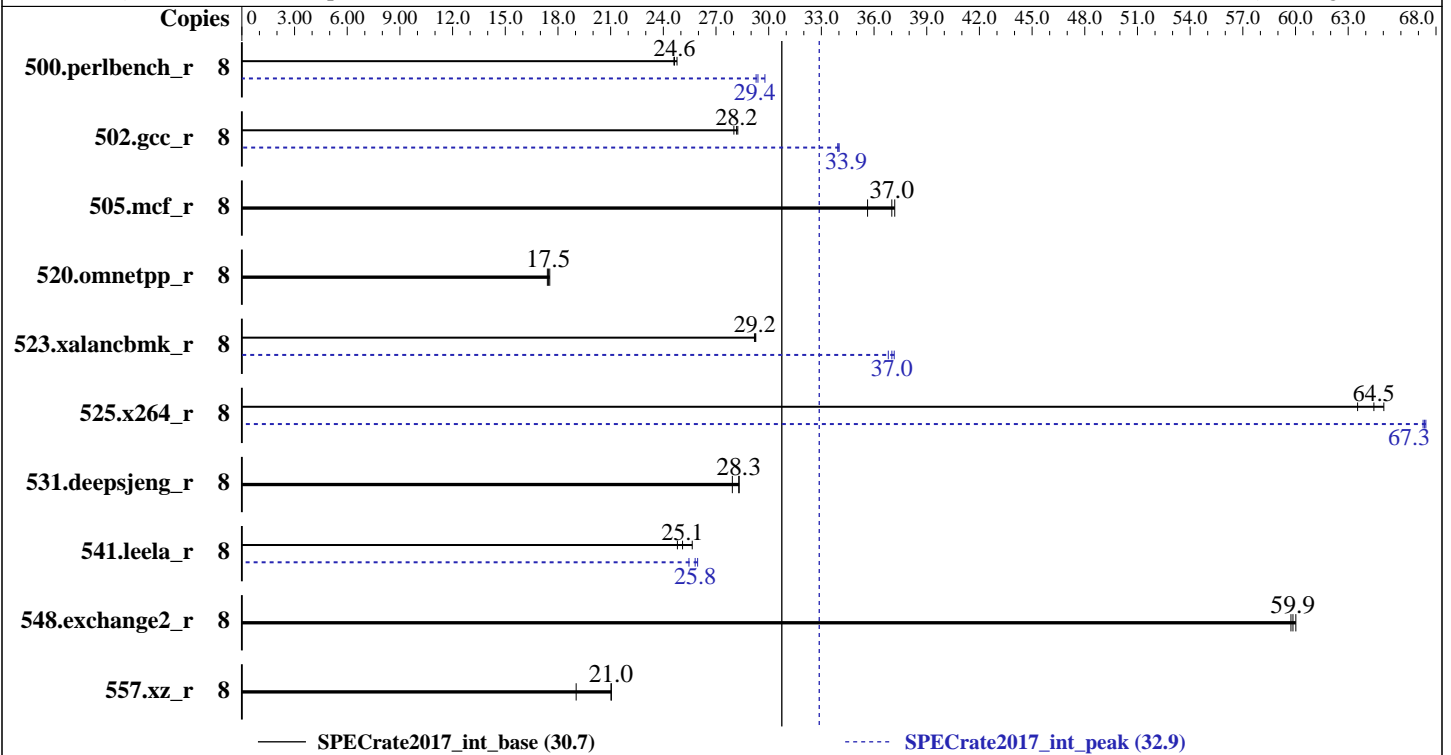
SPECrate2017\_int\_base = 30.7

### Express5800/R110j-1 (Intel Xeon E-2174G)

SPECrate2017\_int\_peak = 32.9

CPU2017 License: 9006  
Test Sponsor: NEC Corporation  
Tested by: NEC Corporation

Test Date: Nov-2018  
Hardware Availability: Jan-2019  
Software Availability: Aug-2018



