



SPEC[®] CFP2006 Result

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Fujitsu

SPECfp[®]_rate2006 = **870**

PRIMERGY CX1640 M1, Intel Xeon Phi 7250, 1.40GHz

SPECfp_rate_base2006 = **842**

CPU2006 license: 19

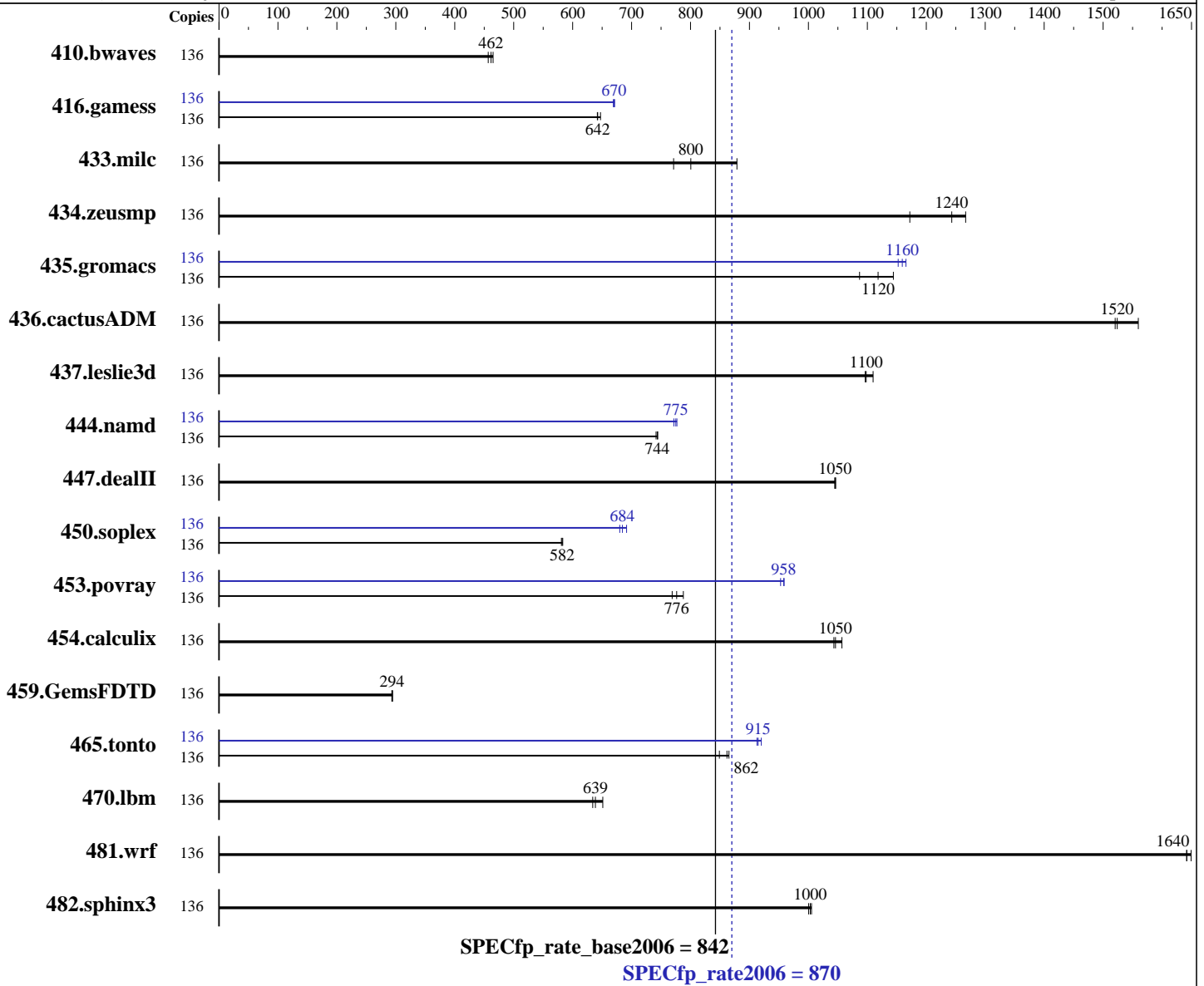
Test sponsor: Fujitsu

Tested by: Fujitsu

Test date: Jun-2016

Hardware Availability: Sep-2016

Software Availability: Sep-2016



Hardware

CPU Name: Intel Xeon Phi 7250
 CPU Characteristics: Intel Turbo Boost Technology up to 1.60 GHz
 CPU MHz: 1400
 FPU: Integrated
 CPU(s) enabled: 68 cores, 1 chip, 68 cores/chip, 4 threads/core
 CPU(s) orderable: 1 chip
 Primary Cache: 32 KB I + 32 KB D on chip per core
 Secondary Cache: 1 MB I+D on chip per two cores

