# SPEC® CFP2006 Result

## Fujitsu

**PRIMERGY RX2560 M2, Intel Xeon E5-2650 v4, 2.20 GHz**

<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>
</tbody>
</table>

### SPECfp®2006 = 112

### SPECfp_base2006 = 107

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### Hardware

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU Name:</td>
<td>Intel Xeon E5-2650 v4</td>
</tr>
<tr>
<td>CPU Characteristics:</td>
<td>Intel Turbo Boost Technology up to 2.90 GHz</td>
</tr>
<tr>
<td>CPU MHz:</td>
<td>2200</td>
</tr>
<tr>
<td>FPU:</td>
<td>Integrated</td>
</tr>
<tr>
<td>CPU(s) enabled:</td>
<td>24 cores, 2 chips, 12 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 L1 + 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>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating System:</td>
<td>SUSE Linux Enterprise Server 12 SP1 (x86_64)</td>
</tr>
<tr>
<td></td>
<td>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</td>
</tr>
<tr>
<td></td>
<td>for Linux;</td>
</tr>
<tr>
<td></td>
<td>Fortran: Version 16.0.0.101 of Intel Fortran</td>
</tr>
<tr>
<td></td>
<td>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 5 (multi-user)</td>
</tr>
</tbody>
</table>

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**SPEC CFP2006 Result**

**Fujitsu**

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| SPECfp2006 | 112 |
| SPECfp_base2006 | 107 |

CPU2006 license: 19
Test sponsor: Fujitsu
Tested by: Fujitsu
L3 Cache: 30 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>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>410.bwaves</td>
<td>22.5</td>
<td>604</td>
<td>22.3</td>
<td>609</td>
<td>22.4</td>
<td>606</td>
<td>22.5</td>
<td>604</td>
</tr>
<tr>
<td>416.gamess</td>
<td>608</td>
<td>32.2</td>
<td>612</td>
<td>32.0</td>
<td>608</td>
<td>32.2</td>
<td>524</td>
<td>37.3</td>
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<tr>
<td>433.milc</td>
<td>144</td>
<td>63.5</td>
<td>144</td>
<td>63.7</td>
<td>143</td>
<td>64.4</td>
<td>144</td>
<td>63.5</td>
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<tr>
<td>434.zeusmp</td>
<td>44.7</td>
<td>203</td>
<td>44.9</td>
<td>203</td>
<td>45.2</td>
<td>201</td>
<td>44.7</td>
<td>203</td>
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<tr>
<td>435.gromacs</td>
<td>157</td>
<td>45.3</td>
<td>157</td>
<td>45.4</td>
<td>161</td>
<td>44.4</td>
<td>157</td>
<td>45.3</td>
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<tr>
<td>436.cactusADM</td>
<td>13.2</td>
<td>905</td>
<td>13.4</td>
<td>894</td>
<td>13.3</td>
<td>901</td>
<td>13.2</td>
<td>905</td>
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<tr>
<td>437.leslie3d</td>
<td>25.3</td>
<td>372</td>
<td>24.3</td>
<td>387</td>
<td>24.4</td>
<td>385</td>
<td>25.3</td>
<td>372</td>
</tr>
<tr>
<td>444.namd</td>
<td>314</td>
<td>25.5</td>
<td>315</td>
<td>25.4</td>
<td>315</td>
<td>25.5</td>
<td>305</td>
<td>26.3</td>
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<tr>
<td>447.dealII</td>
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<td>55.3</td>
<td>205</td>
<td>55.8</td>
<td>205</td>
<td>55.8</td>
<td>207</td>
<td>55.3</td>
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<tr>
<td>450.soplex</td>
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<td>41.7</td>
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<td>41.8</td>
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<td>41.6</td>
<td>200</td>
<td>41.7</td>
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<tr>
<td>453.povray</td>
<td>107</td>
<td>49.9</td>
<td>106</td>
<td>50.2</td>
<td>107</td>
<td>49.8</td>
<td>93.8</td>
<td>56.7</td>
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<tr>
<td>454.calculix</td>
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<td>47.8</td>
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<td>47.7</td>
<td>173</td>
<td>47.7</td>
<td>163</td>
<td>50.6</td>
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<tr>
<td>459.GemsFDTD</td>
<td>43.7</td>
<td>243</td>
<td>43.9</td>
<td>242</td>
<td>44.6</td>
<td>238</td>
<td>35.9</td>
<td>295</td>
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<tr>
<td>465.tonto</td>
<td>262</td>
<td>37.6</td>
<td>256</td>
<td>38.4</td>
<td>254</td>
<td>38.7</td>
<td>209</td>
<td>47.2</td>
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<tr>
<td>470.ibm</td>
<td>16.3</td>
<td>844</td>
<td>16.2</td>
<td>850</td>
<td>16.5</td>
<td>834</td>
<td>16.3</td>
<td>844</td>
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<tr>
<td>481.wrf</td>
<td>104</td>
<td>107</td>
<td>104</td>
<td>108</td>
<td>104</td>
<td>107</td>
<td>104</td>
<td>107</td>
</tr>
<tr>
<td>482.sphinx3</td>
<td>290</td>
<td>67.2</td>
<td>288</td>
<td>67.7</td>
<td>287</td>
<td>67.9</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 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 RX2560M21 Fri Apr  1 07:16:36 2016

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Fujitsu
PRIMERGY RX2560 M2, Intel Xeon E5-2650 v4, 2.20 GHz

SPECfp2006 = 112
SPECfp_base2006 = 107

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

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 E5-2650 v4@ 2.20GHz
    2 "physical id"s (chips)
    48 "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: 12
        siblings: 24
        physical 0: cores 0 1 2 3 4 5 8 9 10 11 12 13
        physical 1: cores 0 1 2 3 4 5 8 9 10 11 12 13
        cache size: 30720 KB

From /proc/meminfo
    MemTotal: 264316552 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 5 Apr 1 07:15

SPEC is set to: /home/SPECcpu2006
    Filesystem Type Size Used Avail Use% Mounted on
    /dev/md126p3 xfs 889G 64G 826G 8% /home
    Additional information from dmidecode: Continued on next page
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 R1.6.0 for D3289-B1x 03/11/2016
Memory:
16x Hynix Semiconductor HMA42GR7AFR4N-UH 16 GB 2 rank 2400 MHz
8x NO DIMM NO DIMM
(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 = "24"

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
Fujitsu

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

Base Portability Flags (Continued)

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
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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- **CPU2006 license:** 19
- **Test sponsor:** Fujitsu
- **Tested by:** Fujitsu
- **Test date:** Apr-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 -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

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CPU2006 license: 19
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Test date: Apr-2016
Tested by: Fujitsu
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
http://www.spec.org/cpu2006/flags/Intel-ic16.0-official-linux64.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-HSW-RevA.xml

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

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