



SPEC[®] CFP2006 Result

Copyright 2006-2017 Standard Performance Evaluation Corporation

Dell Inc.

SPECfp[®]_rate2006 = 786

PowerEdge C6320p (Intel Xeon Phi 7210 1.30 GHz)

SPECfp_rate_base2006 = 765

CPU2006 license: 55

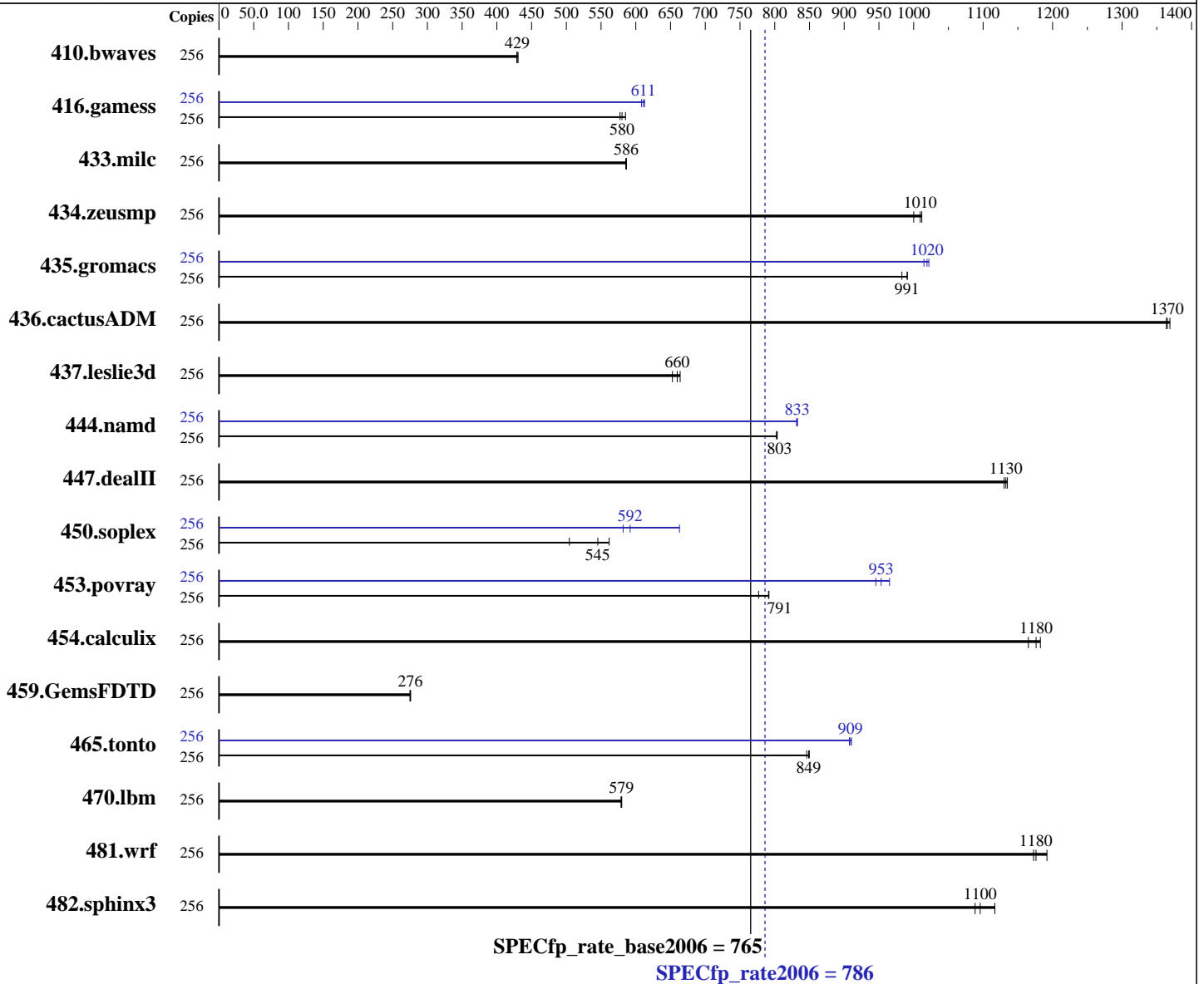
Test date: Mar-2017

Test sponsor: Dell Inc.

