



# SPEC CPU®2017 Integer Speed Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

## NEC Corporation

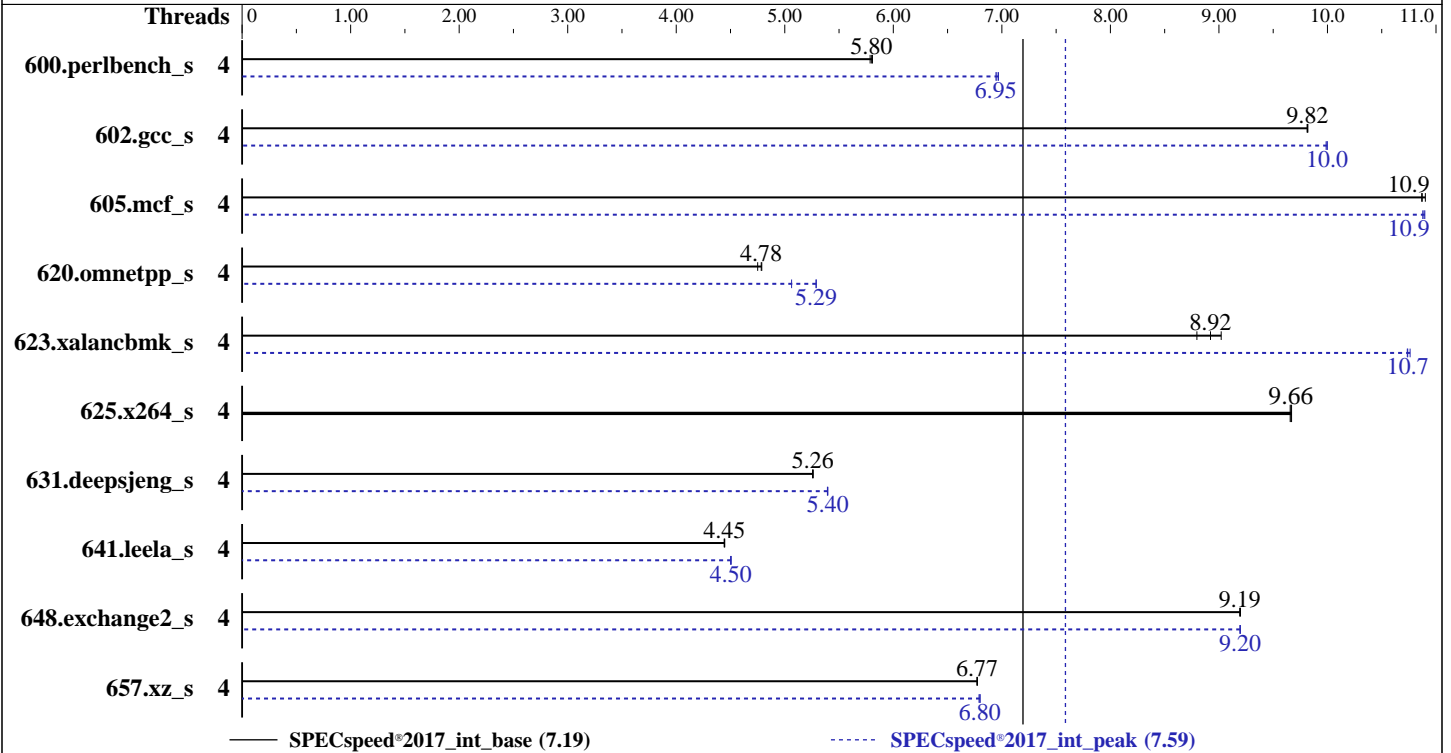
SPECspeed®2017\_int\_base = 7.19

Express5800/T110j-S (Intel Pentium Gold G5420)

SPECspeed®2017\_int\_peak = 7.59

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

Test Date: Oct-2019  
Hardware Availability: Nov-2019  
Software Availability: Aug-2019



### Hardware

CPU Name: Intel Pentium Gold G5420  
 Max MHz: 3800  
 Nominal: 3800  
 Enabled: 2 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: 4 MB I+D on chip per chip  
 Other: None  
 Memory: 64 GB (4 x 16 GB 2Rx8 PC4-2666V-E, running at 2400)  
 Storage: 1 x 1 TB SATA, 7200 RPM  
 Other: None

