## SPEC® CFP2006 Result

### Fujitsu

**PRIMERGY BX2560 M2, Intel Xeon E5-2690 v4, 2.60 GHz**

**SPECfp®2006 = 127**

**SPECfp_base2006 = 120**

<table>
<thead>
<tr>
<th>Test sponsor</th>
<th>Fujitsu</th>
<th>Test date</th>
<th>Jul-2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU2006 license:</td>
<td>19</td>
<td>Hardware Availability:</td>
<td>Apr-2016</td>
</tr>
<tr>
<td>Tested by:</td>
<td>Fujitsu</td>
<td>Software Availability:</td>
<td>Sep-2015</td>
</tr>
</tbody>
</table>

### 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

### 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)

### Benchmark Results

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>SPECfp®2006</th>
<th>SPECfp_base2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>410.bwaves</td>
<td>46.6</td>
<td></td>
</tr>
<tr>
<td>416.gamess</td>
<td>37.9</td>
<td></td>
</tr>
<tr>
<td>433.milc</td>
<td>71.9</td>
<td></td>
</tr>
<tr>
<td>434.zeusmp</td>
<td>221</td>
<td></td>
</tr>
<tr>
<td>435.gromacs</td>
<td>52.5</td>
<td></td>
</tr>
<tr>
<td>436.cactusADM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>437.leslie3d</td>
<td>381</td>
<td></td>
</tr>
<tr>
<td>444.namd</td>
<td>31.8</td>
<td></td>
</tr>
<tr>
<td>447.dealII</td>
<td>65.7</td>
<td></td>
</tr>
<tr>
<td>450.soplex</td>
<td>48.6</td>
<td></td>
</tr>
<tr>
<td>453.povray</td>
<td>71.5</td>
<td></td>
</tr>
<tr>
<td>454.calculix</td>
<td>63.0</td>
<td></td>
</tr>
<tr>
<td>459.GemsFDTD</td>
<td>55.9</td>
<td></td>
</tr>
<tr>
<td>465.tonto</td>
<td>58.3</td>
<td></td>
</tr>
<tr>
<td>470.lbm</td>
<td>44.4</td>
<td></td>
</tr>
<tr>
<td>481.wrf</td>
<td>117</td>
<td></td>
</tr>
<tr>
<td>482.sphinx3</td>
<td>77.3</td>
<td></td>
</tr>
</tbody>
</table>

**Total:** SPECfp®2006 = 127
Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Base Seconds</th>
<th>Ratio</th>
<th>Peak Seconds</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>410.bwaves</td>
<td>21.9</td>
<td>620</td>
<td>22.1</td>
<td>616</td>
</tr>
<tr>
<td>416.gamess</td>
<td>519</td>
<td>37.8</td>
<td>517</td>
<td>37.9</td>
</tr>
<tr>
<td>433.milc</td>
<td>128</td>
<td>71.6</td>
<td>128</td>
<td>71.9</td>
</tr>
<tr>
<td>434.dezvm</td>
<td>41.1</td>
<td>221</td>
<td>41.2</td>
<td>221</td>
</tr>
<tr>
<td>435.gromacs</td>
<td>136</td>
<td>52.5</td>
<td>139</td>
<td>51.3</td>
</tr>
<tr>
<td>436.cactusADM</td>
<td>12.5</td>
<td>957</td>
<td>12.1</td>
<td>985</td>
</tr>
<tr>
<td>437.leslie3d</td>
<td>24.7</td>
<td>381</td>
<td>25.1</td>
<td>375</td>
</tr>
<tr>
<td>444.namd</td>
<td>264</td>
<td>30.3</td>
<td>260</td>
<td>30.8</td>
</tr>
<tr>
<td>447.dealII</td>
<td>174</td>
<td>65.7</td>
<td>174</td>
<td>65.9</td>
</tr>
<tr>
<td>450.soplex</td>
<td>171</td>
<td>48.6</td>
<td>171</td>
<td>48.6</td>
</tr>
<tr>
<td>453.povray</td>
<td>84.5</td>
<td>63.0</td>
<td>85.1</td>
<td>62.5</td>
</tr>
<tr>
<td>454.calculix</td>
<td>147</td>
<td>56.0</td>
<td>148</td>
<td>55.9</td>
</tr>
<tr>
<td>459.GemsFDTD</td>
<td>42.1</td>
<td>252</td>
<td>41.5</td>
<td>255</td>
</tr>
<tr>
<td>465.tonto</td>
<td>222</td>
<td>44.4</td>
<td>224</td>
<td>44.0</td>
</tr>
<tr>
<td>470.lbm</td>
<td>15.4</td>
<td>895</td>
<td>15.7</td>
<td>874</td>
</tr>
<tr>
<td>481.wrf</td>
<td>94.3</td>
<td>118</td>
<td>96.5</td>
<td>116</td>
</tr>
<tr>
<td>482.sphinx3</td>
<td>252</td>
<td>77.3</td>
<td>253</td>
<td>77.0</td>
</tr>
</tbody>
</table>

