



SPEC[®] CFP2006 Result

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Fujitsu

PRIMEQUEST 3800B, Intel Xeon Platinum 8156,
3.60GHz

SPECfp[®]_rate2006 = Not Run

SPECfp_rate_base2006 = 2160

CPU2006 license: 19

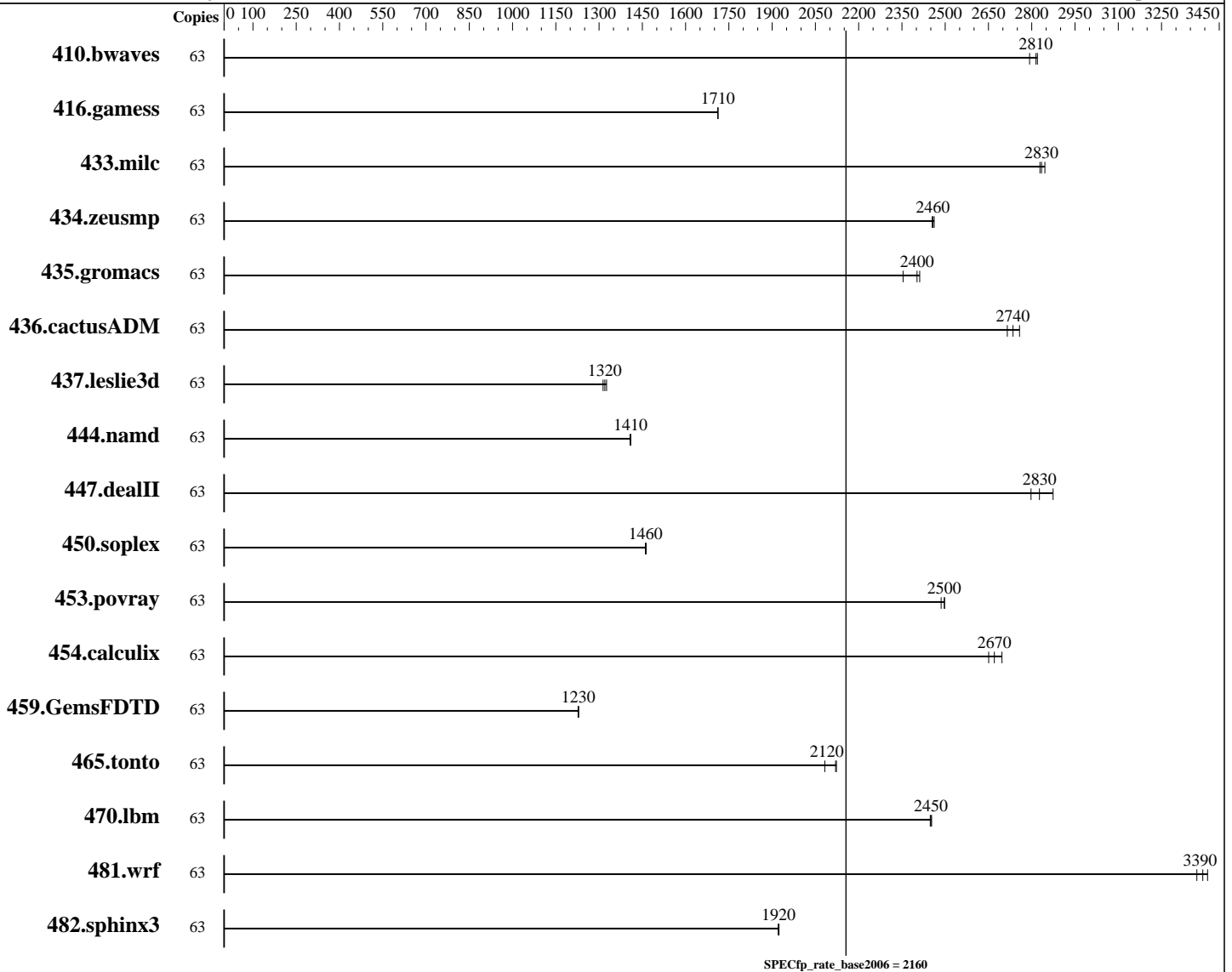
Test sponsor: Fujitsu

Tested by: Fujitsu

Test date: Oct-2017

Hardware Availability: Jul-2017

Software Availability: Sep-2017



Hardware

CPU Name: Intel Xeon Platinum 8156
 CPU Characteristics: Intel Turbo Boost Technology up to 3.70 GHz
 CPU MHz: 3600
 FPU: Integrated
 CPU(s) enabled: 32 cores, 8 chips, 4 cores/chip, 2 threads/core
 CPU(s) orderable: 2,4,6,8 chips
 Primary Cache: 32 KB I + 32 KB D on chip per core
 Secondary Cache: 1 MB I+D on chip per core

