SPEC® CFP2006 Result

Fujitsu
PRIMERGY RX2530 M2, Intel Xeon E5-2640 v4, 2.40 GHz

| SPECfp®_rate2006 | 712 |
| SPECfp_rate_base2006 | 695 |

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

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

| SPECfp®_rate2006 | 712 |
| SPECfp_rate_base2006 | 695 |

<table>
<thead>
<tr>
<th>Copies</th>
<th>SPECfp®_rate2006</th>
<th>SPECfp_rate_base2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>410.bwaves</td>
<td>565</td>
<td>758</td>
</tr>
<tr>
<td>416.gamess</td>
<td>755</td>
<td>816</td>
</tr>
<tr>
<td>433.milc</td>
<td>553</td>
<td>944</td>
</tr>
<tr>
<td>434.zeusmp</td>
<td>816</td>
<td>942</td>
</tr>
<tr>
<td>435.gromacs</td>
<td>900</td>
<td>942</td>
</tr>
<tr>
<td>436.cactusADM</td>
<td>400</td>
<td>1200</td>
</tr>
<tr>
<td>437.leslie3d</td>
<td>589</td>
<td>816</td>
</tr>
<tr>
<td>444.namd</td>
<td>587</td>
<td>968</td>
</tr>
<tr>
<td>447.dealII</td>
<td>449</td>
<td>1130</td>
</tr>
<tr>
<td>450.soplex</td>
<td>413</td>
<td>1130</td>
</tr>
<tr>
<td>453.povray</td>
<td>413</td>
<td>1130</td>
</tr>
<tr>
<td>454.calculix</td>
<td>387</td>
<td>814</td>
</tr>
<tr>
<td>459.GemsFDTD</td>
<td>763</td>
<td>770</td>
</tr>
<tr>
<td>465.tonto</td>
<td>674</td>
<td></td>
</tr>
<tr>
<td>470.lbm</td>
<td>673</td>
<td></td>
</tr>
<tr>
<td>481.wrf</td>
<td>673</td>
<td></td>
</tr>
<tr>
<td>482.sphinx3</td>
<td>673</td>
<td></td>
</tr>
</tbody>
</table>

Hardware

| CPU Name: | Intel Xeon E5-2640 v4 |
| CPU Characteristics: | Intel Turbo Boost Technology up to 3.40 GHz |
| CPU MHz: | 2400 |
| FPU: | Integrated |
| CPU(s) enabled: | 20 cores, 2 chips, 10 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) |
| 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: | No |
| File System: | xfs |
| System State: | Run level 3 (multi-user) |

Continued on next page
## RESULTS TABLE

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Copies</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>
<th>Seconds</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>410.bwaves</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>416.gamess</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>433.milc</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>434.zeusmp</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>435.gromacs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>436.cactusADM</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>437.leslie3d</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>444.namd</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>447.dealII</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>450.soplex</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>453.povray</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>454.calculix</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>459.GemsFDTD</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>465.tonto</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>470.lbm</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>481.wrf</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>482.sphinx3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

### Submit Notes

The numactl mechanism was used to bind copies to processors. The config file option 'submit' was used to generate numactl commands to bind each copy to a specific processor. For details, please see the config file.

### Operating System Notes

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

### Platform Notes

BIOS configuration:
- Energy Performance = Performance
- Utilization Profile = Unbalanced

Continued on next page
Fujitsu

PRIMERGY RX2530 M2, Intel Xeon E5-2640 v4, 2.40 GHz

SPECfp_rate2006 = 712
SPECfp_rate_base2006 = 695

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

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

Platform Notes (Continued)

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 $ $Date:: 2014-06-25 #$ e3fbb8667b5a285932ceab81e28219e1
running on RX2530M2 Thu May 12 21:13:31 2016

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 E5-2640 v4 @ 2.40GHz
  2 "physical id"s (chips)
  40 "processors"
core states, siblings (Caution: counting these is hw and system dependent. The following excerpts from /proc/cpuinfo might not be reliable. Use with caution.)
cpu cores : 10
siblings : 20
physical 0: cores 0 1 2 3 4 8 9 10 11 12
physical 1: cores 0 1 2 3 4 8 9 10 11 12
cache size : 25600 KB

From /proc/meminfo
MemTotal: 264325160 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

