SPEC® CFP2006 Result
Copyright 2006-2014 Standard Performance Evaluation Corporation

Dell Inc.

PowerEdge M820 (Intel Xeon E5-4603 v2, 2.20 GHz)

$SPECfp^{®}\_rate2006 = \quad 508$

$SPECfp\_rate\_base2006 = \quad 496$

CPU2006 license: 55	**Test date:** Feb-2014
Test sponsor: Dell Inc.	**Hardware Availability:** Mar-2014
Tested by: Dell Inc.	**Software Availability:** Aug-2013

Copies

- 410.bwaves — 32 — 589
- 416.gamess — 32 — 400; 32 — 394
- 433.milc — 32 — 605; 32 — 603
- 434.zeusmp — 32 — 543
- 435.gromacs — 32 — 494; 32 — 488
- 436.cactusADM — 32 — 541
- 437.leslie3d — 16 — 428; 32 — 377
- 444.namd — 32 — 312; 32 — 305
- 447.dealII — 32 — 727
- 450.soplex — 32 — 387
- 453.povray — 32 — 634; 32 — 547
- 454.calculix — 32 — 595
- 459.GemsFDTD — 32 — 341
- 465.tonto — 32 — 513; 32 — 487
- 470.lbm — 32 — 532
- 481.wrf — 32 — 687; 32 — 675
- 482.sphinx3 — 32 — 525

SPECfp_rate_base2006 = 496

SPECfp_rate2006 = 508

Hardware

CPU Name:	Intel Xeon E5-4603 v2
CPU Characteristics:	
CPU MHz:	2200
FPU:	Integrated
CPU(s) enabled:	16 cores, 4 chips, 4 cores/chip, 2 threads/core
CPU(s) orderable:	4 chip
Primary Cache:	32 KB I + 32 KB D on chip per core
Secondary Cache:	256 KB I+D on chip per core

Continued on next page

Software

Operating System:	SUSE Linux Enterprise Server 11 (x86_64)
	SUSE Linux Enterprise Server 11 (x86_64)
	3.0.76-0.11-default
Compiler:	C/C++: Version 14.0.0.080 of Intel C++ Studio XE for Linux;
	Fortran: Version 14.0.0.080 of Intel Fortran Studio XE for Linux
Auto Parallel:	No
File System:	ext2

Continued on next page

SPEC CFP2006 Result
Copyright 2006-2014 Standard Performance Evaluation Corporation

Dell Inc.

PowerEdge M820 (Intel Xeon E5-4603 v2, 2.20 GHz)

SPECfp_rate2006 = 508
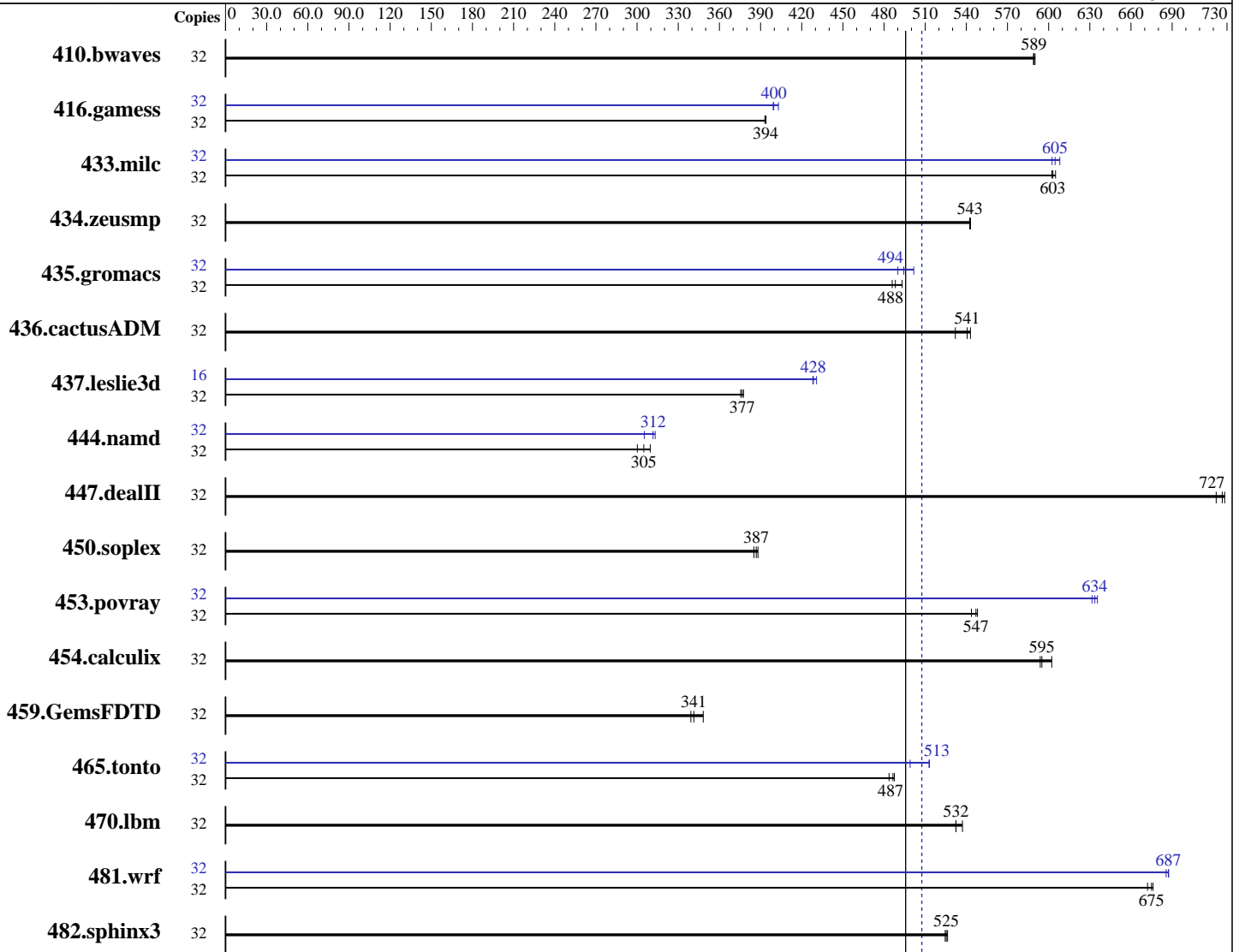
SPECfp_rate_base2006 = 496