Continued on next page

Software

Operating System: 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
 Auto Parallel: No
 File System: tmpfs
 System State: Run level 3 (multi-user)

Continued on next page



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L3 Cache: 16.5 MB I+D on chip per chip
Other Cache: None
Memory: 1536 GB (96 x 16 GB 2Rx4 PC4-2666V-R)
Disk Subsystem: 768 GB tmpfs
Other Hardware: 1 x SAS HDD, 600 GB, 10.5K RPM, used for swap

Base Pointers: 32/64-bit
Peak Pointers: Not Applicable
Other Software: None

Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	63	307	2790	<u>304</u>	<u>2810</u>	304	2820							
416.gamess	63	<u>721</u>	<u>1710</u>	721	1710	720	1710							
433.milc	63	204	2830	203	2850	<u>204</u>	<u>2830</u>							
434.zeusmp	63	233	2460	234	2450	<u>233</u>	<u>2460</u>							
435.gromacs	63	187	2410	<u>187</u>	<u>2400</u>	191	2350							
436.cactusADM	63	<u>275</u>	<u>2740</u>	273	2760	277	2720							
437.leslie3d	63	451	1310	<u>449</u>	<u>1320</u>	447	1330							
444.namd	63	358	1410	359	1410	<u>359</u>	<u>1410</u>							
447.dealII	63	251	2870	258	2800	<u>255</u>	<u>2830</u>							
450.soplex	63	360	1460	<u>360</u>	<u>1460</u>	359	1460							
453.povray	63	134	2500	135	2490	<u>134</u>	<u>2500</u>							
454.calculix	63	193	2700	<u>195</u>	<u>2670</u>	196	2650							
459.GemsFDTD	63	<u>544</u>	<u>1230</u>	544	1230	545	1230							
465.tonto	63	<u>292</u>	<u>2120</u>	298	2080	292	2120							
470.lbm	63	<u>353</u>	<u>2450</u>	354	2450	353	2450							
481.wrf	63	209	3370	<u>207</u>	<u>3390</u>	206	3410							
482.sphinx3	63	638	1920	639	1920	<u>639</u>	<u>1920</u>							

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=1-63 isolcpus=1-63
Set CPU frequency governor to maximum performance with:
cpupower -c all frequency-set -g performance
Set tmpfs filesystem with:
mkdir /home/memory
mount -t tmpfs -o size=768g,rw tmpfs /home/memory
Process tuning settings:

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Operating System Notes (Continued)

```
echo 10000000 > /proc/sys/kernel/sched_min_granularity_ns
echo 15000000 > /proc/sys/kernel/sched_wakeup_granularity_ns
echo 0 > /proc/sys/kernel/numa_balancing
echo always > /sys/kernel/mm/transparent_hugepage/enabled
cpu idle state set with:
cpupower idle-set -d 2
cpupower idle-set -d 3
set affinity of rcu threads to the cpu0:
for i in `pgrep rcu` ; do taskset -pc 0 $i ; done
```

Platform Notes

BIOS configuration:
Intel Virtualization Technology = Disabled
HWPM Support = Disabled
DCU Streamer Prefetcher = Disabled
Stale AtoS = Enabled
LLC dead line alloc = Disabled
Sub NUMA Clustering = Enabled
Fan Control = Full
Sysinfo program /home/memory/speccpu/config/sysinfo.rev6993
Revision 6993 of 2015-11-06 (b5e8d4b4eb51ed28d7f98696cbe290c1)
running on linux-k55j Wed Oct 25 11:35:52 2017

