## SPEC® CFP2006 Result

### Fujitsu

PRIMERGY BX2580 M2, Intel Xeon E5-2637 v4, 3.50 GHz

<table>
<thead>
<tr>
<th>SPECfp®2006</th>
<th>SPECfp_base2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>112</td>
<td>109</td>
</tr>
</tbody>
</table>

**CPU2006 license:** 19  
**Test date:** Jul-2016  
**Hardware Availability:** Apr-2016  
**Software Availability:** Sep-2015

### Hardware

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU Name</td>
<td>Intel Xeon E5-2637 v4</td>
</tr>
<tr>
<td>CPU Characteristics</td>
<td>Intel Turbo Boost Technology up to 3.70 GHz</td>
</tr>
<tr>
<td>CPU MHz</td>
<td>3500</td>
</tr>
<tr>
<td>FPU</td>
<td>Integrated</td>
</tr>
<tr>
<td>CPU(s) enabled</td>
<td>8 cores, 2 chips, 4 cores/chip, 2 threads/core</td>
</tr>
<tr>
<td>CPU(s) orderable</td>
<td>1,2 chip</td>
</tr>
<tr>
<td>Primary Cache</td>
<td>32 KB I + 32 KB D on chip per core</td>
</tr>
<tr>
<td>Secondary Cache</td>
<td>256 KB I+D on chip per core</td>
</tr>
</tbody>
</table>

### Software

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>OS</td>
<td>SUSE Linux Enterprise Server 12 SP1 (x86_64) Kernel 3.12.49-11-default</td>
</tr>
<tr>
<td>Compiler</td>
<td>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</td>
</tr>
<tr>
<td>Auto Parallel</td>
<td>Yes</td>
</tr>
<tr>
<td>File System</td>
<td>xfs</td>
</tr>
<tr>
<td>System State</td>
<td>Run level 3 (multi-user)</td>
</tr>
</tbody>
</table>

### Test Data

410.bwaves: 48.0  
416.game: 44.6  
433.milc: 74.7  
434.zeusmp: 191  
435.gromacs: 64.1  
436.cactusADM: 572  
437.leslie3d: 273  
444.namd: 32.6  
447.dealII: 69.5  
450.soplex: 45.2  
453.povray: 73.0  
454.calculix: 62.2  
459.GemsFDTD: 202  
465.tonto: 60.5  
470.lbm: 94.1  
481.wrf: 91.6  
482.sphinx3: 58.6

**SPECfp2006 = 112**  
**SPECfp_base2006 = 109**
# SPEC CFP2006 Result

## Fujitsu

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<th>Test date: Jul-2016</th>
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</thead>
<tbody>
<tr>
<td>Test sponsor: Fujitsu</td>
<td>Hardware Availability: Apr-2016</td>
</tr>
<tr>
<td>Tested by: Fujitsu</td>
<td>Software Availability: Sep-2015</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>L3 Cache: 15 MB I+D on chip per chip</th>
<th>Base Pointers: 64-bit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other Cache: None</td>
<td>Peak Pointers: 32/64-bit</td>
</tr>
<tr>
<td>Memory: 256 GB (16 x 16 GB 2Rx4 PC4-2400T-R)</td>
<td>Other Software: None</td>
</tr>
<tr>
<td>Disk Subsystem: 1 x SATA, 1000 GB, 7200 RPM</td>
<td></td>
</tr>
</tbody>
</table>