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 linux-w3cw Fri Jul 1 10:55:07 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**

```plaintext
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**

```plaintext
MemTotal:       264514592 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:

```plaintext
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"
```

```plaintext
uname -a:
Linux linux-w3cw 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 Jul 1 10:54 last=5
```

**SPEC is set to: /home/SPECcpu2006**

```
Filesystem Type Size Used Avail Use% Mounted on
/dev/md126p3 xfs 424G 75G 349G 18% /home
```

Additional information from dmidecode:

Continued on next page
**SPEC CFP2006 Result**

**Fujitsu**

PRIMERGY BX2560 M2, Intel Xeon E5-2690 v4, 2.60 GHz

<table>
<thead>
<tr>
<th>SPECfp2006</th>
<th>127</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECfp_base2006</td>
<td>120</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CPU2006 license:</th>
<th>19</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test sponsor:</td>
<td>Fujitsu</td>
</tr>
<tr>
<td>Tested by:</td>
<td>Fujitsu</td>
</tr>
<tr>
<td>Test date:</td>
<td>Jul-2016</td>
</tr>
<tr>
<td>Hardware Availability:</td>
<td>Apr-2016</td>
</tr>
<tr>
<td>Software Availability:</td>
<td>Sep-2015</td>
</tr>
</tbody>
</table>

**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 D3320-B1x

03/17/2016

Memory:
8x Micron Technology 36ASF2G72PZ-2G3A3 16 GB 2 rank 2400 MHz
8x 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 = "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

Continued on next page
Fujitsu PRIMERGY BX2560 M2, Intel Xeon E5-2690 v4, 2.60 GHz

SPECfp2006 = 127
SPECfp_base2006 = 120

CPU2006 license: 19
Test date: Jul-2016
Test sponsor: Fujitsu
Hardware Availability: Apr-2016
Tested by: Fujitsu
Software Availability: Sep-2015

Base Portability Flags (Continued)

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Flags</th>
</tr>
</thead>
<tbody>
<tr>
<td>434.zeusmp</td>
<td>-DSPEC_CPU_LP64</td>
</tr>
<tr>
<td>435.gromacs</td>
<td>-DSPEC_CPU_LP64 -nofor_main</td>
</tr>
<tr>
<td>436.cactusADM</td>
<td>-DSPEC_CPU_LP64 -nofor_main</td>
</tr>
<tr>
<td>437.leslie3d</td>
<td>-DSPEC_CPU_LP64</td>
</tr>
<tr>
<td>444.namd</td>
<td>-DSPEC_CPU_LP64</td>
</tr>
<tr>
<td>447.dealII</td>
<td>-DSPEC_CPU_LP64</td>
</tr>
<tr>
<td>450.soplex</td>
<td>-DSPEC_CPU_LP64</td>
</tr>
<tr>
<td>453.povray</td>
<td>-DSPEC_CPU_LP64</td>
</tr>
<tr>
<td>454.calculix</td>
<td>-DSPEC_CPU_LP64 -nofor_main</td>
</tr>
<tr>
<td>459.GemsFDTD</td>
<td>-DSPEC_CPU_LP64</td>
</tr>
<tr>
<td>465.tonto</td>
<td>-DSPEC_CPU_LP64</td>
</tr>
<tr>
<td>481.wrf</td>
<td>-DSPEC_CPU_LP64 -DSPEC_CPU_CASE_FLAG -DSPEC_CPU_LINUX</td>
</tr>
<tr>
<td>482.sphinx3</td>
<td>-DSPEC_CPU_LP64</td>
</tr>
</tbody>
</table>

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
SPEC CFP2006 Result

Fujitsu
PRIMERGY BX2560 M2, Intel Xeon E5-2690 v4, 2.60 GHz

SPECfp2006 = 127
SPECfp_base2006 = 120

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

Test date: Jul-2016
Hardware Availability: Apr-2016
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: -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) -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) -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
            -opt-prefetch -parallel

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

Continued on next page
## Fujitsu

PRIMERGY BX2560 M2, Intel Xeon E5-2690 v4, 2.60 GHz

<table>
<thead>
<tr>
<th>SPECfp2006</th>
<th>127</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECfp_base2006</td>
<td>120</td>
</tr>
</tbody>
</table>

**CPU2006 license:** 19

**Test sponsor:** Fujitsu

**Tested by:** Fujitsu

**Test date:** Jul-2016

**Hardware Availability:** Apr-2016

**Software Availability:** Sep-2015

### 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:


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

- [http://www.spec.org/cpu2006/flags/Fujitsu-Platform-Settings-V1.2-BDW-RevB.xml](http://www.spec.org/cpu2006/flags/Fujitsu-Platform-Settings-V1.2-BDW-RevB.xml)

---

SPEC and SPECfp are registered trademarks of the Standard Performance Evaluation Corporation. All other brand and product names appearing in this result are trademarks or registered trademarks of their respective holders.

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

Tested with SPEC CPU2006 v1.2.