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Software

Operating System: Red Hat Enterprise Linux Server release 7.2 (Maipo)
 3.10.0-327.13.1.el7.mpsp_1.3.2.100.x86_64
 Compiler: C/C++: Version 16.0.2.181 of Intel C++ Studio XE for Linux;
 Fortran: Version 16.0.2.181 of Intel Fortran Studio XE for Linux
 Auto Parallel: No
 File System: xfs

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L3 Cache: None
Other Cache: None
Memory: 192 GB (6 x 32 GB 2Rx4 PC4-2400T-R, running at 1200 MHz)
Disk Subsystem: 1 x SATA SSD, 741 GB, 6.0 Gbps
Other Hardware: 16 GB MCDRAM

System State: Run level 3 (multi-user)
Base Pointers: 32/64-bit
Peak Pointers: 32/64-bit
Other Software: None

Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	136	4046	457	3975	465	4005	462	136	4046	457	3975	465	4005	462
416.gamess	136	4114	647	4148	642	4145	642	136	3972	670	3967	671	3980	669
433.milc	136	1421	879	1560	800	1619	771	136	1421	879	1560	800	1619	771
434.zeusmp	136	995	1240	977	1270	1056	1170	136	995	1240	977	1270	1056	1170
435.gromacs	136	849	1140	868	1120	894	1090	136	838	1160	843	1150	833	1170
436.cactusADM	136	1042	1560	1066	1520	1069	1520	136	1042	1560	1066	1520	1069	1520
437.leslie3d	136	1164	1100	1166	1100	1152	1110	136	1164	1100	1166	1100	1152	1110
444.namd	136	1467	744	1465	744	1471	742	136	1413	772	1407	775	1404	777
447.dealII	136	1489	1040	1487	1050	1488	1050	136	1489	1040	1487	1050	1488	1050
450.soplex	136	1952	581	1945	583	1948	582	136	1657	684	1668	680	1640	692
453.povray	136	932	776	918	788	941	769	136	755	959	755	958	759	953
454.calculix	136	1062	1060	1073	1050	1075	1040	136	1062	1060	1073	1050	1075	1040
459.GemsFDTD	136	4911	294	4920	293	4899	295	136	4911	294	4920	293	4899	295
465.tonto	136	1547	865	1576	849	1553	862	136	1454	920	1466	913	1463	915
470.lbm	136	2870	651	2926	639	2947	634	136	2870	651	2926	639	2947	634
481.wrf	136	925	1640	925	1640	921	1650	136	925	1640	925	1640	921	1650
482.sphinx3	136	2637	1010	2642	1000	2649	1000	136	2637	1010	2642	1000	2649	1000

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

Submit Notes

The taskset mechanism was used to bind copies to processors. The config file option 'submit' was used to generate taskset 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:
Cluster Mode = Quadrant
Memory Mode = Cache

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Software Availability: Sep-2016

Platform Notes (Continued)

Patrol Scrub = Disabled
 Power Technology = Custom
 Enhanced Speedstep = Enabled
 Turbo Mode = Enabled
 CPU C6 Report = Disabled
 Package C State limit = C0
 Cooling System:

Cool-Central Liquid Cooling Technology

For details of cooling system please visit: <http://www.fujitsu.com/fts/products/computing/servers/primergy/scale-out/cclc/index.html>

For information about Fujitsu please visit: <http://www.fujitsu.com>

Sysinfo program /root/cpu2006/config/sysinfo.rev6914

\$Rev: 6914 \$ \$Date:: 2014-06-25 #\$ e3fbb8667b5a285932ceab81e28219e1

running on cx1640m1-42 Thu Jun 2 19:29:43 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 Phi(TM) CPU 7250 @ 1.40GHz

1 "physical id"s (chips)

272 "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 : 68

siblings : 272

physical 0: cores 0 1 2 3 4 5 6 7 12 13 14 15 16 17 18 19 24 25 26 27 28

29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53

54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75

cache size : 1024 KB

From /proc/meminfo

MemTotal: 197741932 kB

HugePages_Total: 0

Hugepagesize: 2048 kB

From /etc/*release* /etc/*version*

os-release:

NAME="Red Hat Enterprise Linux Server"

VERSION="7.2 (Maipo)"

