



# SPEC® CPU2017 Integer Rate Result

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## Fujitsu

PRIMEQUEST 3800B, Intel Xeon Platinum 8153, 2.00GHz

SPECrate2017\_int\_base = 566

SPECrate2017\_int\_peak = Not Run

CPU2017 License: 19

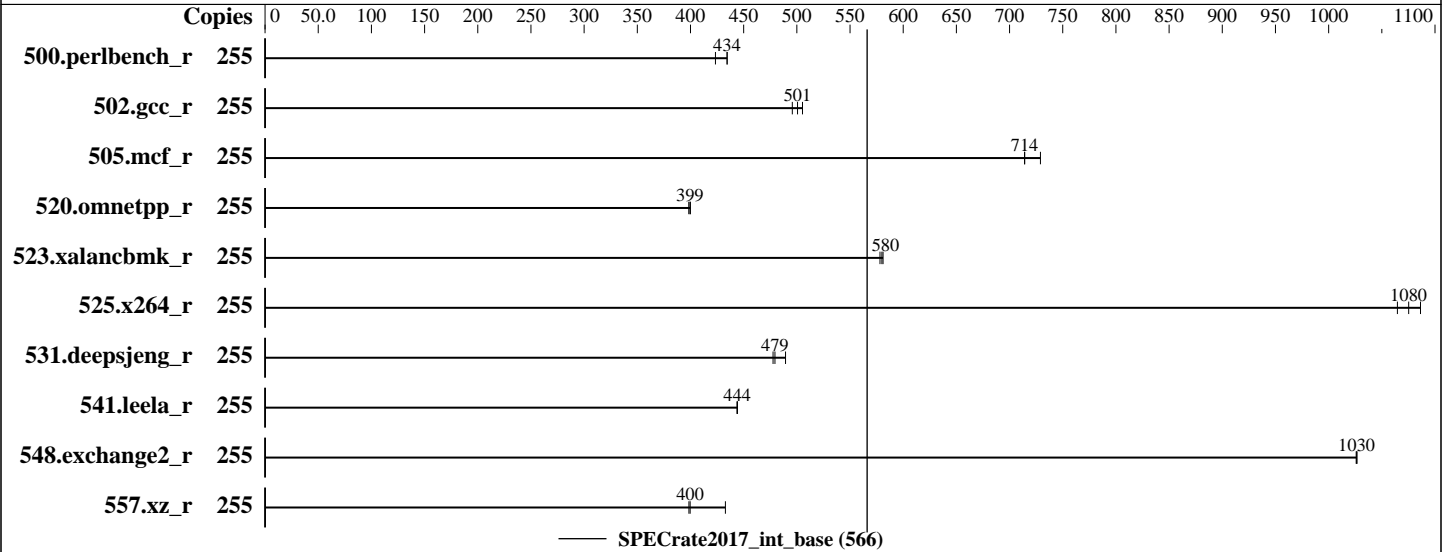
Test Sponsor: Fujitsu

Tested by: Fujitsu

Test Date: Nov-2017

Hardware Availability: Jul-2017

Software Availability: Sep-2017



### Hardware

CPU Name: Intel Xeon Platinum 8153  
 Max MHz.: 2800  
 Nominal: 2000  
 Enabled: 128 cores, 8 chips, 2 threads/core  
 Orderable: 2,4,6,8 chips  
 Cache L1: 32 KB I + 32 KB D on chip per core  
 L2: 1 MB I+D on chip per core  
 L3: 22 MB I+D on chip per chip  
 Other: None  
 Memory: 1536 GB (96 x 16 GB 2Rx4 PC4-2666V-R)  
 Storage: 768 GB tmpfs  
 Other: 1 x SAS HDD, 600 GB, 10.5K RPM, used for swap

### 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: Fujitsu BIOS Version V1.0.0.0 R1.21.0 for D3858-A1x. Released Dec-2017  
 File System: tmpfs  
 System State: Run level 3 (multi-user)  
 Base Pointers: 64-bit  
 Peak Pointers: Not Applicable  
 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



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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	255	959	423	<b>935</b>	<b>434</b>	934	434							
502.gcc_r	255	728	496	<b>721</b>	<b>501</b>	715	505							
505.mcf_r	255	565	729	<b>577</b>	<b>714</b>	577	714							
520.omnetpp_r	255	840	398	837	400	<b>837</b>	<b>399</b>							
523.xalancbmk_r	255	466	578	<b>464</b>	<b>580</b>	463	581							
525.x264_r	255	<b>415</b>	<b>1080</b>	411	1090	419	1060							
531.deepsjeng_r	255	597	489	<b>610</b>	<b>479</b>	612	478							
541.leela_r	255	951	444	<b>951</b>	<b>444</b>	951	444							
548.exchange2_r	255	651	1030	651	1030	<b>651</b>	<b>1030</b>							
557.xz_r	255	636	433	<b>689</b>	<b>400</b>	691	399							