---

## Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Base Seconds</th>
<th>Base Ratio</th>
<th>PE Seconds</th>
<th>PE Ratio</th>
<th>Base Seconds</th>
<th>Base Ratio</th>
<th>PE Seconds</th>
<th>PE Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>410.bwaves</td>
<td>30.7</td>
<td>443</td>
<td>31.0</td>
<td>438</td>
<td>31.0</td>
<td>438</td>
<td>30.7</td>
<td>443</td>
</tr>
<tr>
<td>416.gamess</td>
<td>438</td>
<td>44.7</td>
<td>439</td>
<td>44.6</td>
<td>439</td>
<td>44.6</td>
<td>408</td>
<td>48.0</td>
</tr>
<tr>
<td>433.milc</td>
<td>123</td>
<td>74.7</td>
<td>124</td>
<td>73.7</td>
<td>122</td>
<td>74.9</td>
<td>123</td>
<td>74.7</td>
</tr>
<tr>
<td>434.zesmp</td>
<td>47.7</td>
<td>191</td>
<td>48.1</td>
<td>189</td>
<td>47.3</td>
<td>192</td>
<td>47.7</td>
<td>191</td>
</tr>
<tr>
<td>435.gromacs</td>
<td>111</td>
<td>64.3</td>
<td>113</td>
<td>63.2</td>
<td>111</td>
<td>64.1</td>
<td>111</td>
<td>64.1</td>
</tr>
<tr>
<td>436.cactusADM</td>
<td>20.9</td>
<td>572</td>
<td>21.0</td>
<td>568</td>
<td>20.9</td>
<td>572</td>
<td>20.9</td>
<td>572</td>
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<tr>
<td>437.leslie3d</td>
<td>34.2</td>
<td>275</td>
<td>34.4</td>
<td>273</td>
<td>34.6</td>
<td>271</td>
<td>34.2</td>
<td>275</td>
</tr>
<tr>
<td>444.namd</td>
<td>246</td>
<td>32.6</td>
<td>246</td>
<td>32.6</td>
<td>246</td>
<td>32.6</td>
<td>239</td>
<td>33.6</td>
</tr>
<tr>
<td>447.dealII</td>
<td>164</td>
<td>69.6</td>
<td>165</td>
<td>69.5</td>
<td>165</td>
<td>69.2</td>
<td>164</td>
<td>69.6</td>
</tr>
<tr>
<td>450.soplex</td>
<td>185</td>
<td>45.2</td>
<td>184</td>
<td>45.2</td>
<td>186</td>
<td>44.8</td>
<td>185</td>
<td>45.2</td>
</tr>
<tr>
<td>453.povray</td>
<td>81.4</td>
<td>65.3</td>
<td>81.5</td>
<td>65.3</td>
<td>83.6</td>
<td>63.6</td>
<td>72.0</td>
<td>73.8</td>
</tr>
<tr>
<td>454.calculix</td>
<td>132</td>
<td>62.3</td>
<td>133</td>
<td>62.1</td>
<td>133</td>
<td>62.2</td>
<td>129</td>
<td>63.7</td>
</tr>
<tr>
<td>459.GemsFDTD</td>
<td>57.9</td>
<td>183</td>
<td>59.7</td>
<td>178</td>
<td>57.8</td>
<td>184</td>
<td>52.2</td>
<td>203</td>
</tr>
<tr>
<td>465.tonto</td>
<td>185</td>
<td>53.1</td>
<td>186</td>
<td>53.0</td>
<td>186</td>
<td>53.0</td>
<td>163</td>
<td>60.4</td>
</tr>
<tr>
<td>470.lbm</td>
<td>29.2</td>
<td>470</td>
<td>29.2</td>
<td>470</td>
<td>28.3</td>
<td>485</td>
<td>29.2</td>
<td>470</td>
</tr>
<tr>
<td>481.wrf</td>
<td>116</td>
<td>96.5</td>
<td>119</td>
<td>93.9</td>
<td>119</td>
<td>94.1</td>
<td>116</td>
<td>96.5</td>
</tr>
<tr>
<td>482.sphinx3</td>
<td>213</td>
<td>91.6</td>
<td>213</td>
<td>91.7</td>
<td>213</td>
<td>91.6</td>
<td>213</td>
<td>91.7</td>
</tr>
</tbody>
</table>

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

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## Operating System Notes

Stack size set to unlimited using "ulimit -s unlimited"

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## 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 linux-rzz5 Wed Jul  6 11:36:18 2016

Continued on next page
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 E5-2637 v4 @ 3.50GHz
  2 "physical id"s (chips)
  16 "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 0 1 2 3
  physical 1: cores 0 1 2 3
cache size : 15360 KB

From /proc/meminfo
MemTotal:       264519268 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:
  (8d714a0) x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Jul 6 11:35 last=5

SPEC is set to: /home/SPECcpu2006
  Filesystem  Type  Size  Used Avail Use% Mounted on
  /dev/sda3  xfs  331G  33G  299G  10%  /home

Additional information from dmidecode:
Continued on next page
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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 D3321-B1x 03/17/2016
Memory:
16x Samsung M393A2G40EB1-CRC 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 = "8"

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 -nofor_main
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
463.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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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: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)
           -ipo(pass 2) -03(pass 2) -no-prec-div(pass 2)
           -par-num-threads=1(pass 1) -prof-use(pass 2) -fno-alias
           -auto-ilp32

447.dealII: basepeak = yes
450.soplex: basepeak = yes

453.povray: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)
             -ipo(pass 2) -03(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) -03(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) -03(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) -03(pass 2) -no-prec-div(pass 2)
           -par-num-threads=1(pass 1) -prof-use(pass 2) -inline-calloc

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| SPECfp2006 | 112 |
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SPECfp2006 = 112
SPECfp_base2006 = 109

Peak Optimization Flags (Continued)

465.tonto (continued):
- opt-malloc-options=3 -auto -unroll4

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

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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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