SPEC® CFP2006 Result

Fujitsu

PRIMERGY CX2550 M2, Intel Xeon E5-2690 v4, 2.60 GHz

$SPECfp^{®}2006 =$ 125

$SPECfp\_base2006 =$ 119

CPU2006 license: 19
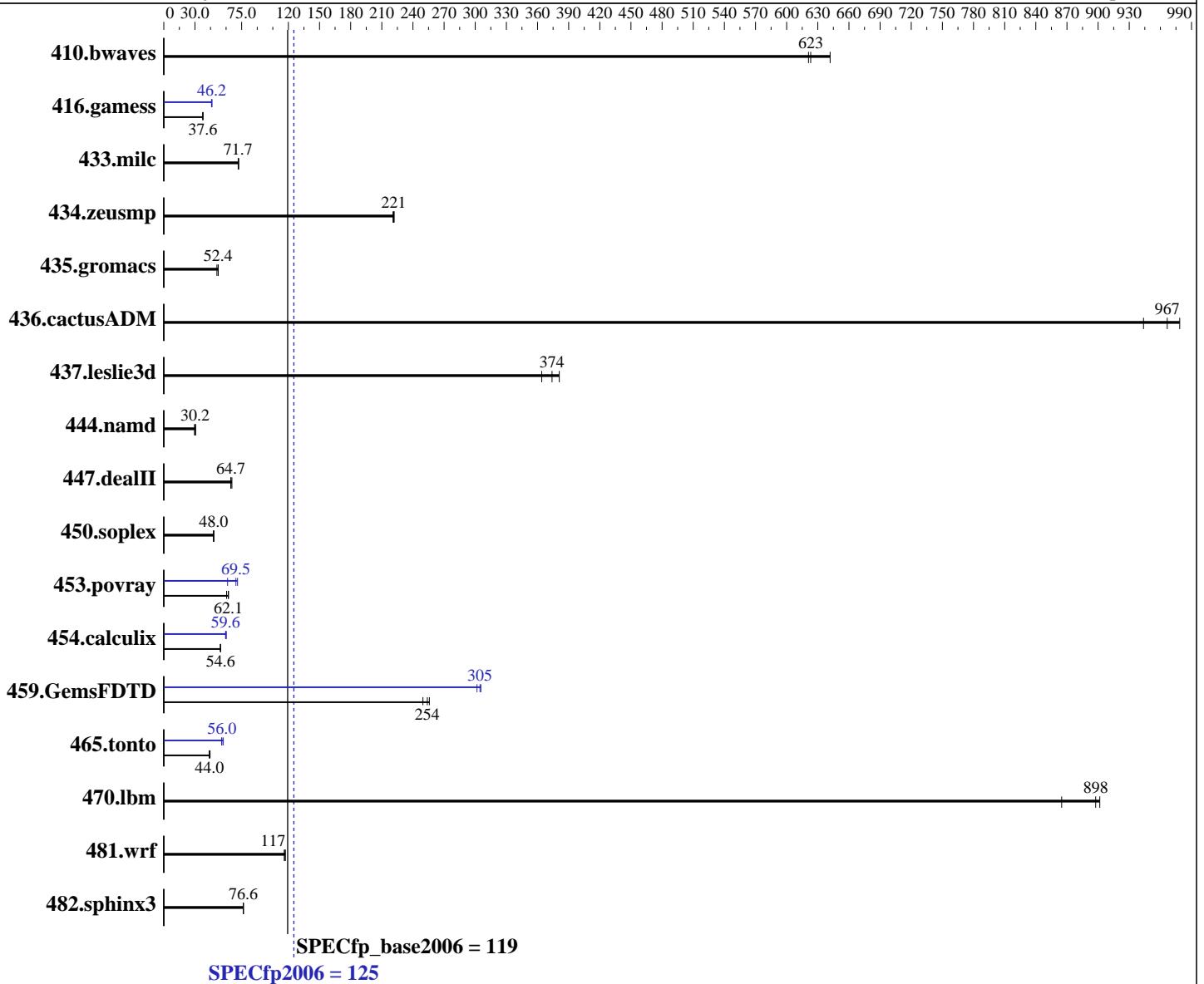**Test sponsor:** Fujitsu
Tested by: Fujitsu

Test date: Jun-2016
Hardware Availability: Apr-2016
Software Availability: Sep-2015

Benchmark	Result
410.bwaves	623
416.gamess	46.2 / 37.6
433.milc	71.7
434.zeusmp	221
435.gromacs	52.4
436.cactusADM	967
437.leslie3d	374
444.namd	30.2
447.dealII	64.7
450.soplex	48.0
453.povray	69.5 / 62.1
454.calculix	59.6 / 54.6
459.GemsFDTD	305 / 254
465.tonto	56.0 / 44.0
470.lbm	898
481.wrf	117
482.sphinx3	76.6