### Hardware

CPU Name: Intel Xeon E-2174G  
Max MHz.: 4700  
Nominal: 3800  
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 PC4-2666V-E)  
Storage: 1 x 600 GB SAS, 15000 RPM, RAID 0  
Other: None

### Software

OS: Red Hat Enterprise Linux Server release 7.5 (Maipo)  
Kernel 3.10.0-862.11.6.el7.x86\_64  
Compiler: C/C++: Version 18.0.2.199 of Intel C/C++ Compiler for Linux;  
Fortran: Version 18.0.2.199 of Intel Fortran Compiler for Linux  
Parallel: No  
Firmware: NEC BIOS Version U43 10/02/2018 released Dec-2018  
File System: ext4  
System State: Run level 3 (multi-user)  
Base Pointers: 64-bit  
Peak Pointers: 32/64-bit  
Other: jemalloc memory allocator V5.0.1



# SPEC CPU2017 Integer Rate Result

Copyright 2017-2018 Standard Performance Evaluation Corporation

## NEC Corporation

SPECrate2017\_int\_base = 30.7

Express5800/R110j-1 (Intel Xeon E-2174G)

SPECrate2017\_int\_peak = 32.9

CPU2017 License: 9006  
Test Sponsor: NEC Corporation  
Tested by: NEC Corporation

Test Date: Nov-2018  
Hardware Availability: Jan-2019  
Software Availability: Aug-2018

## Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
500.perlbench_r	8	<b>517</b>	<b>24.6</b>	518	24.6	514	24.8	8	428	29.8	<b>433</b>	<b>29.4</b>	435	29.3
502.gcc_r	8	401	28.2	<b>402</b>	<b>28.2</b>	404	28.0	8	333	34.0	<b>334</b>	<b>33.9</b>	334	33.9
505.mcf_r	8	<b>349</b>	<b>37.0</b>	348	37.2	363	35.6	8	<b>349</b>	<b>37.0</b>	348	37.2	363	35.6
520.omnetpp_r	8	<b>601</b>	<b>17.5</b>	599	17.5	603	17.4	8	<b>601</b>	<b>17.5</b>	599	17.5	603	17.4
523.xalancbmk_r	8	289	29.2	289	29.3	<b>289</b>	<b>29.2</b>	8	227	37.1	<b>228</b>	<b>37.0</b>	229	36.8
525.x264_r	8	215	65.0	220	63.5	<b>217</b>	<b>64.5</b>	8	<b>208</b>	<b>67.3</b>	208	67.3	208	67.4
531.deepsjeng_r	8	324	28.3	<b>324</b>	<b>28.3</b>	328	27.9	8	324	28.3	<b>324</b>	<b>28.3</b>	328	27.9
541.leela_r	8	534	24.8	517	25.6	<b>528</b>	<b>25.1</b>	8	520	25.5	510	26.0	<b>513</b>	<b>25.8</b>
548.exchange2_r	8	349	60.0	351	59.7	<b>350</b>	<b>59.9</b>	8	349	60.0	351	59.7	<b>350</b>	<b>59.9</b>
557.xz_r	8	<b>411</b>	<b>21.0</b>	411	21.0	454	19.0	8	<b>411</b>	<b>21.0</b>	411	21.0	454	19.0

SPECrate2017\_int\_base = 30.7

SPECrate2017\_int\_peak = 32.9

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

## 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"  
IRQ balance service was stopped using "systemctl stop irqbalance.service"  
Process tuning settings:  
echo 500000 > /proc/sys/kernel/sched\_cfs\_bandwidth\_slice\_us  
echo 5000000 > /proc/sys/kernel/sched\_migration\_cost\_ns

## 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 i7-6700K CPU + 32GB RAM  
memory using Redhat Enterprise Linux 7.5  
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

Yes: The test sponsor attests, as of date of publication, that CVE-2017-5754 (Meltdown) is mitigated in the system as tested and documented.