Hardware Availability: Jan-2017

Tested by: Dell Inc.

Software Availability: Jan-2017



Hardware

CPU Name: Intel Xeon Phi 7210
 CPU Characteristics: Intel Turbo Boost Technology up to 1.50 GHz
 CPU MHz: 1300
 FPU: Integrated
 CPU(s) enabled: 64 cores, 1 chip, 64 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

Continued on next page

Software

Operating System: SUSE Linux Enterprise Server 12 SP2 (x86_64)
 4.4.16-56-default
 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
 System State: Run level 3 (multi-user)

Continued on next page



SPEC CFP2006 Result

Copyright 2006-2017 Standard Performance Evaluation Corporation

Dell Inc.

SPECfp_rate2006 = 786

PowerEdge C6320p (Intel Xeon Phi 7210 1.30 GHz)

SPECfp_rate_base2006 = 765

CPU2006 license: 55

Test date: Mar-2017

Test sponsor: Dell Inc.

Hardware Availability: Jan-2017

Tested by: Dell Inc.

Software Availability: Jan-2017

L3 Cache: None
Other Cache: None
Memory: 400 GB (6 x 64 GB 2Rx8 PC4-2400T-R, running at 2133 MHz + 8 x 2 GB 6400 MHz MCDRAM)
Disk Subsystem: 1 x 1 TB 7.2K SATA
Other Hardware: None

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	256	8115	429	8080	431	8103	429	256	8115	429	8080	431	8103	429
416.gamess	256	8566	585	8640	580	8682	577	256	8206	611	8180	613	8240	608
433.milc	256	4007	586	4008	586	4013	586	256	4007	586	4008	586	4013	586
434.zeusmp	256	2308	1010	2329	1000	2303	1010	256	2308	1010	2329	1000	2303	1010
435.gromacs	256	1845	991	1859	983	1845	991	256	1793	1020	1801	1010	1789	1020
436.cactusADM	256	2243	1360	2235	1370	2241	1370	256	2243	1360	2235	1370	2241	1370
437.leslie3d	256	3625	664	3687	653	3648	660	256	3625	664	3687	653	3648	660
444.namd	256	2559	802	2556	803	2555	804	256	2466	833	2470	831	2466	833
447.dealII	256	2591	1130	2580	1130	2585	1130	256	2591	1130	2580	1130	2585	1130
450.soplex	256	4233	504	3915	545	3801	562	256	3670	582	3608	592	3221	663
453.povray	256	1720	792	1753	777	1722	791	256	1429	953	1411	965	1440	946
454.calculix	256	1786	1180	1796	1180	1813	1170	256	1786	1180	1796	1180	1813	1170
459.GemsFDTD	256	9855	276	9883	275	9849	276	256	9855	276	9883	275	9849	276
465.tonto	256	2964	850	2967	849	2977	846	256	2771	909	2776	907	2767	910
470.lbm	256	6072	579	6078	579	6067	580	256	6072	579	6078	579	6067	580
481.wrf	256	2439	1170	2431	1180	2399	1190	256	2439	1170	2431	1180	2399	1190
482.sphinx3	256	4584	1090	4553	1100	4467	1120	256	4584	1090	4553	1100	4467	1120

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

Sysinfo program /root/cpu2006-1.2/config/sysinfo.rev6914
\$Rev: 6914 \$ \$Date:: 2014-06-25 #\$ e3fbb8667b5a285932ceab81e28219e1
running on linux-z6tq Thu Mar 9 22:03:14 2017
Continued on next page



SPEC CFP2006 Result

Copyright 2006-2017 Standard Performance Evaluation Corporation

Dell Inc.

SPECfp_rate2006 = 786

PowerEdge C6320p (Intel Xeon Phi 7210 1.30 GHz)

SPECfp_rate_base2006 = 765

CPU2006 license: 55

Test date: Mar-2017

Test sponsor: Dell Inc.

Hardware Availability: Jan-2017

Tested by: Dell Inc.