SPECfp_base2006 = 119
SPECfp2006 = 125

Hardware

CPU Name:	Intel Xeon E5-2690 v4
CPU Characteristics:	Intel Turbo Boost Technology up to 3.50 GHz
CPU MHz:	2600
FPU:	Integrated
CPU(s) enabled:	28 cores, 2 chips, 14 cores/chip, 2 threads/core
CPU(s) orderable:	1,2 chip
Primary Cache:	32 KB I + 32 KB D on chip per core
Secondary Cache:	256 KB I+D on chip per core

Continued on next page

Software

Operating System:	SUSE Linux Enterprise Server 12 SP1 (x86_64) Kernel 3.12.49-11-default
Compiler:	C/C++: Version 16.0.0.101 of Intel C++ Studio XE for Linux; Fortran: Version 16.0.0.101 of Intel Fortran Studio XE for Linux
Auto Parallel:	Yes
File System:	xfs
System State:	Run level 3 (multi-user)

Continued on next page

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L3 Cache:	35 MB I+D on chip per chip	Base Pointers:	64-bit
Other Cache:	None	Peak Pointers:	32/64-bit
Memory:	256 GB (16 x 16 GB 2Rx4 PC4-2400T-R)	Other Software:	None
Disk Subsystem:	1 x SATA, 1000 GB, 7200 RPM		
Other Hardware:	None		

Results Table

Benchmark	Base Seconds	Base Ratio	Base Seconds	Base Ratio	Base Seconds	Base Ratio	Peak Seconds	Peak Ratio	Peak Seconds	Peak Ratio	Peak Seconds	Peak Ratio
410.bwaves	21.9	621	**21.8**	**623**	21.2	642	21.9	621	**21.8**	**623**	21.2	642
416.gamess	522	37.5	519	37.7	**521**	**37.6**	426	45.9	**424**	**46.2**	422	46.4
433.milc	127	72.2	**128**	**71.7**	128	71.7	127	72.2	**128**	**71.7**	128	71.7
434.zeusmp	41.2	221	41.0	222	**41.1**	**221**	41.2	221	41.0	222	**41.1**	**221**
435.gromacs	**136**	**52.4**	136	52.4	140	51.2	**136**	**52.4**	136	52.4	140	51.2
436.cactusADM	12.2	979	12.7	944	**12.4**	**967**	12.2	979	12.7	944	**12.4**	**967**
437.leslie3d	**25.1**	**374**	24.7	381	25.8	364	**25.1**	**374**	24.7	381	25.8	364
444.namd	271	29.6	261	30.7	**265**	**30.2**	271	29.6	261	30.7	**265**	**30.2**
447.dealII	**177**	**64.7**	174	65.6	177	64.5	**177**	**64.7**	174	65.6	177	64.5
450.soplex	174	47.9	173	48.3	**174**	**48.0**	174	47.9	173	48.3	**174**	**48.0**
453.povray	85.3	62.3	88.0	60.5	**85.7**	**62.1**	86.6	61.5	**76.6**	**69.5**	74.9	71.0
454.calculix	151	54.7	**151**	**54.6**	151	54.5	**138**	**59.6**	139	59.5	137	60.3
459.GemsFDTD	41.5	256	**41.8**	**254**	42.5	250	35.2	302	**34.8**	**305**	34.7	305
465.tonto	225	43.8	**224**	**44.0**	221	44.6	177	55.6	172	57.3	**176**	**56.0**
470.lbm	15.9	865	**15.3**	**898**	15.2	902	15.9	865	**15.3**	**898**	15.2	902
481.wrf	95.4	117	96.3	116	**95.6**	**117**	95.4	117	96.3	116	**95.6**	**117**
482.sphinx3	255	76.5	254	76.8	**254**	**76.6**	255	76.5	254	76.8	**254**	**76.6**

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"
```

Platform Notes

```
BIOS configuration:
Energy Performance = Performance
Utilization Profile = Unbalanced
QPI snoop mode: Home Snoop
    COD Enable = Disabled, Early Snoop = Disabled, Home Snoop Dir OSB = Disabled
CPU C1E Support = Disabled
Sysinfo program /home/SPECcpu2006/config/sysinfo.rev6914
$Rev: 6914 $ $Date:: 2014-06-25 #$ e3fbb8667b5a285932ceab81e28219e1
running on CX2550M2 Mon Jun 27 13:59:43 2016
```

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CPU2006 license: 19		**Test date:**	Jun-2016
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Platform Notes (Continued)

