



SPEC® CPU2017 Floating Point Rate Result

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Fujitsu

PRIMERGY RX2560 M2, Intel Xeon E5-2699A v4, 2.40GHz

SPECrate2017_fp_base = 149

SPECrate2017_fp_peak = Not Run

CPU2017 License: 19

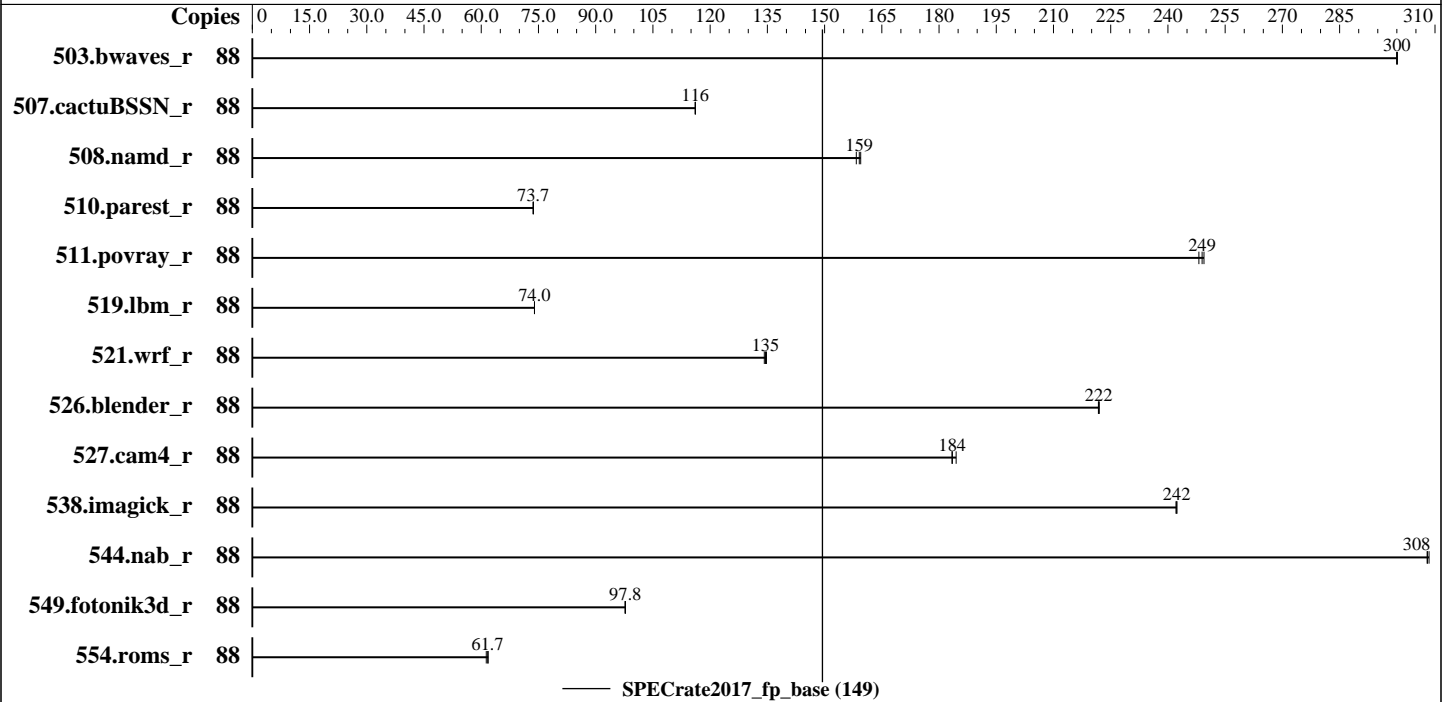
Test Sponsor: Fujitsu

Tested by: Fujitsu

Test Date: Dec-2016

Hardware Availability: Oct-2016

Software Availability: Nov-2016



Hardware

CPU Name: Intel Xeon E5-2699A v4
 Max MHz.: 3600
 Nominal: 2400
 Enabled: 44 cores, 2 chips, 2 threads/core
 Orderable: 1,2 chips
 Cache L1: 32 KB I + 32 KB D on chip per core
 L2: 256 KB I+D on chip per core
 L3: 55 MB I+D on chip per chip
 Other: None
 Memory: 256 GB (16 x 16 GB 2Rx4 PC4-2400T-R)
 Storage: 1 x 960GB, SAS3, SSD
 Other: None