Software Availability: Jan-2017

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 Phi(TM) CPU 7210 @ 1.30GHz
1 "physical id"s (chips)
256 "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 : 64
siblings : 256
physical 0: cores 0 1 10 11 12 13 14 15 18 19 20 21 22 23 24 25 28 29 30
31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 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
cache size : 1024 KB
```

From /proc/meminfo

```
MemTotal: 396136364 kB
HugePages_Total: 0
Hugepagesize: 2048 kB
```

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

```
SuSE-release:
SUSE Linux Enterprise Server 12 (x86_64)
VERSION = 12
PATCHLEVEL = 2
# 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-SP2"
VERSION_ID="12.2"
PRETTY_NAME="SUSE Linux Enterprise Server 12 SP2"
ID="sles"
ANSI_COLOR="0;32"
CPE_NAME="cpe:/o:suse:sles:12:sp2"
```

uname -a:

```
Linux linux-z6tq 4.4.16-56-default #1 SMP Mon Aug 8 14:24:26 UTC 2016
(5b281a8) x86_64 x86_64 x86_64 GNU/Linux
```

run-level 3 Mar 6 22:35

SPEC is set to: /root/cpu2006-1.2

```
Filesystem Type Size Used Avail Use% Mounted on
/dev/sdb2 btrfs 930G 533G 395G 58% /
```

Additional information from dmidecode:

Continued on next page



SPEC CFP2006 Result

Copyright 2006-2017 Standard Performance Evaluation Corporation

Dell Inc.

SPECfp_rate2006 = 786

PowerEdge C6320p (Intel Xeon Phi 7210 1.30 GHz)

SPECfp_rate_base2006 = 765

CPU2006 license: 55

Test date: Mar-2017

Test sponsor: Dell Inc.

Hardware Availability: Jan-2017

Tested by: Dell Inc.

Software Availability: Jan-2017

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 Dell Inc. 1.1.7 003/003/2017

Memory:

6x Hynix HMAA8GL7MMR4N-UH 64 GB 4 rank 2400 MHz, configured at 2133 MHz
8x INTEL N/A 2 GB 6400 MHz

(End of data from sysinfo program)

General Notes

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

LD_LIBRARY_PATH = "/root/cpu2006-1.2/libs/32:/root/cpu2006-1.2/libs/64:/root/cpu2006-1.2/sh"

Binaries compiled on a system with
Intel 2nd Generation Xeon Phi CPU
with 96 GB DDR4 memory using RedHat EL 7.2
Filesystem page cache cleared with:
echo 1> /proc/sys/vm/drop_caches
runspec command invoked through numactl i.e.:
numactl --interleave=all runspec <etc>

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
435.gromacs: -DSPEC_CPU_LP64 -nofor_main

Continued on next page



SPEC CFP2006 Result

Copyright 2006-2017 Standard Performance Evaluation Corporation

Dell Inc.

SPECfp_rate2006 = 786

PowerEdge C6320p (Intel Xeon Phi 7210 1.30 GHz)

SPECfp_rate_base2006 = 765

CPU2006 license: 55

Test date: Mar-2017

Test sponsor: Dell Inc.

Hardware Availability: Jan-2017

Tested by: Dell Inc.

Software Availability: Jan-2017

Base Portability Flags (Continued)

```

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

Fortran benchmarks:
ifort -m64

Benchmarks using both Fortran and C:
icc -m64 ifort -m64



SPEC CFP2006 Result

Copyright 2006-2017 Standard Performance Evaluation Corporation

Dell Inc.

SPECfp_rate2006 = 786

PowerEdge C6320p (Intel Xeon Phi 7210 1.30 GHz)

SPECfp_rate_base2006 = 765

CPU2006 license: 55

Test date: Mar-2017

Test sponsor: Dell Inc.

Hardware Availability: Jan-2017

Tested by: Dell Inc.

Software Availability: Jan-2017

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

```

```

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

Continued on next page



SPEC CFP2006 Result

Copyright 2006-2017 Standard Performance Evaluation Corporation

Dell Inc.

SPECfp_rate2006 = 786

PowerEdge C6320p (Intel Xeon Phi 7210 1.30 GHz)

SPECfp_rate_base2006 = 765

CPU2006 license: 55

Test date: Mar-2017

Test sponsor: Dell Inc.

Hardware Availability: Jan-2017

Tested by: Dell Inc.

Software Availability: Jan-2017

Peak Optimization Flags (Continued)

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/Default-Platform-Flags.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/Default-Platform-Flags.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 Apr 4 16:57:13 2017 by SPEC CPU2006 PS/PDF formatter v6932.

Originally published on 4 April 2017.

Standard Performance Evaluation Corporation

info@spec.org

<http://www.spec.org/>