



SPEC® CPU2017 Integer Rate Result

Copyright 2017-2019 Standard Performance Evaluation Corporation

Dell Inc.

SPECrate2017_int_base = 12.7

PowerEdge T340 (Intel Pentium Gold G5500)

SPECrate2017_int_peak = 13.6

CPU2017 License: 55

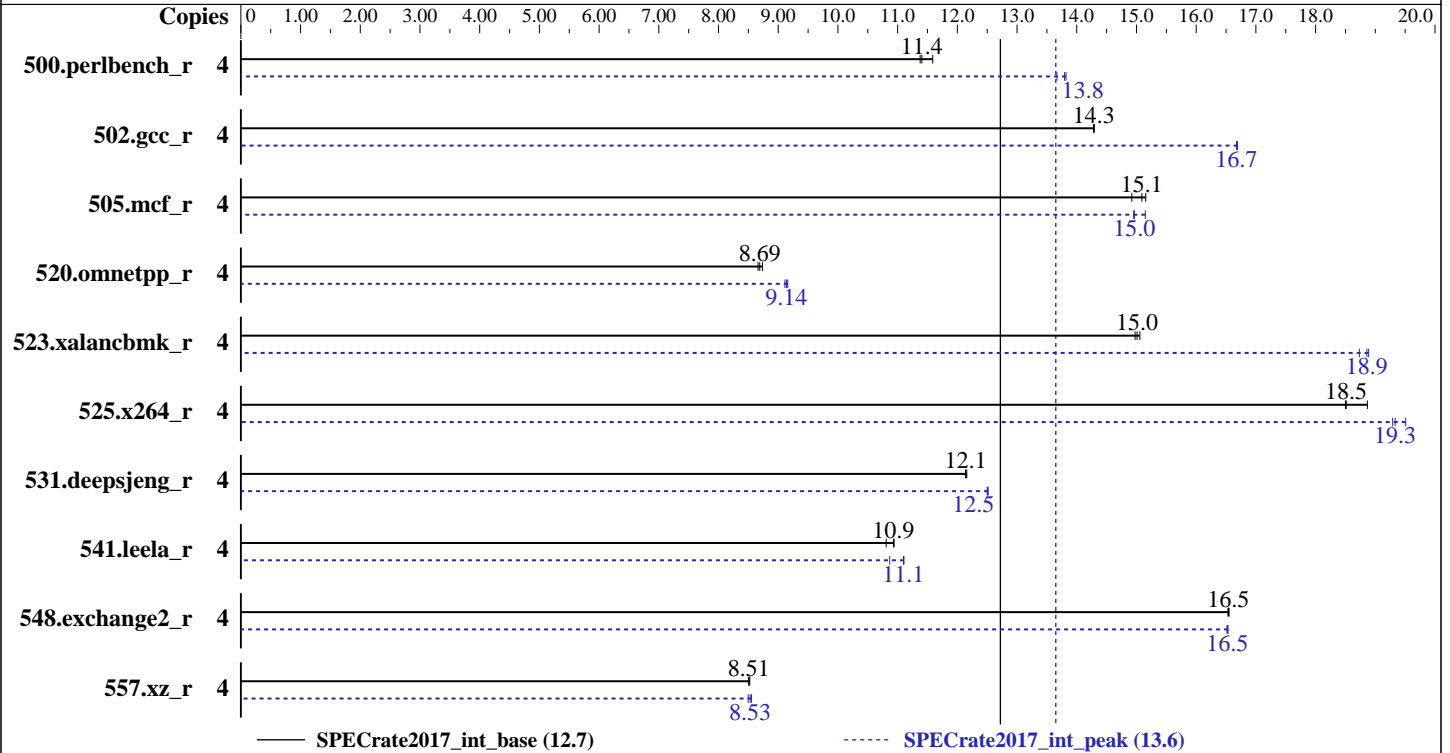
Test Date: Mar-2019

Test Sponsor: Dell Inc.

Hardware Availability: Dec-2018

Tested by: Dell Inc.

Software Availability: Oct-2018



Hardware

CPU Name: Intel Pentium Gold G5500
 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-R, running at 2400)
 Storage: 1 x 960 GB SATA SSD
 Other: None

Software

OS: SUSE Linux Enterprise Server 12 SP3
 kernel 4.4.126-94.22-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 1.0.1 released Oct-2018
 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;



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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	4	558	11.4	550	11.6	560	11.4	4	461	13.8	462	13.8	466	13.7
502.gcc_r	4	396	14.3	396	14.3	397	14.3	4	339	16.7	340	16.7	340	16.7
505.mcf_r	4	427	15.2	428	15.1	433	14.9	4	432	15.0	432	15.0	427	15.1
520.omnetpp_r	4	604	8.69	606	8.66	601	8.74	4	576	9.11	574	9.14	573	9.16
523.xalancbmk_r	4	281	15.1	281	15.0	282	15.0	4	224	18.9	224	18.9	225	18.7
525.x264_r	4	378	18.5	371	18.9	379	18.5	4	362	19.3	359	19.5	363	19.3
531.deepsjeng_r	4	378	12.1	377	12.2	378	12.1	4	367	12.5	366	12.5	366	12.5
541.leela_r	4	613	10.8	605	10.9	606	10.9	4	596	11.1	609	10.9	597	11.1
548.exchange2_r	4	634	16.5	634	16.5	633	16.6	4	634	16.5	634	16.5	634	16.5
557.xz_r	4	508	8.51	507	8.52	508	8.51	4	506	8.53	508	8.50	505	8.55

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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

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.