### Software

OS: Red Hat Enterprise Linux Server release 7.7 (Maipo)  
 Kernel 3.10.0-1062.el7.x86\_64  
 Compiler: C/C++: Version 19.0.0.117 of Intel C/C++ Compiler Build 20180804 for Linux;  
 Fortran: Version 19.0.0.117 of Intel Fortran Compiler Build 20180804 for Linux  
 Parallel: Yes  
 Firmware: NEC BIOS Version F01 08/21/2019 released Nov-2019  
 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  
 Power Management: --



# SPEC CPU®2017 Integer Speed Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

## NEC Corporation

SPECspeed®2017\_int\_base = 7.19

Express5800/T110j-S (Intel Pentium Gold G5420)

SPECspeed®2017\_int\_peak = 7.59

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

Test Date: Oct-2019  
Hardware Availability: Nov-2019  
Software Availability: Aug-2019

### Results Table

Benchmark	Base							Peak						
	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
600.perlbench_s	4	306	5.81	307	5.79	<b>306</b>	<b>5.80</b>	4	<b>255</b>	<b>6.95</b>	256	6.95	255	6.97
602.gcc_s	4	406	9.82	406	9.81	<b>406</b>	<b>9.82</b>	4	<b>398</b>	<b>10.0</b>	399	9.99	398	10.0
605.mcf_s	4	<b>434</b>	<b>10.9</b>	433	10.9	434	10.9	4	433	10.9	434	10.9	<b>434</b>	<b>10.9</b>
620.omnetpp_s	4	343	4.75	<b>341</b>	<b>4.78</b>	341	4.79	4	322	5.06	308	5.29	<b>308</b>	<b>5.29</b>
623.xalancbmk_s	4	161	8.80	<b>159</b>	<b>8.92</b>	157	9.02	4	132	10.7	132	10.8	<b>132</b>	<b>10.7</b>
625.x264_s	4	<b>183</b>	<b>9.66</b>	183	9.66	182	9.67	4	<b>183</b>	<b>9.66</b>	183	9.66	182	9.67
631.deepsjeng_s	4	273	5.26	272	5.26	<b>272</b>	<b>5.26</b>	4	266	5.39	<b>266</b>	<b>5.40</b>	266	5.40
641.leela_s	4	<b>384</b>	<b>4.45</b>	384	4.45	384	4.44	4	<b>379</b>	<b>4.50</b>	379	4.51	379	4.50
648.exchange2_s	4	<b>320</b>	<b>9.19</b>	320	9.19	320	9.20	4	320	9.20	320	9.20	<b>320</b>	<b>9.20</b>
657.xz_s	4	913	6.77	913	6.77	<b>913</b>	<b>6.77</b>	4	<b>909</b>	<b>6.80</b>	909	6.80	910	6.79

SPECspeed®2017\_int\_base = **7.19**

SPECspeed®2017\_int\_peak = **7.59**

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"

### General Notes

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

KMP\_AFFINITY = "granularity=fine,scatter"

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 i9-799X 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.

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>



# SPEC CPU®2017 Integer Speed Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

## NEC Corporation

SPECspeed®2017\_int\_base = 7.19

Express5800/T110j-S (Intel Pentium Gold G5420)

SPECspeed®2017\_int\_peak = 7.59

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

**Test Date:** Oct-2019  
**Hardware Availability:** Nov-2019  
**Software Availability:** Aug-2019

### Platform Notes

BIOS Settings:

VT-x: Disabled

Sysinfo program /home/cpu2017/bin/sysinfo

Rev: r5974 of 2018-05-19 9bcde8f2999c33d61f64985e45859ea9

running on t110js Sat Oct 26 11:53:53 2019

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) Pentium(R) Gold G5420 CPU @ 3.80GHz

1 "physical id"s (chips)

4 "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 : 2

siblings : 4

physical 0: cores 0 1

From lscpu:

Architecture: x86\_64

CPU op-mode(s): 32-bit, 64-bit

Byte Order: Little Endian

CPU(s): 4

On-line CPU(s) list: 0-3

Thread(s) per core: 2

Core(s) per socket: 2

Socket(s): 1

NUMA node(s): 1

Vendor ID: GenuineIntel

CPU family: 6

Model: 158

Model name: Intel(R) Pentium(R) Gold G5420 CPU @ 3.80GHz

Stepping: 11

CPU MHz: 3797.680

CPU max MHz: 3800.0000

CPU min MHz: 800.0000

BogoMIPS: 7584.00

Virtualization: VT-x

L1d cache: 32K

L1i cache: 32K

L2 cache: 256K

L3 cache: 4096K

NUMA node0 CPU(s): 0-3

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

(Continued on next page)



# SPEC CPU®2017 Integer Speed Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

## NEC Corporation

SPECspeed®2017\_int\_base = 7.19

Express5800/T110j-S (Intel Pentium Gold G5420)

SPECspeed®2017\_int\_peak = 7.59

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

**Test Date:** Oct-2019  
**Hardware Availability:** Nov-2019  
**Software Availability:** Aug-2019

### Platform Notes (Continued)

```
lm constant_tsc art arch_perfmon pebs bts rep_good nopl xtopology nonstop_tsc
aperfmpperf eagerfpu pni pclmulqdq dtes64 monitor ds_cpl vmx est tm2 ssse3 sdbg cx16
xtpr pdcm pcid sse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer aes xsave rdrand
lahf_lm abm 3dnowprefetch intel_pt ssbd ibrs ibpb stibp tpr_shadow vnm flexpriority
ept vpid fsgsbase tsc_adjust smep erms invpcid mpx rdseed smap clflushopt xsaveopt
xsavc xgetbv1 dtherm arat pln pts hwp hwp_notify hwp_act_window hwp_epp md_clear
spec_ctrl intel_stibp flush_lli
```

```
/proc/cpuinfo cache data
cache size : 4096 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
node 0 size: 65284 MB
node 0 free: 63407 MB
node distances:
node 0
0: 10
```

```
From /proc/meminfo
MemTotal: 65719160 kB
HugePages_Total: 0
Hugepagesize: 2048 kB
```

```
From /etc/*release* /etc/*version*
os-release:
NAME="Red Hat Enterprise Linux Server"
VERSION="7.7 (Maipo)"
ID="rhel"
ID_LIKE="fedora"
VARIANT="Server"
VARIANT_ID="server"
VERSION_ID="7.7"
PRETTY_NAME="Red Hat Enterprise Linux Server 7.7 (Maipo)"
redhat-release: Red Hat Enterprise Linux Server release 7.7 (Maipo)
system-release: Red Hat Enterprise Linux Server release 7.7 (Maipo)
system-release-cpe: cpe:/o:redhat:enterprise_linux:7.7:ga:server
```

```
uname -a:
Linux t110js 3.10.0-1062.el7.x86_64 #1 SMP Thu Jul 18 20:25:13 UTC 2019 x86_64 x86_64
x86_64 GNU/Linux
```

Kernel self-reported vulnerability status:

CVE-2017-5754 (Meltdown): Mitigation: PTI

(Continued on next page)



# SPEC CPU®2017 Integer Speed Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

## NEC Corporation

SPECspeed®2017\_int\_base = 7.19

Express5800/T110j-S (Intel Pentium Gold G5420)

SPECspeed®2017\_int\_peak = 7.59

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

**Test Date:** Oct-2019  
**Hardware Availability:** Nov-2019  
**Software Availability:** Aug-2019

### Platform Notes (Continued)

CVE-2017-5753 (Spectre variant 1): Mitigation: Load fences, \_\_user pointer sanitization  
CVE-2017-5715 (Spectre variant 2): Mitigation: Full retpoline, IBPB

run-level 3 Oct 26 11:48

SPEC is set to: /home/cpu2017

Filesystem	Type	Size	Used	Avail	Use%	Mounted on
/dev/sda3	ext4	908G	36G	826G	5%	/

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 American Megatrends Inc. F01 08/21/2019  
Memory:  
4x Samsung M391A2K43BB1-CTD 16 GB 2 rank 2667

(End of data from sysinfo program)

### Compiler Version Notes

```

=====
C          | 600.perlbench_s(base, peak) 602.gcc_s(base, peak) 605.mcf_s(base,
          | peak) 625.x264_s(base, peak) 657.xz_s(base, peak)
=====

```

Intel(R) C Intel(R) 64 Compiler for applications running on Intel(R) 64, Version 19.0.0.117 Build 20180804  
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.

```

=====
C++       | 623.xalancbmk_s(peak)
=====

```

Intel(R) C++ Intel(R) 64 Compiler for applications running on IA-32, Version 19.0.0.117 Build 20180804  
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.

```

=====
C++       | 620.omnetpp_s(base, peak) 623.xalancbmk_s(base)
          | 631.deepsjeng_s(base, peak) 641.leela_s(base, peak)
=====

```

Intel(R) C++ Intel(R) 64 Compiler for applications running on Intel(R) 64, Version 19.0.0.117 Build 20180804  
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.

