**SPEC® CFP2006 Result**

**Fujitsu**

PRIMERGY RX2540 M2, Intel Xeon E5-2699 v4, 2.2 GHz

<table>
<thead>
<tr>
<th>SPECfp®2006</th>
<th>124</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECfp_base2006</td>
<td>116</td>
</tr>
</tbody>
</table>

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

**CPU Characteristics:** Intel Turbo Boost Technology up to 3.60 GHz

<table>
<thead>
<tr>
<th>Software</th>
<th></th>
<th>Hardware</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Operating System:</strong></td>
<td>SUSE Linux Enterprise Server 12 SP1 (x86_64)</td>
<td><strong>CPU Name:</strong> Intel Xeon E5-2699 v4</td>
</tr>
<tr>
<td><strong>Compiler:</strong></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>
<td><strong>CPU Characteristics:</strong> Intel Turbo Boost Technology up to 3.60 GHz</td>
</tr>
<tr>
<td><strong>Auto Parallel:</strong></td>
<td>Yes</td>
<td><strong>CPU MHz:</strong> 2200</td>
</tr>
<tr>
<td><strong>File System:</strong></td>
<td>xfs</td>
<td><strong>FPU:</strong> Integrated</td>
</tr>
<tr>
<td><strong>System State:</strong></td>
<td>Run level 5 (multi-user)</td>
<td><strong>CPU(s) enabled:</strong> 44 cores, 2 chips, 22 cores/chip, 2 threads/core</td>
</tr>
</tbody>
</table>

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CPU2006 license: 19
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L3 Cache: 55 MB I+D on chip per chip
Other Cache: None
Memory: 256 GB (16 x 16 GB 2Rx4 PC4-2400T-R)
Disk Subsystem: 1 x SATA, 500 GB, 7200 RPM
Other Hardware: None

Base Pointers: 64-bit
Peak Pointers: 32/64-bit
Other Software: None

Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Base Seconds</th>
<th>Base Ratio</th>
<th>Peak Seconds</th>
<th>Peak Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>410.bwaves</td>
<td>25.5</td>
<td>532</td>
<td>24.3</td>
<td>560</td>
</tr>
<tr>
<td>416.gamess</td>
<td>527</td>
<td>37.2</td>
<td>527</td>
<td>37.1</td>
</tr>
<tr>
<td>433.milc</td>
<td>113</td>
<td>81.5</td>
<td>113</td>
<td>81.3</td>
</tr>
<tr>
<td>434.zeusmp</td>
<td>43.5</td>
<td>209</td>
<td>43.4</td>
<td>210</td>
</tr>
<tr>
<td>435.gromacs</td>
<td>158</td>
<td>45.3</td>
<td>161</td>
<td>44.5</td>
</tr>
<tr>
<td>436.cactusADM</td>
<td>13.3</td>
<td>897</td>
<td>13.0</td>
<td>916</td>
</tr>
<tr>
<td>437.leslie3d</td>
<td>26.3</td>
<td>357</td>
<td>26.1</td>
<td>360</td>
</tr>
<tr>
<td>444.namd</td>
<td>254</td>
<td>31.5</td>
<td>254</td>
<td>31.6</td>
</tr>
<tr>
<td>447.dealII</td>
<td>165</td>
<td>69.3</td>
<td>164</td>
<td>69.6</td>
</tr>
<tr>
<td>450.soplex</td>
<td>159</td>
<td>52.3</td>
<td>160</td>
<td>52.1</td>
</tr>
<tr>
<td>453.povray</td>
<td>83.0</td>
<td>64.1</td>
<td>83.2</td>
<td>64.0</td>
</tr>
<tr>
<td>454.calculix</td>
<td>156</td>
<td>52.8</td>
<td>156</td>
<td>52.9</td>
</tr>
<tr>
<td>459.GemsFDTD</td>
<td>47.8</td>
<td>222</td>
<td>46.4</td>
<td>229</td>
</tr>
<tr>
<td>465.tonto</td>
<td>251</td>
<td>39.2</td>
<td>254</td>
<td>38.8</td>
</tr>
<tr>
<td>470.pbm</td>
<td>15.6</td>
<td>881</td>
<td>15.7</td>
<td>876</td>
</tr>
<tr>
<td>481.wrf</td>
<td>91.8</td>
<td>122</td>
<td>91.1</td>
<td>123</td>
</tr>
<tr>
<td>482.sphinx3</td>
<td>291</td>
<td>67.0</td>
<td>290</td>
<td>67.2</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 Directory Snoop with OSB
COD Enable = Disabled, Early Snoop = Disabled, Home Snoop Dir OSB = Enabled
CPU C1E Support = Disabled
Sysinfo program /home/SPECcpu2006/config/sysinfo.rev6914
$Rev: 6914 $ $Date:: 2014-06-25 #$ e3fbb867b5a285932ceab81e28219e1
running on RX2540M2 Thu Feb 4 20:58:29 2016

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SPEC CFP2006 Result

Fujitsu

PRIMERGY RX2540 M2, Intel Xeon E5-2699 v4, 2.2 GHz

SPECfp2006 = 124
SPECfp_base2006 = 116

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

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

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 E5-2699 v4 @ 2.20GHz
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 : 56320 KB

From /proc/meminfo
MemTotal: 264387884 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:
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 5 Feb 4 15:52

SPEC is set to: /home/SPECcpu2006

Filesystem Type Size Used Avail Use% Mounted on
Continued on next page

Page 3
### SPEC CFP2006 Result

**Fujitsu**

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**CPU2006 license:** 19

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### Platform Notes (Continued)

/dev/sda3  xfs  191G 53G 139G 28% /home

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 // American Megatrends Inc. V5.0.0.11 R1.1.0 for D3289-B1x
01/14/2016

Memory:
8x NO DIMM NO DIMM
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 = "44"

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/transient_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
Fujitsu

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CPU2006 license: 19
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Baseline Portability Flags (Continued)

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-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
Fujitsu

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Tested by: Fujitsu

Test date: Feb-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) -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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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-ilk32 -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-RevA.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-RevA.xml

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For other inquiries, please contact webmaster@spec.org.

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