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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"
Set Kernel Boot Parameter : nohz_full=1-255 isolcpus=1-255
Set tmpfs filesystem with:
mkdir /home/memory
mount -t tmpfs -o size=768g,rw tmpfs /home/memory
Process tuning setting:
echo 0 > /proc/sys/kernel/numa_balancing
cpu idle state set with:
cpupower idle-set -d 1
cpupower idle-set -d 2
set affinity of rcu threads to the cpu0:
for i in `pgrep rcu` ; do taskset -pc 0 $i ; done
```

## General Notes

Environment variables set by runcpu before the start of the run:  
LD\_LIBRARY\_PATH = "/home/memory/speccpu/lib/ia32:/home/memory/speccpu/lib/intel64"  
LD\_LIBRARY\_PATH = "\$LD\_LIBRARY\_PATH:/home/memory/speccpu/je5.0.1-32:/home/memory/speccpu/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

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### General Notes (Continued)

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>

### Platform Notes

BIOS configuration:  
DCU Streamer Prefetcher = Disabled  
Sub NUMA Clustering = Enabled  
Stale AtoS = Enabled  
LLC Dead Line Alloc = Disabled  
Fan Control = Full  
Sysinfo program /home/memory/speccpu/bin/sysinfo  
Rev: r5797 of 2017-06-14 96c45e4568ad54c135fd618bcc091c0f  
running on linux-k55j Fri Nov 10 07:29:40 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) Platinum 8153 CPU @ 2.00GHz  
8 "physical id"s (chips)  
256 "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 : 16  
siblings : 32  
physical 0: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15  
physical 1: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15  
physical 2: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15  
physical 3: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15  
physical 4: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15  
physical 5: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15  
physical 6: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15  
physical 7: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

From lscpu:  
Architecture: x86\_64  
CPU op-mode(s): 32-bit, 64-bit  
Byte Order: Little Endian  
CPU(s): 256  
On-line CPU(s) list: 0-255

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### Platform Notes (Continued)

```

Thread(s) per core:      2
Core(s) per socket:     16
Socket(s):               8
NUMA node(s):           16
Vendor ID:               GenuineIntel
CPU family:              6
Model:                   85
Model name:              Intel(R) Xeon(R) Platinum 8153 CPU @ 2.00GHz
Stepping:                4
CPU MHz:                 2591.274
CPU max MHz:             2800.0000
CPU min MHz:             1000.0000
BogoMIPS:                4000.21
Virtualization:         VT-x
L1d cache:               32K
L1i cache:               32K
L2 cache:                1024K
L3 cache:                22528K
NUMA node0 CPU(s):      0-3,8-11,128-131,136-139
NUMA node1 CPU(s):      4-7,12-15,132-135,140-143
NUMA node2 CPU(s):      16-19,24-27,144-147,152-155
NUMA node3 CPU(s):      20-23,28-31,148-151,156-159
NUMA node4 CPU(s):      32-35,40-43,160-163,168-171
NUMA node5 CPU(s):      36-39,44-47,164-167,172-175
NUMA node6 CPU(s):      48-51,56-59,176-179,184-187
NUMA node7 CPU(s):      52-55,60-63,180-183,188-191
NUMA node8 CPU(s):      64-67,72-75,192-195,200-203
NUMA node9 CPU(s):      68-71,76-79,196-199,204-207
NUMA node10 CPU(s):     80-83,88-91,208-211,216-219
NUMA node11 CPU(s):     84-87,92-95,212-215,220-223
NUMA node12 CPU(s):     96-99,104-107,224-227,232-235
NUMA node13 CPU(s):     100-103,108-111,228-231,236-239
NUMA node14 CPU(s):     112-115,120-123,240-243,248-251
NUMA node15 CPU(s):     116-119,124-127,244-247,252-255
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 hwp
hwp_act_window hwp_epp hwp_pkg_req 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 : 22528 KB
```

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### Platform Notes (Continued)

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