Software

OS: SUSE Linux Enterprise Server 12 SP2 RC2 4.4.19-60-default
 Compiler: C/C++: Version 17.0.0.098 of Intel C/C++ Compiler for Linux;
 Fortran: Version 17.0.0.098 of Intel Fortran Compiler for Linux
 Parallel: No
 Firmware: Fujitsu R1.7.0
 File System: xfs
 System State: Run level 3 (multi-user)
 Base Pointers: 32/64-bit
 Peak Pointers: Not Applicable
 Other: Microquill SmartHeap V10.2



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Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
503.bwaves_r	88	2942	300	<u>2941</u>	<u>300</u>	2940	300							
507.cactuBSSN_r	88	<u>959</u>	<u>116</u>	960	116	959	116							
508.namd_r	88	<u>525</u>	<u>159</u>	524	159	528	158							
510.parest_r	88	<u>3126</u>	<u>73.7</u>	3128	73.6	3124	73.7							
511.povray_r	88	<u>825</u>	<u>249</u>	824	249	828	248							
519.lbm_r	88	<u>1254</u>	<u>74.0</u>	1254	74.0	1254	74.0							
521.wrf_r	88	1469	134	<u>1465</u>	<u>135</u>	1463	135							
526.blender_r	88	604	222	604	222	<u>604</u>	<u>222</u>							
527.cam4_r	88	839	183	834	184	<u>839</u>	<u>184</u>							
538.imagick_r	88	<u>903</u>	<u>242</u>	904	242	903	242							
544.nab_r	88	481	308	480	308	<u>481</u>	<u>308</u>							
549.fotonik3d_r	88	3510	97.7	<u>3507</u>	<u>97.8</u>	3506	97.8							
554.roms_r	88	<u>2267</u>	<u>61.7</u>	2262	61.8	2280	61.3							

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

Submit Notes

The config file option 'submit' was used.

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/spec/cpu2017/lib/ia32:/home/spec/cpu2017/lib/intel64:/home/spec/cpu2017/sh10.2"

Binaries compiled on a system with 1x Intel Core i7-4790 CPU + 32GB RAM
memory using Redhat Enterprise Linux 7.2

Transparent Huge Pages enabled by default

Filesystem page cache cleared with:

```
echo 1> /proc/sys/vm/drop_caches
```

runcpu command invoked through numactl i.e.:

```
numactl --interleave=all runcpu <etc>
```



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Platform Notes

BIOS configuration:

Energy Performance = Performance

Utilization Profile = Unbalanced

QPI snoop mode: Cluster on Die

COD Enable = Enabled, Early Snoop = Disabled, Home Snoop Dir OSB = Disabled

CPU ClE Support = Disabled

Sysinfo program /home/spec/cpu2017/Docs/sysinfo

Rev: r5007 of 2016-11-15 fc8dc82f217779bedfed4d694d580ba9

running on linux-tw9h Sun Dec 11 00:49:27 2016

This section contains SUT (System Under Test) info as seen by some common utilities.

For more information on this section, see

<http://www.spec.org/cpu2017/Docs/config.html#sysinfo>

From /proc/cpuinfo

model name : Intel(R) Xeon(R) CPU E5-2699A v4 @ 2.40GHz

2 "physical id"s (chips)

88 "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 : 22

siblings : 44

physical 0: cores 0 1 2 3 4 5 8 9 10 11 12 16 17 18 19 20 21 24 25 26 27 28

physical 1: cores 0 1 2 3 4 5 8 9 10 11 12 16 17 18 19 20 21 24 25 26 27 28

cache size : 28160 KB

The view from numactl --hardware follows. WARNING: a numactl 'node' might or might not correspond to a physical chip.

available: 4 nodes (0-3)

node 0 cpus: 0 1 2 3 4 5 6 7 8 9 10 44 45 46 47 48 49 50 51 52 53 54

node 0 size: 64200 MB

node 0 free: 57255 MB

node 1 cpus: 11 12 13 14 15 16 17 18 19 20 21 55 56 57 58 59 60 61 62 63 64 65

node 1 size: 64508 MB

node 1 free: 59837 MB

node 2 cpus: 22 23 24 25 26 27 28 29 30 31 32 66 67 68 69 70 71 72 73 74 75 76

node 2 size: 64508 MB

node 2 free: 59849 MB

node 3 cpus: 33 34 35 36 37 38 39 40 41 42 43 77 78 79 80 81 82 83 84 85 86 87

node 3 size: 64384 MB

node 3 free: 59723 MB

node distances:

node 0 1 2 3

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Platform Notes (Continued)

```
0: 10 11 21 21
1: 11 10 21 21
2: 21 21 10 11
3: 21 21 11 10
```