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;

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General Notes (Continued)

jemalloc: sources available via jemalloc.net

Platform Notes

BIOS settings:

Virtualization Technology disabled

System Profile set to Custom

CPU Performance set to Maximum Performance

C States set to Autonomous

C1E disabled

Uncore Frequency set to Dynamic

Energy Efficiency Policy set to Performance

Memory Patrol Scrub disabled

CPU Interconnect Bus Link Power Management disabled

PCI ASPM L1 Link Power Management disabled

Sysinfo program /home/cpu2017/bin/sysinfo

Rev: r5974 of 2018-05-19 9bcde8f2999c33d61f64985e45859ea9

running on linux-icjc Mon Mar 25 10:49:22 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 G5500 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

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Platform Notes (Continued)

```

Model name: Intel(R) Pentium(R) Gold G5500 CPU @ 3.80GHz
Stepping: 11
CPU MHz: 3797.762
CPU max MHz: 3800.0000
CPU min MHz: 800.0000
BogoMIPS: 7583.80
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
lm constant_tsc art arch_perfmon pebs bts rep_good nopl xtopology nonstop_tsc
aperfperf eagerfpu pni pclmulqdq dtes64 monitor ds_cpl vmx est tm2 ssse3 sdbg cx16
xtpr pdcn pcid sse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer aes xsave rdrand
lahf_lm abm 3dnowprefetch arat epb invpcid_single pln pts dtherm hwp hwp_act_window
hwp_epp intel_pt rsb_ctxsw spec_ctrl stibp retpoline kaiser tpr_shadow vmmi
flexpriority ept vpid fsgsbase tsc_adjust smep erms invpcid mpx rdseed smap
clflushopt xsaveopt xsavec xgetbv1

```

```

/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: 64278 MB
node 0 free: 63801 MB
node distances:
node 0
0: 10

```

```

From /proc/meminfo
MemTotal: 65820840 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

```

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Platform Notes (Continued)

```
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"
```

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

```
uname -a:
```

```
Linux linux-icjc 4.4.126-94.22-default #1 SMP Wed Apr 11 07:45:03 UTC 2018 (9649989)
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: __user pointer sanitization
```

```
CVE-2017-5715 (Spectre variant 2): Mitigation: IBRS+IBPB
```

```
run-level 3 Mar 25 10:49 last=5
```

```
SPEC is set to: /home/cpu2017
```

```
Filesystem      Type  Size  Used Avail Use% Mounted on
/dev/sda2       xfs   301G  16G  285G   6% /
```

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. 1.0.1 10/19/2018
```

```
Memory:
```

```
3x 00AD00000A02 HMA82GU7CJR8N-VK 16 GB 2 rank 2666, configured at 2400
```

```
1x 00AD00000A06 HMA82GU7CJR8N-VK 16 GB 2 rank 2666, configured at 2400
```

```
(End of data from sysinfo program)
```

Compiler Version Notes

```
=====  
CC 500.perlbench_r(base) 502.gcc_r(base) 505.mcf_r(base, peak)  
525.x264_r(base, peak) 557.xz_r(base, peak)  
=====
```

```
icc (ICC) 18.0.0 20170811
```

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Compiler Version Notes (Continued)

Copyright (C) 1985-2017 Intel Corporation. All rights reserved.

=====
CC 500.perlbench_r(peak) 502.gcc_r(peak)

icc (ICC) 18.0.0 20170811

Copyright (C) 1985-2017 Intel Corporation. All rights reserved.

=====
CXXC 520.omnetpp_r(base) 523.xalanbmk_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.

=====
CXXC 520.omnetpp_r(peak) 523.xalanbmk_r(peak) 531.deepsjeng_r(peak)
541.leela_r(peak)

icpc (ICC) 18.0.0 20170811

Copyright (C) 1985-2017 Intel Corporation. All rights reserved.

=====
FC 548.exchange2_r(base, peak)

ifort (IFORT) 18.0.0 20170811

Copyright (C) 1985-2017 Intel Corporation. All rights reserved.

Base Compiler Invocation

C benchmarks:

icc

C++ benchmarks:

icpc

Fortran benchmarks:

ifort



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

C++ benchmarks:

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



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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
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
-xSSE4.2 -O3 -no-prec-div -qopt-prefetch
-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
-xSSE4.2 -O3 -no-prec-div -qopt-prefetch
-qopt-mem-layout-trans=3 -L/usr/local/je5.0.1-32/lib
-ljemalloc

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

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Peak Optimization Flags (Continued)

525.x264_r: -Wl,-z,muldefs -xSSE4.2 -ipo -O3 -no-prec-div
-qopt-prefetch -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
-xSSE4.2 -O3 -no-prec-div -qopt-prefetch
-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
-xSSE4.2 -O3 -no-prec-div -qopt-prefetch
-qopt-mem-layout-trans=3 -L/usr/local/je5.0.1-32/lib
-ljemalloc

531.deepsjeng_r: Same as 520.omnetpp_r

541.leela_r: Same as 520.omnetpp_r

Fortran benchmarks:

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



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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-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-linux64.2017-10-19.xml>

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