(Continued on next page)



# SPEC CPU2017 Integer Rate Result

Copyright 2017-2018 Standard Performance Evaluation Corporation

## NEC Corporation

SPECrate2017\_int\_base = 30.7

Express5800/R110j-1 (Intel Xeon E-2174G)

SPECrate2017\_int\_peak = 32.9

**CPU2017 License:** 9006  
**Test Sponsor:** NEC Corporation  
**Tested by:** NEC Corporation

**Test Date:** Nov-2018  
**Hardware Availability:** Jan-2019  
**Software Availability:** Aug-2018

### General Notes (Continued)

Yes: 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.

Yes: 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.

jemalloc, a general purpose malloc implementation  
built with the RedHat Enterprise 7.5, and the system compiler gcc 4.8.5  
sources available from jemalloc.net or <https://github.com/jemalloc/jemalloc/releases>

### Platform Notes

BIOS Settings:

Thermal Configuration: Maximum Cooling  
Workload Profile: Custom  
Intel Virtualization Technology (Intel VT): Disabled  
Energy Efficient Turbo: Disabled  
Adjacent Sector Prefetch: Disabled  
DCU Stream Prefetcher: Disabled

sysinfo program /home/cpu2017/bin/sysinfo  
Rev: r5974 of 2018-05-19 9bcde8f2999c33d61f64985e45859ea9  
running on r110j1 Wed Nov 14 16:52:32 2018

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) E-2174G CPU @ 3.80GHz
 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
```

(Continued on next page)



# SPEC CPU2017 Integer Rate Result

Copyright 2017-2018 Standard Performance Evaluation Corporation

## NEC Corporation

SPECrate2017\_int\_base = 30.7

### Express5800/R110j-1 (Intel Xeon E-2174G)

SPECrate2017\_int\_peak = 32.9

**CPU2017 License:** 9006  
**Test Sponsor:** NEC Corporation  
**Tested by:** NEC Corporation

**Test Date:** Nov-2018  
**Hardware Availability:** Jan-2019  
**Software Availability:** Aug-2018

## Platform Notes (Continued)

```

Vendor ID:           GenuineIntel
CPU family:         6
Model:              158
Model name:         Intel(R) Xeon(R) E-2174G CPU @ 3.80GHz
Stepping:           10
CPU MHz:            4441.296
CPU max MHz:        4700.0000
CPU min MHz:        800.0000
BogoMIPS:           7584.00
Virtualization:     VT-x
L1d cache:          32K
L1i cache:          32K
L2 cache:           256K
L3 cache:           8192K
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
aperfmpperf eagerfpu pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 sdbg
fma cx16 xtpr pdcm pcid sse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer aes
xsave avx f16c rdrand lahf_lm abm 3dnowprefetch ept intel_pt ssbd ibrs ibpb stibp
tpr_shadow vnmi flexpriority ept vpid fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2
erms invpcid rtm mpx rdseed adx smap clflushopt xsaveopt xsavec xgetbv1 dtherm ida
arat pln pts hwp hwp_notify hwp_act_window hwp_epp spec_ctrl intel_stibp flush_l1d

```

```

/proc/cpuinfo cache data
cache size : 8192 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: 65386 MB
node 0 free: 63482 MB
node distances:
node    0
0:     10

```

```

From /proc/meminfo
MemTotal:      65821576 kB
HugePages_Total:      0
Hugepagesize:    2048 kB

```

```

From /etc/*release* /etc/*version*
os-release:
NAME="Red Hat Enterprise Linux Server"
VERSION="7.5 (Maipo)"

```

(Continued on next page)



# SPEC CPU2017 Integer Rate Result

Copyright 2017-2018 Standard Performance Evaluation Corporation

## NEC Corporation

SPECrate2017\_int\_base = 30.7

### Express5800/R110j-1 (Intel Xeon E-2174G)

SPECrate2017\_int\_peak = 32.9

**CPU2017 License:** 9006  
**Test Sponsor:** NEC Corporation  
**Tested by:** NEC Corporation

**Test Date:** Nov-2018  
**Hardware Availability:** Jan-2019  
**Software Availability:** Aug-2018

## Platform Notes (Continued)