(Continued on next page)



# SPEC CPU®2017 Integer Speed Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

## NEC Corporation

SPECspeed®2017\_int\_base = 7.19

Express5800/T110j-S (Intel Pentium Gold G5420)

SPECspeed®2017\_int\_peak = 7.59

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

**Test Date:** Oct-2019  
**Hardware Availability:** Nov-2019  
**Software Availability:** Aug-2019

### Compiler Version Notes (Continued)

=====  
C++ | 623.xalancbmk\_s(peak)  
-----

Intel(R) C++ Intel(R) 64 Compiler for applications running on IA-32, Version  
19.0.0.117 Build 20180804  
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.  
-----

=====  
C++ | 620.omnetpp\_s(base, peak) 623.xalancbmk\_s(base)  
631.deepsjeng\_s(base, peak) 641.leela\_s(base, peak)

Intel(R) C++ Intel(R) 64 Compiler for applications running on Intel(R) 64,  
Version 19.0.0.117 Build 20180804  
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.  
-----

=====  
Fortran | 648.exchange2\_s(base, peak)  
-----

Intel(R) Fortran Intel(R) 64 Compiler for applications running on Intel(R)  
64, Version 19.0.0.117 Build 20180804  
Copyright (C) 1985-2018 Intel Corporation. All rights reserved.  
-----

### Base Compiler Invocation

C benchmarks:  
icc -m64 -std=c11

C++ benchmarks:  
icpc -m64

Fortran benchmarks:  
ifort -m64

### Base Portability Flags

600.perlbench\_s: -DSPEC\_LP64 -DSPEC\_LINUX\_X64  
602.gc\_s: -DSPEC\_LP64  
605.mcf\_s: -DSPEC\_LP64  
620.omnetpp\_s: -DSPEC\_LP64

(Continued on next page)



# SPEC CPU®2017 Integer Speed Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

**NEC Corporation**

SPECspeed®2017\_int\_base = 7.19

Express5800/T110j-S (Intel Pentium Gold G5420)

SPECspeed®2017\_int\_peak = 7.59

CPU2017 License: 9006

Test Sponsor: NEC Corporation

Tested by: NEC Corporation

Test Date: Oct-2019

Hardware Availability: Nov-2019

Software Availability: Aug-2019

## Base Portability Flags (Continued)

```
623.xalancbmk_s: -DSPEC_LP64 -DSPEC_LINUX
625.x264_s: -DSPEC_LP64
631.deepsjeng_s: -DSPEC_LP64
641.leela_s: -DSPEC_LP64
648.exchange2_s: -DSPEC_LP64
657.xz_s: -DSPEC_LP64
```

## Base Optimization Flags

C benchmarks:

```
-Wl,-z,muldefs -xSSE4.2 -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 -xSSE4.2 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=3 -L/usr/local/je5.0.1-64/lib -ljemalloc
```

Fortran benchmarks:

```
-Wl,-z,muldefs -xSSE4.2 -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 Compiler Invocation

C benchmarks:

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

C++ benchmarks (except as noted below):

```
icpc -m64
```

```
623.xalancbmk_s: icpc -m32 -L/usr/local/IntelCompiler19/compilers_and_libraries_2019.0.117/linux/compiler/lib/ia32_lin
```

Fortran benchmarks:

```
ifort -m64
```

## Peak Portability Flags

```
600.perlbench_s: -DSPEC_LP64 -DSPEC_LINUX_X64
```

(Continued on next page)



# SPEC CPU®2017 Integer Speed Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

NEC Corporation

SPECspeed®2017\_int\_base = 7.19

Express5800/T110j-S (Intel Pentium Gold G5420)

SPECspeed®2017\_int\_peak = 7.59

CPU2017 License: 9006

Test Sponsor: NEC Corporation

Tested by: NEC Corporation

Test Date: Oct-2019

Hardware Availability: Nov-2019

Software Availability: Aug-2019

## Peak Portability Flags (Continued)

