Fujitsu
PRIMERGY CX2550 M2, Intel Xeon E5-2650 v4, 2.20 GHz

CPU2006 license: 19
Test sponsor: Fujitsu
Tested by: Fujitsu
CPU Name: Intel Xeon E5-2650 v4
CPU Characteristics: Intel Turbo Boost Technology up to 2.90 GHz
CPU MHz: 2200
FPU: Integrated
CPU(s) enabled: 24 cores, 2 chips, 12 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)
<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Seconds Base</th>
<th>Ratio Base</th>
<th>Seconds Peak</th>
<th>Ratio Peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>bwaves</td>
<td>22.7</td>
<td>599</td>
<td>22.7</td>
<td>599</td>
</tr>
<tr>
<td>gamess</td>
<td>611</td>
<td>32.0</td>
<td>609</td>
<td>32.2</td>
</tr>
<tr>
<td>mmlc</td>
<td>143</td>
<td>64.2</td>
<td>143</td>
<td>64.2</td>
</tr>
<tr>
<td>zeusmp</td>
<td>44.4</td>
<td>205</td>
<td>44.1</td>
<td>206</td>
</tr>
<tr>
<td>gromacs</td>
<td>157</td>
<td>45.5</td>
<td>157</td>
<td>45.4</td>
</tr>
<tr>
<td>cactusADM</td>
<td>13.0</td>
<td>917</td>
<td>12.8</td>
<td>931</td>
</tr>
<tr>
<td>lesle3d</td>
<td>24.2</td>
<td>388</td>
<td>24.1</td>
<td>391</td>
</tr>
<tr>
<td>namd</td>
<td>314</td>
<td>25.5</td>
<td>314</td>
<td>25.5</td>
</tr>
<tr>
<td>dealII</td>
<td>206</td>
<td>55.6</td>
<td>205</td>
<td>55.8</td>
</tr>
<tr>
<td>soplex</td>
<td>199</td>
<td>41.9</td>
<td>199</td>
<td>41.8</td>
</tr>
<tr>
<td>povray</td>
<td>107</td>
<td>49.8</td>
<td>107</td>
<td>49.9</td>
</tr>
<tr>
<td>calculix</td>
<td>173</td>
<td>47.7</td>
<td>172</td>
<td>47.9</td>
</tr>
<tr>
<td>GmEsFDTD</td>
<td>44.3</td>
<td>240</td>
<td>42.3</td>
<td>251</td>
</tr>
<tr>
<td>tonto</td>
<td>252</td>
<td>39.0</td>
<td>254</td>
<td>38.8</td>
</tr>
<tr>
<td>lbm</td>
<td>16.7</td>
<td>823</td>
<td>16.3</td>
<td>844</td>
</tr>
<tr>
<td>wfr</td>
<td>103</td>
<td>109</td>
<td>104</td>
<td>108</td>
</tr>
<tr>
<td>sphinx3</td>
<td>286</td>
<td>68.1</td>
<td>285</td>
<td>68.3</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 CX2550M2 Tue Jul 26 08:52:07 2016

Continued on next page
SPEC CFP2006 Result

Fujitsu
PRIMERGY CX2550 M2, Intel Xeon E5-2650 v4, 2.20 GHz

SPECfp2006 = 112
SPECfp_base2006 = 108

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

Test date: Jul-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 E5-2650 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: 264318868 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 26 08:51 last=5

SPEC is set to: /home/SPECcpu2006
Filesystem Type Size Used Avail Use% Mounted on
/dev/sda3 xfs 890G 90G 800G 11% /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 R1.4.0 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 = "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
434.zeusmp: -DSPEC_CPU_LP64
**Fujitsu**

**PRIMERGY CX2550 M2, Intel Xeon E5-2650 v4, 2.20 GHz**

<table>
<thead>
<tr>
<th>SPECfp2006</th>
<th>112</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECfp_base2006</td>
<td>108</td>
</tr>
</tbody>
</table>

**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)

- 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
- 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

PRIMERGY CX2550 M2, Intel Xeon E5-2650 v4, 2.20 GHz

Fujitsu

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

SPECfp2006 = 112
SPECfp_base2006 = 108

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
            -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

Continued on next page
**SPEC CFP2006 Result**

Fujitsu

PRIMERGY CX2550 M2, Intel Xeon E5-2650 v4, 2.20 GHz

<table>
<thead>
<tr>
<th>SPECfp2006</th>
<th>112</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECfp_base2006</td>
<td>108</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
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

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.
Report generated on Tue Sep 6 16:56:11 2016 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 6 September 2016.