From /proc/meminfo

```
MemTotal:      263784808 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-tw9h 4.4.19-60-default #1 SMP Fri Aug 26 12:54:34 UTC 2016
(a3a3ea6) x86_64 x86_64 x86_64 GNU/Linux
```

run-level 3 Dec 10 17:42

SPEC is set to: /home/spec/cpu2017

```
Filesystem      Type  Size  Used Avail Use% Mounted on
/dev/sda3        xfs   852G   22G  830G   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 FUJITSU // American Megatrends Inc. V5.0.0.11 R1.7.0 for D3289-B1x
04/21/2016
```

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Platform Notes (Continued)

Memory:

8x NO DIMM NO DIMM

16x Samsung M393A2G40EB1-CRC 16 GB 2 rank 2400 MHz

(End of data from sysinfo program)

Compiler Version Notes

```
=====  
CC 507.cactuBSSN_r(base) 511.povray_r(base) 519.lbm_r(base) 521.wrf_r(base)  
526.blender_r(base) 527.cam4_r(base) 538.imagick_r(base) 544.nab_r(base)  
-----
```

icc (ICC) 17.0.0 20160721

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```
=====  
CXXC 507.cactuBSSN_r(base) 508.namd_r(base) 510.parest_r(base)  
511.povray_r(base) 526.blender_r(base)  
-----
```

icpc (ICC) 17.0.0 20160721

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```
=====  
FC 503.bwaves_r(base) 507.cactuBSSN_r(base) 521.wrf_r(base)  
527.cam4_r(base) 549.fotonik3d_r(base) 554.roms_r(base)  
-----
```

ifort (IFORT) 17.0.0 20160721

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Base Compiler Invocation

C benchmarks:

icc -m64 -std=c11

C++ benchmarks:

icpc -m64

Fortran benchmarks:

ifort -m64

Benchmarks using both Fortran and C:

ifort -m64 icc -m64 -std=c11

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Base Compiler Invocation (Continued)

Benchmarks using both C and C++:

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

Benchmarks using Fortran, C, and C++:

```
icpc -m64 icc -m64 -std=c11 ifort -m64
```

Base Portability Flags

```
503.bwaves_r: -DSPEC_LP64
507.cactuBSSN_r: -DSPEC_LP64
508.namd_r: -DSPEC_LP64
510.parest_r: -DSPEC_LP64
511.povray_r: -DSPEC_LP64
519.lbm_r: -DSPEC_LP64
521.wrf_r: -DSPEC_LP64 -DSPEC_CASE_FLAG -convert big_endian
526.blender_r: -DSPEC_LP64 -DSPEC_LINUX -funsigned-char
527.cam4_r: -DSPEC_LP64 -DSPEC_CASE_FLAG
538.imagick_r: -DSPEC_LP64
544.nab_r: -DSPEC_LP64
549.fotonik3d_r: -DSPEC_LP64
554.roms_r: -DSPEC_LP64
```

Base Optimization Flags

C benchmarks:

```
-xCORE-AVX2 -ipo -O3 -no-prec-div -auto-p32 -qopt-prefetch
-qopt-mem-layout-trans=3
```

C++ benchmarks:

```
-Wl,-z,muldefs -xCORE-AVX2 -ipo -O3 -no-prec-div -auto-p32
-qopt-prefetch -qopt-mem-layout-trans=3 -L/sh10.2 -lsmartheap64
```

Fortran benchmarks:

```
-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch
-qopt-mem-layout-trans=3 -nostandard-realloc-lhs
```

Benchmarks using both Fortran and C:

```
-xCORE-AVX2 -ipo -O3 -no-prec-div -auto-p32 -qopt-prefetch
-qopt-mem-layout-trans=3 -nostandard-realloc-lhs
```

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Base Optimization Flags (Continued)

Benchmarks using both C and C++:

```
-Wl,-z,muldefs -xCORE-AVX2 -ipo -O3 -no-prec-div -auto-p32  
-qopt-prefetch -qopt-mem-layout-trans=3 -L/shl0.2 -lsmartheap64
```

Benchmarks using Fortran, C, and C++:

```
-Wl,-z,muldefs -xCORE-AVX2 -ipo -O3 -no-prec-div -auto-p32  
-qopt-prefetch -qopt-mem-layout-trans=3 -nostandard-realloc-lhs  
-L/shl0.2 -lsmartheap64
```

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

<http://www.spec.org/cpu2017/flags/Intel-ic17.0-official-linux64-revD.html>

<http://www.spec.org/cpu2017/flags/Fujitsu-Platform-Settings-V1.2-BDW-RevD.html>

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

<http://www.spec.org/cpu2017/flags/Intel-ic17.0-official-linux64-revD.xml>

<http://www.spec.org/cpu2017/flags/Fujitsu-Platform-Settings-V1.2-BDW-RevD.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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