```

available: 16 nodes (0-15)
node 0 cpus: 0 1 2 3 8 9 10 11 128 129 130 131 136 137 138 139
node 0 size: 95380 MB
node 0 free: 85704 MB
node 1 cpus: 4 5 6 7 12 13 14 15 132 133 134 135 140 141 142 143
node 1 size: 96765 MB
node 1 free: 96484 MB
node 2 cpus: 16 17 18 19 24 25 26 27 144 145 146 147 152 153 154 155
node 2 size: 96765 MB
node 2 free: 96486 MB
node 3 cpus: 20 21 22 23 28 29 30 31 148 149 150 151 156 157 158 159
node 3 size: 96765 MB
node 3 free: 96487 MB
node 4 cpus: 32 33 34 35 40 41 42 43 160 161 162 163 168 169 170 171
node 4 size: 96765 MB
node 4 free: 96482 MB
node 5 cpus: 36 37 38 39 44 45 46 47 164 165 166 167 172 173 174 175
node 5 size: 96765 MB
node 5 free: 96473 MB
node 6 cpus: 48 49 50 51 56 57 58 59 176 177 178 179 184 185 186 187
node 6 size: 96765 MB
node 6 free: 96487 MB
node 7 cpus: 52 53 54 55 60 61 62 63 180 181 182 183 188 189 190 191
node 7 size: 96765 MB
node 7 free: 96499 MB
node 8 cpus: 64 65 66 67 72 73 74 75 192 193 194 195 200 201 202 203
node 8 size: 96765 MB
node 8 free: 96487 MB
node 9 cpus: 68 69 70 71 76 77 78 79 196 197 198 199 204 205 206 207
node 9 size: 96765 MB
node 9 free: 96489 MB
node 10 cpus: 80 81 82 83 88 89 90 91 208 209 210 211 216 217 218 219
node 10 size: 96765 MB
node 10 free: 96474 MB
node 11 cpus: 84 85 86 87 92 93 94 95 212 213 214 215 220 221 222 223
node 11 size: 96765 MB
node 11 free: 96477 MB
node 12 cpus: 96 97 98 99 104 105 106 107 224 225 226 227 232 233 234 235
node 12 size: 96765 MB
node 12 free: 96480 MB
node 13 cpus: 100 101 102 103 108 109 110 111 228 229 230 231 236 237 238 239
node 13 size: 96765 MB
node 13 free: 96486 MB
node 14 cpus: 112 113 114 115 120 121 122 123 240 241 242 243 248 249 250 251

```

(Continued on next page)



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### Platform Notes (Continued)

```

node 14 size: 96765 MB
node 14 free: 96465 MB
node 15 cpus: 116 117 118 119 124 125 126 127 244 245 246 247 252 253 254 255
node 15 size: 96617 MB
node 15 free: 96334 MB
node distances:
node 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
0: 10 11 35 35 35 35 40 40 40 40 40 40 35 35 40 40
1: 11 10 35 35 35 35 40 40 40 40 40 40 35 35 40 40
2: 35 35 10 11 40 40 35 35 40 40 35 35 40 40 40 40
3: 35 35 11 10 40 40 35 35 40 40 35 35 40 40 40 40
4: 35 35 40 40 10 11 35 35 35 35 40 40 40 40 40 40
5: 35 35 40 40 11 10 35 35 35 35 40 40 40 40 40 40
6: 40 40 35 35 35 35 10 11 40 40 40 40 40 40 35 35
7: 40 40 35 35 35 35 11 10 40 40 40 40 40 40 35 35
8: 40 40 40 40 35 35 40 40 10 11 35 35 35 35 40 40
9: 40 40 40 40 35 35 40 40 11 10 35 35 35 35 40 40
10: 40 40 35 35 40 40 40 40 35 35 10 11 40 40 35 35
11: 40 40 35 35 40 40 40 40 35 35 11 10 40 40 35 35
12: 35 35 40 40 40 40 40 40 35 35 40 40 10 11 35 35
13: 35 35 40 40 40 40 40 40 35 35 40 40 11 10 35 35
14: 40 40 40 40 40 40 35 35 40 40 35 35 35 35 10 11
15: 40 40 40 40 40 40 35 35 40 40 35 35 35 35 11 10

```

```

From /proc/meminfo
MemTotal: 1583837096 kB
HugePages_Total: 0
Hugepagesize: 2048 kB

```

```

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-k55j 4.4.21-69-default #1 SMP Tue Oct 25 10:58:20 UTC 2016 (9464f67)

```

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### Platform Notes (Continued)

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

run-level 3 Nov 9 19:55

SPEC is set to: /home/memory/speccpu

Filesystem	Type	Size	Used	Avail	Use%	Mounted on
tmpfs	tmpfs	768G	8.8G	760G	2%	/home/memory

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 FUJITSU V1.0.0.0 R1.21.0 for D3858-A1x 09/15/2017

Memory:

45x Hynix HMA42GR7BJR4N-VK 16 GB 2 rank 2666  
51x Samsung M393A2G40EB2-CTD 16 GB 2 rank 2666

(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/Fujitsu-Platform-Settings-V1.2-SKL-RevC.html>  
<http://www.spec.org/cpu2017/flags/Intel-ic18.0-official-linux64.2017-10-19.html>

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

<http://www.spec.org/cpu2017/flags/Fujitsu-Platform-Settings-V1.2-SKL-RevC.xml>  
<http://www.spec.org/cpu2017/flags/Intel-ic18.0-official-linux64.2017-10-19.xml>

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