```
ID="rhel"
ID_LIKE="fedora"
VARIANT="Server"
VARIANT_ID="server"
VERSION_ID="7.5"
PRETTY_NAME="Red Hat Enterprise Linux Server 7.5 (Maipo)"
redhat-release: Red Hat Enterprise Linux Server release 7.5 (Maipo)
system-release: Red Hat Enterprise Linux Server release 7.5 (Maipo)
system-release-cpe: cpe:/o:redhat:enterprise_linux:7.5:ga:server
```

```
uname -a:
Linux r110j1 3.10.0-862.11.6.el7.x86_64 #1 SMP Fri Aug 10 16:55:11 UTC 2018 x86_64
x86_64 x86_64 GNU/Linux
```

Kernel self-reported vulnerability status:

```
CVE-2017-5754 (Meltdown): Mitigation: PTI
CVE-2017-5753 (Spectre variant 1): Mitigation: Load fences, __user pointer sanitization
CVE-2017-5715 (Spectre variant 2): Mitigation: IBRS (kernel)
```

```
run-level 3 Nov 14 16:46
```

```
SPEC is set to: /home/cpu2017
Filesystem      Type  Size  Used Avail Use% Mounted on
/dev/sda3       ext4  542G   86G  428G  17% /
```

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 NEC U43 10/02/2018

Memory:

```
2x HPE 879527-091 16 GB 2 rank 2666, configured at 2667
2x UNKNOWN NOT AVAILABLE 16 GB 2 rank 2666, configured at 2667
```

(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) 18.0.2 20180210  
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.  
-----
```

(Continued on next page)



# SPEC CPU2017 Integer Rate Result

Copyright 2017-2018 Standard Performance Evaluation Corporation

**NEC Corporation**

SPECrate2017\_int\_base = 30.7

Express5800/R110j-1 (Intel Xeon E-2174G)

SPECrate2017\_int\_peak = 32.9

**CPU2017 License:** 9006  
**Test Sponsor:** NEC Corporation  
**Tested by:** NEC Corporation

**Test Date:** Nov-2018  
**Hardware Availability:** Jan-2019  
**Software Availability:** Aug-2018

## Compiler Version Notes (Continued)

=====  
CC 500.perlbench\_r(peak) 502.gcc\_r(peak) 505.mcf\_r(peak) 525.x264\_r(peak)  
557.xz\_r(peak)  
-----

icc (ICC) 18.0.2 20180210  
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.  
-----

=====  
CXXC 520.omnetpp\_r(base) 523.xalancbmk\_r(base) 531.deepsjeng\_r(base)  
541.leela\_r(base)  
-----

icpc (ICC) 18.0.2 20180210  
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.  
-----

=====  
CXXC 520.omnetpp\_r(peak) 523.xalancbmk\_r(peak) 531.deepsjeng\_r(peak)  
541.leela\_r(peak)  
-----

icpc (ICC) 18.0.2 20180210  
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.  
-----

=====  
FC 548.exchange2\_r(base)  
-----

ifort (IFORT) 18.0.2 20180210  
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.  
-----

=====  
FC 548.exchange2\_r(peak)  
-----

ifort (IFORT) 18.0.2 20180210  
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.  
-----

## Base Compiler Invocation

C benchmarks:  
icc -m64 -std=c11

C++ benchmarks:  
icpc -m64

(Continued on next page)



# SPEC CPU2017 Integer Rate Result

Copyright 2017-2018 Standard Performance Evaluation Corporation

NEC Corporation

SPECrate2017\_int\_base = 30.7

Express5800/R110j-1 (Intel Xeon E-2174G)