```
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) CPU E5-2690 v4@ 2.60GHz
      2 "physical id"s (chips)
      56 "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 : 14
      siblings  : 28
      physical 0: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14
      physical 1: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14
   cache size : 35840 KB

From /proc/meminfo
   MemTotal:      264318036 kB
   HugePages_Total:       0
   Hugepagesize:       2048 kB

/usr/bin/lsb_release -d
   SUSE Linux Enterprise Server 12 SP1

From /etc/*release* /etc/*version*
   SuSE-release:
      SUSE Linux Enterprise Server 12 (x86_64)
      VERSION = 12
      PATCHLEVEL = 1
      # 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-SP1"
      VERSION_ID="12.1"
      PRETTY_NAME="SUSE Linux Enterprise Server 12 SP1"
      ID="sles"
      ANSI_COLOR="0;32"
      CPE_NAME="cpe:/o:suse:sles:12:sp1"

uname -a:
   Linux CX2550M2 3.12.49-11-default #1 SMP Wed Nov 11 20:52:43 UTC 2015
   (8d714a0) x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Jun 27 13:59 last=5

SPEC is set to: /home/SPECcpu2006
   Filesystem     Type  Size  Used Avail Use% Mounted on
   /dev/sda3      xfs   890G  104G  786G  12% /home
Additional information from dmidecode:
```

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Platform Notes (Continued)

```
   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 R1.4.0 for D3343-B1x
   03/17/2016
   Memory:
   16x Hyundai Electronics (Hynix) HMA42GR7AFR4N-UH 16 GB 2 rank 2400 MHz

 (End of data from sysinfo program)
```

General Notes

```
Environment variables set by runspec before the start of the run:
KMP_AFFINITY = "granularity=fine,compact,1,0"
LD_LIBRARY_PATH = "/home/SPECcpu2006/libs/32:/home/SPECcpu2006/libs/64:/home/SPECcpu2006/sh"
OMP_NUM_THREADS = "28"

 Binaries compiled on a system with 1x Intel Core i5-4670K CPU + 32GB
 memory using RedHat EL 7.1
 Transparent Huge Pages enabled with:
 echo always > /sys/kernel/mm/transparent_hugepage/enabled
 For information about Fujitsu please visit: http://www.fujitsu.com
```

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
```

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Base Portability Flags (Continued)

```
       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-AVX2 -ipo -O3 -no-prec-div -parallel -opt-prefetch
    -ansi-alias
```

C++ benchmarks:
```
    -xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch -ansi-alias
```

Fortran benchmarks:
```
    -xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -opt-prefetch
```

Benchmarks using both Fortran and C:
```
    -xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -opt-prefetch
    -ansi-alias
```

Peak Compiler Invocation

C benchmarks:
```
    icc   -m64
```

C++ benchmarks:
```
    icpc  -m64
```

Fortran benchmarks:
```
    ifort -m64
```

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

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Software Availability: Sep-2015

Peak Portability Flags

Same as Base Portability Flags

Peak Optimization Flags

C benchmarks:

      433.milc: basepeak = yes

      470.lbm: basepeak = yes

   482.sphinx3: basepeak = yes

C++ benchmarks:

    444.namd: basepeak = yes

    447.dealII: basepeak = yes

    450.soplex: basepeak = yes

   453.povray: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)
        -ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2)
        -par-num-threads=1(pass 1) -prof-use(pass 2) -unroll4
        -ansi-alias

Fortran benchmarks:

    410.bwaves: basepeak = yes

    416.gamess: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)
        -ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2)
        -par-num-threads=1(pass 1) -prof-use(pass 2) -unroll2
        -inline-level=0 -scalar-rep-

   434.zeusmp: basepeak = yes

   437.leslie3d: basepeak = yes

459.GemsFDTD: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)
        -ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2)
        -par-num-threads=1(pass 1) -prof-use(pass 2) -unroll2
        -inline-level=0 -opt-prefetch -parallel

    465.tonto: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)
        -ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2)
        -par-num-threads=1(pass 1) -prof-use(pass 2) -inline-calloc
        -opt-malloc-options=3 -auto -unroll4

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Peak Optimization Flags (Continued)

Benchmarks using both Fortran and C:

> 435.gromacs: basepeak = yes

> 436.cactusADM: basepeak = yes

> 454.calculix: -xCORE-AVX2 -ipo -O3 -no-prec-div -auto-ilp32 -ansi-alias

> 481.wrf: basepeak = yes

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/Intel-ic16.0-official-linux64.html
http://www.spec.org/cpu2006/flags/Fujitsu-Platform-Settings-V1.2-BDW-RevB.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic16.0-official-linux64.xml
http://www.spec.org/cpu2006/flags/Fujitsu-Platform-Settings-V1.2-BDW-RevB.xml

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

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