Continued on next page
SPEC CFP2006 Result

Fujitsu
PRIMERGY RX2530 M2, Intel Xeon E5-2640 v4, 2.40 GHz

SPECfp_rate2006 = 712
SPECfp_rate_base2006 = 695

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

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

Platform Notes (Continued)

run-level 3 May 12 10:02 last=5

SPEC is set to: /home/SPECcpu2006
   Filesystem     Type  Size  Used  Avail  Use%  Mounted on
/dev/sda3      xfs   890G   39G   851G   5%  /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 R1.6.0 for D3279-B1x
03/11/2016
Memory:
   16x Micron 36ASF2G72PZ-2G3A3 16 GB 2 rank 2400 MHz, configured at 2133 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:
LD_LIBRARY_PATH = "/home/SPECcpu2006/libs/32:/home/SPECcpu2006/libs/64:/home/SPECcpu2006/sh"

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
Filesystem page cache cleared with:
   echo 1 > /proc/sys/vm/drop_caches
runspec command invoked through numactl i.e.:
   numactl --interleave=all runspec <etc>
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
SPEC CFP2006 Result

Fujitsu
PRIMERGY RX2530 M2, Intel Xeon E5-2640 v4, 2.40 GHz

SPECfp_rate2006 = 712
SPECfp_rate_base2006 = 695

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

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

Base Portability Flags

410.bwaves: -DSPEC_CPU_LP64
416.games: -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 -opt-prefetch -auto-p32
-ansi-alias -opt-mem-layout-trans=3

C++ benchmarks:
-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch -auto-p32
-ansi-alias -opt-mem-layout-trans=3

Fortran benchmarks:
-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch

Benchmarks using both Fortran and C:
-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch -auto-p32
-ansi-alias -opt-mem-layout-trans=3

Peak Compiler Invocation

C benchmarks:
icc -m64

C++ benchmarks (except as noted below):
icpc -m64

450.soplex: icpc -m32 -L/opt/intel/compilers_and_libraries_2016/linux/compiler/lib/ia32_lin

Continued on next page
**SPEC CFP2006 Result**

**Fujitsu**

PRIMERGY RX2530 M2, Intel Xeon E5-2640 v4, 2.40 GHz

| SPECfp_rate2006 | = 712 |
| SPECfp_rate_base2006 | = 695 |

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

### Peak Compiler Invocation (Continued)

Fortran benchmarks:

```bash
ifort -m64
```

Benchmarks using both Fortran and C:

```bash
icc  -m64 ifort -m64
```

### Peak Portability Flags

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Flags</th>
</tr>
</thead>
<tbody>
<tr>
<td>410.bwaves</td>
<td>-DSPEC_CPU_LP64</td>
</tr>
<tr>
<td>416.gamess</td>
<td>-DSPEC_CPU_LP64</td>
</tr>
<tr>
<td>433.milc</td>
<td>-DSPEC_CPU_LP64</td>
</tr>
<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>-D_FILE_OFFSET_BITS=64</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>470.lbm</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>

### Peak Optimization Flags

**C** benchmarks:

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Flags</th>
</tr>
</thead>
<tbody>
<tr>
<td>433.milc</td>
<td>basepeak = yes</td>
</tr>
<tr>
<td>470.lbm</td>
<td>basepeak = yes</td>
</tr>
<tr>
<td>482.sphinx3</td>
<td>basepeak = yes</td>
</tr>
</tbody>
</table>

**C++** benchmarks:

```bash
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) -opt-mem-layout-trans=3(pass 2) -prof-use(pass 2) -fnno-alias -auto-ilp32
```

```bash
447.dealII: basepeak = yes
```

Continued on next page
**SPEC CFP2006 Result**

Fujitsu
PRIMERGY RX2530 M2, Intel Xeon E5-2640 v4, 2.40 GHz

<table>
<thead>
<tr>
<th>SPECfp_rate2006</th>
<th>SPECfp_rate_base2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>712</td>
<td>695</td>
</tr>
</tbody>
</table>

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

### Peak Optimization Flags (Continued)

450.soplex:  
-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)  -opt-mem-layout-trans=3(pass 2)  
-prof-use(pass 2)  -opt-malloc-options=3

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)  -opt-mem-layout-trans=3(pass 2)  
-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: basepeak = yes

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)  -unroll4  -auto  
-inline-calloc  -opt-malloc-options=3

**Benchmarks using both Fortran and C:**

435.gromacs:  
-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)  -opt-mem-layout-trans=3(pass 2)  
-prof-use(pass 2)  -opt-prefetch  -auto-ilp32

436.cactusADM: basepeak = yes

454.calculix: basepeak = yes

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.20160517.xml
<table>
<thead>
<tr>
<th>SPEC CFP2006 Result</th>
</tr>
</thead>
</table>

**Fujitsu**

PRIMERGY RX2530 M2, Intel Xeon E5-2640 v4, 2.40 GHz

<table>
<thead>
<tr>
<th>SPECfp_rate2006 = 712</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECfp_rate_base2006 = 695</td>
</tr>
</tbody>
</table>

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

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

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.  
Originally published on 28 June 2016.