```
602.gcc_s: -DSPEC_LP64
605.mcf_s: -DSPEC_LP64
620.omnetpp_s: -DSPEC_LP64
623.xalancbmk_s: -D_FILE_OFFSET_BITS=64 -DSPEC_LINUX
625.x264_s: -DSPEC_LP64
631.deepsjeng_s: -DSPEC_LP64
641.leela_s: -DSPEC_LP64
648.exchange2_s: -DSPEC_LP64
657.xz_s: -DSPEC_LP64
```

## Peak Optimization Flags

C benchmarks:

```
600.perlbench_s: -Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -O2
-xSSE4.2 -qopt-mem-layout-trans=3 -ipo -O3 -no-prec-div
-DSPEC_SUPPRESS_OPENMP -qopenmp -DSPEC_OPENMP
-fno-strict-overflow -L/usr/local/je5.0.1-64/lib
-ljemalloc
```

```
602.gcc_s: -Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -O2
-xSSE4.2 -qopt-mem-layout-trans=3 -ipo -O3 -no-prec-div
-DSPEC_SUPPRESS_OPENMP -qopenmp -DSPEC_OPENMP
-L/usr/local/je5.0.1-64/lib -ljemalloc
```

```
605.mcf_s: -Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -ipo
-xSSE4.2 -O3 -no-prec-div -qopt-mem-layout-trans=3
-DSPEC_SUPPRESS_OPENMP -qopenmp -DSPEC_OPENMP
-L/usr/local/je5.0.1-64/lib -ljemalloc
```

```
625.x264_s: basepeak = yes
```

```
657.xz_s: Same as 602.gcc_s
```

C++ benchmarks:

```
620.omnetpp_s: -Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -ipo
-xSSE4.2 -O3 -no-prec-div -qopt-mem-layout-trans=3
-DSPEC_SUPPRESS_OPENMP -qopenmp -DSPEC_OPENMP
-L/usr/local/je5.0.1-64/lib -ljemalloc
```

```
623.xalancbmk_s: -Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -ipo
-xSSE4.2 -O3 -no-prec-div -qopt-mem-layout-trans=3
-DSPEC_SUPPRESS_OPENMP -qopenmp -DSPEC_OPENMP
```

(Continued on next page)





# SPEC CPU®2017 Integer Speed Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

**NEC Corporation**

SPECspeed®2017\_int\_base = 7.19

Express5800/T110j-S (Intel Pentium Gold G5420)

SPECspeed®2017\_int\_peak = 7.59

**CPU2017 License:** 9006

**Test Date:** Oct-2019

**Test Sponsor:** NEC Corporation

**Hardware Availability:** Nov-2019

**Tested by:** NEC Corporation

**Software Availability:** Aug-2019

## Peak Optimization Flags (Continued)

623.xalancbmk\_s (continued):

```
-L/usr/local/je5.0.1-32/lib -ljemalloc
```

631.deepsjeng\_s: Same as 620.omnetpp\_s

641.leela\_s: Same as 620.omnetpp\_s

Fortran benchmarks:

```
-Wl,-z,muldefs -xSSE4.2 -ipo -O3 -no-prec-div
```

```
-qopt-mem-layout-trans=3 -nostandard-realloc-lhs -align array32byte
```

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

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

<http://www.spec.org/cpu2017/flags/Intel-ic19.0-official-linux64.2019-01-15.html>

<http://www.spec.org/cpu2017/flags/NEC-Platform-Settings-T110j-RevE.html>

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

<http://www.spec.org/cpu2017/flags/Intel-ic19.0-official-linux64.2019-01-15.xml>

<http://www.spec.org/cpu2017/flags/NEC-Platform-Settings-T110j-RevE.xml>

SPEC CPU and SPECspeed are registered trademarks 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 CPU®2017 v1.0.5 on 2019-10-25 22:53:53-0400.

Report generated on 2019-11-12 14:59:54 by CPU2017 PDF formatter v6255.

Originally published on 2019-11-12.