SPECrate2017\_int\_peak = 32.9

CPU2017 License: 9006

Test Sponsor: NEC Corporation

Tested by: NEC Corporation

Test Date: Nov-2018

Hardware Availability: Jan-2019

Software Availability: Aug-2018

## Base Compiler Invocation (Continued)

Fortran benchmarks:

```
ifort -m64
```

## 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
-L/usr/local/je5.0.1-64/lib -ljemalloc
```

## Peak Compiler Invocation

C benchmarks (except as noted below):

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

```
502.gcc_r: icc -m32 -std=c11 -L/home/prasadj/specdev/IC18u2_Internal/lin_18_0_20180210/compiler/lib/ia32_lin
```

(Continued on next page)



# SPEC CPU2017 Integer Rate Result

Copyright 2017-2018 Standard Performance Evaluation Corporation

NEC Corporation

SPECrate2017\_int\_base = 30.7

Express5800/R110j-1 (Intel Xeon E-2174G)

SPECrate2017\_int\_peak = 32.9

CPU2017 License: 9006

Test Sponsor: NEC Corporation

Tested by: NEC Corporation

Test Date: Nov-2018

Hardware Availability: Jan-2019

Software Availability: Aug-2018

## Peak Compiler Invocation (Continued)

C++ benchmarks (except as noted below):

icpc -m64

523.xalancbm\_r: icpc -m32 -L/home/prasadj/specdev/IC18u2\_Internal/lin\_18\_0\_20180210/compiler/lib/ia32\_lin

Fortran benchmarks:

ifort -m64

## Peak Portability Flags

500.perlbenc\_r: -DSPEC\_LP64 -DSPEC\_LINUX\_X64

502.gcc\_r: -D\_FILE\_OFFSET\_BITS=64

505.mcf\_r: -DSPEC\_LP64

520.omnetpp\_r: -DSPEC\_LP64

523.xalancbm\_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.perlbenc\_r: -w1, -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: -w1, -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: basepeak = yes

525.x264\_r: -w1, -z, muldefs -prof-gen(pass 1) -prof-use(pass 2) -ipo

-xCORE-AVX2 -O3 -no-prec-div -qopt-mem-layout-trans=3

-fno-alias -L/usr/local/je5.0.1-64/lib -ljemalloc

557.xz\_r: basepeak = yes

(Continued on next page)





# SPEC CPU2017 Integer Rate Result

Copyright 2017-2018 Standard Performance Evaluation Corporation

**NEC Corporation**

SPECrate2017\_int\_base = 30.7

Express5800/R110j-1 (Intel Xeon E-2174G)

SPECrate2017\_int\_peak = 32.9

CPU2017 License: 9006

Test Sponsor: NEC Corporation

Tested by: NEC Corporation

Test Date: Nov-2018

Hardware Availability: Jan-2019

Software Availability: Aug-2018

## Peak Optimization Flags (Continued)

C++ benchmarks:

520.omnetpp\_r: basepeak = yes

```
523.xalancbmk_r: -w1,-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
```

531.deepsjeng\_r: basepeak = yes

```
541.leela_r: -w1,-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
```

Fortran benchmarks:

548.exchange2\_r: basepeak = yes

The flags files that were used to format this result can be browsed at

<http://www.spec.org/cpu2017/flags/Intel-ic18.0-official-linux64.2017-12-21.html>

<http://www.spec.org/cpu2017/flags/NEC-Platform-Settings-R110j-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-linux64.2017-12-21.xml>

<http://www.spec.org/cpu2017/flags/NEC-Platform-Settings-R110j-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 v1.0.5 on 2018-11-14 02:52:32-0500.

Report generated on 2018-12-26 12:57:19 by CPU2017 PDF formatter v6067.

Originally published on 2018-12-25.