This section contains SUT (System Under Test) info as seen by some common utilities. To remove or add to this section, see: <http://www.spec.org/cpu2006/Docs/config.html#sysinfo>

```
From /proc/cpuinfo
model name : Intel(R) Xeon(R) Platinum 8156 CPU @ 3.60GHz
 8 "physical id"s (chips)
64 "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 1 5 9 13
  physical 1: cores 1 5 9 13
  physical 2: cores 1 5 9 13
  physical 3: cores 1 2 5 11
  physical 4: cores 5 8 10 11
  physical 5: cores 0 8 11 12
  physical 6: cores 1 5 9 13
  physical 7: cores 1 5 9 13
cache size : 16896 KB
```

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

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Platform Notes (Continued)

```

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) x86_64 x86_64 x86_64 GNU/Linux

```

```
run-level 3 Oct 25 06:51
```

```

SPEC is set to: /home/memory/speccpu
Filesystem      Type      Size  Used Avail Use% Mounted on
tmpfs           tmpfs    768G  9.7G 759G   2% /home/memory
Additional information from dmidecode:

```

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:
48x Hynix HMA42GR7BJR4N-VK 16 GB 2 rank 2666 MHz
48x Samsung M393A2G40EB2-CTD 16 GB 2 rank 2666 MHz

```

(End of data from sysinfo program)

General Notes

```

Environment variables set by runspec before the start of the run:
LD_LIBRARY_PATH = "/home/memory/speccpu/icc2018lib/ia32:/home/memory/speccpu/icc2018lib/intel64"
LD_LIBRARY_PATH = "$LD_LIBRARY_PATH:/home/memory/speccpu/sh10.2"

```

Binaries compiled on a system with 2x Intel Xeon Platinum 8180 CPU + 384GB RAM memory using SUSE Linux Enterprise Server 12 SP2

Transparent Huge Pages enabled with:
echo always > /sys/kernel/mm/transparent_hugepage/enabled

Continued on next page



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General Notes (Continued)

Filesystem page cache cleared with:
shell invocation of 'sync; echo 3 > /proc/sys/vm/drop_caches' prior to run
runspec command invoked through numactl i.e.:
numactl --interleave=all runspec <etc>

Base Compiler Invocation

C benchmarks:
icc -m64

C++ benchmarks:
icpc -m64

Fortran benchmarks:
ifort -m64

Benchmarks using both Fortran and C:
icc -m64 ifort -m64

Base Portability Flags

410.bwaves: -DSPEC_CPU_LP64
416.gamess: -DSPEC_CPU_LP64
433.milc: -DSPEC_CPU_LP64
434.zeusmp: -DSPEC_CPU_LP64
435.gromacs: -DSPEC_CPU_LP64 -nofor_main
436.cactusADM: -DSPEC_CPU_LP64 -nofor_main
437.leslie3d: -DSPEC_CPU_LP64
444.namd: -DSPEC_CPU_LP64
447.dealII: -DSPEC_CPU_LP64
450.soplex: -DSPEC_CPU_LP64
453.povray: -DSPEC_CPU_LP64
454.calculix: -DSPEC_CPU_LP64 -nofor_main
459.GemsFDTD: -DSPEC_CPU_LP64
465.tonto: -DSPEC_CPU_LP64
470.lbm: -DSPEC_CPU_LP64
481.wrf: -DSPEC_CPU_LP64 -DSPEC_CPU_CASE_FLAG -DSPEC_CPU_LINUX
482.sphinx3: -DSPEC_CPU_LP64

Base Optimization Flags

C benchmarks:
-xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch -auto-p32
-qopt-mem-layout-trans=3

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Base Optimization Flags (Continued)

C++ benchmarks:

```
-xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch -auto-p32  
-qopt-mem-layout-trans=3
```

Fortran benchmarks:

```
-xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch
```

Benchmarks using both Fortran and C:

```
-xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch -auto-p32  
-qopt-mem-layout-trans=3
```

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

<http://www.spec.org/cpu2006/flags/Intel-ic17.0-official-linux64-revF.html>
<http://www.spec.org/cpu2006/flags/Fujitsu-Platform-Settings-V1.2-SKL-RevC.html>

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

<http://www.spec.org/cpu2006/flags/Intel-ic17.0-official-linux64-revF.xml>
<http://www.spec.org/cpu2006/flags/Fujitsu-Platform-Settings-V1.2-SKL-RevC.xml>

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For questions about this result, please contact the tester.
For other inquiries, please contact webmaster@spec.org.

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