ID="rhel"

ID_LIKE="fedora"

VERSION_ID="7.2"

PRETTY_NAME="Red Hat Enterprise Linux Server 7.2 (Maipo)"

ANSI_COLOR="0;31"

CPE_NAME="cpe:/o:redhat:enterprise_linux:7.2:GA:server"

redhat-release: Red Hat Enterprise Linux Server release 7.2 (Maipo)

system-release: Red Hat Enterprise Linux Server release 7.2 (Maipo)

system-release-cpe: cpe:/o:redhat:enterprise_linux:7.2:ga:server

uname -a:

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Platform Notes (Continued)

```
Linux cx1640m1-42 3.10.0-327.13.1.el7.mpsp_1.3.2.100.x86_64 #1 SMP Mon May 23
05:37:07 EDT 2016 x86_64 x86_64 x86_64 GNU/Linux
```

```
run-level 3 Jun 2 19:06
```

```
SPEC is set to: /root/cpu2006
```

```
Filesystem      Type  Size  Used Avail Use% Mounted on
/dev/mapper/rhel-root xfs   741G  295G  447G  40% /
```

```
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 R0.97.0 for D3727-A1x
05/21/2016
```

```
Memory:
```

```
6x Samsung M393A4K40BB1-CRC 32 GB 2 rank 2400 MHz, configured at 1200 MHz
```

```
(End of data from sysinfo program)
```

General Notes

Environment variables set by runspec before the start of the run:

```
LD_LIBRARY_PATH = "/root/cpu2006/libs/32:/root/cpu2006/libs/64:/root/cpu2006/sh"
```

```
Binaries compiled on a system with
1x Intel 2nd Generation Xeon Phi CPU
+ 96GB memory using RedHat EL 7.2
Transparent Huge Pages enabled with:
echo always > /sys/kernel/mm/transparent_hugepage/enabled
```

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
```



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Base Portability Flags

```

410.bwaves: -DSPEC_CPU_LP64
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:

```

-xMIC-AVX512 -ipo -O3 -no-prec-div -opt-prefetch -auto-p32
-ansi-alias

```

C++ benchmarks:

```

-xMIC-AVX512 -ipo -O3 -no-prec-div -opt-prefetch -auto-p32
-ansi-alias

```

Fortran benchmarks:

```

-xMIC-AVX512 -ipo -O3 -no-prec-div -opt-prefetch

```

Benchmarks using both Fortran and C:

```

-xMIC-AVX512 -ipo -O3 -no-prec-div -opt-prefetch -auto-p32
-ansi-alias

```

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

```

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Peak Compiler Invocation (Continued)

Fortran benchmarks:

ifort -m64

Benchmarks using both Fortran and C:

icc -m64 ifort -m64

Peak Portability Flags

410.bwaves: -DSPEC_CPU_LP64
 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: -D_FILE_OFFSET_BITS=64
 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

Peak Optimization Flags

C benchmarks:

433.milc: basepeak = yes

470.lbm: basepeak = yes

482.sphinx3: basepeak = yes

C++ benchmarks:

444.namd: -xMIC-AVX512 -ipo -O3 -no-prec-div -prof-gen(pass 1)
-prof-use(pass 2) -par-num-threads=1(pass 1) -fno-alias
-auto-ilp32

447.dealII: basepeak = yes

450.soplex: -xMIC-AVX512 -ipo -O3 -no-prec-div -prof-gen(pass 1)
-prof-use(pass 2) -par-num-threads=1(pass 1)
-opt-malloc-options=3

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Peak Optimization Flags (Continued)

453.povray: -xMIC-AVX512 -ipo -O3 -no-prec-div -prof-gen(pass 1)
-prof-use(pass 2) -par-num-threads=1(pass 1) -unroll4
-ansi-alias

Fortran benchmarks:

410.bwaves: basepeak = yes

416.gamess: -xMIC-AVX512 -ipo -O3 -no-prec-div -prof-gen(pass 1)
-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: -xMIC-AVX512 -ipo -O3 -no-prec-div -prof-gen(pass 1)
-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: -xMIC-AVX512 -ipo -O3 -no-prec-div -prof-gen(pass 1)
-prof-use(pass 2) -par-num-threads=1(pass 1) -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-revB.html>

<http://www.spec.org/cpu2006/flags/Fujitsu-Platform-Settings-V1.2-KNL-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-revB.xml>

<http://www.spec.org/cpu2006/flags/Fujitsu-Platform-Settings-V1.2-KNL-RevA.xml>



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