CPU2006 license: 55   **Test date:** Feb-2014
Test sponsor: Dell Inc.   **Hardware Availability:** Mar-2014
Tested by: Dell Inc.   **Software Availability:** Aug-2013

L3 Cache:	10 MB I+D on chip per chip
Other Cache:	None
Memory:	512 GB (32 x 16 GB 2Rx4 PC3-14900R-13, ECC)
Disk Subsystem:	1 x 1TB 7200 RPM Near-Line SAS
Other Hardware:	None
System State:	Run level 3 (multi-user)
Base Pointers:	32/64-bit
Peak Pointers:	32/64-bit
Other Software:	None

Results Table

Benchmark	Base Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Peak Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	32	737	590	**738**	**589**	738	589	32	737	590	**738**	**589**	738	589
416.gamess	32	1590	394	**1591**	**394**	1594	393	32	1555	403	1570	399	**1568**	**400**
433.milc	32	486	605	**487**	**603**	488	602	32	483	608	**486**	**605**	488	602
434.zeusmp	32	536	543	537	542	**537**	**543**	32	536	543	537	542	**537**	**543**
435.gromacs	32	463	493	**468**	**488**	470	486	32	455	502	**462**	**494**	466	490
436.cactusADM	32	**707**	**541**	719	532	704	543	32	**707**	**541**	719	532	704	543
437.leslie3d	32	**799**	**377**	797	378	801	376	16	351	428	**351**	**428**	349	431
444.namd	32	829	310	855	300	**842**	**305**	32	819	313	841	305	**824**	**312**
447.dealII	32	503	728	**504**	**727**	507	722	32	503	728	**504**	**727**	507	722
450.soplex	32	688	388	**690**	**387**	693	385	32	688	388	**690**	**387**	693	385
453.povray	32	313	544	**311**	**547**	311	548	32	**269**	**634**	270	632	268	636
454.calculix	32	445	594	438	602	**444**	**595**	32	445	594	438	602	**444**	**595**
459.GemsFDTD	32	975	348	**995**	**341**	1001	339	32	975	348	**995**	**341**	1001	339
465.tonto	32	646	488	651	484	**647**	**487**	32	**614**	**513**	614	513	631	499
470.lbm	32	819	537	**826**	**532**	826	532	32	819	537	**826**	**532**	826	532
481.wrf	32	529	676	532	672	**530**	**675**	32	**520**	**687**	520	687	521	686
482.sphinx3	32	1185	526	**1187**	**525**	1189	525	32	1185	526	**1187**	**525**	1189	525

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

Virtualization Technology disabled
Execute Disable disabled
Logical Processor enabled

Continued on next page

Dell Inc.

PowerEdge M820 (Intel Xeon E5-4603 v2, 2.20 GHz)

SPECfp_rate2006 =   508

SPECfp_rate_base2006 =   496

CPU2006 license: 55
Test sponsor: Dell Inc.
Tested by: Dell Inc.

Test date: Feb-2014
Hardware Availability: Mar-2014
Software Availability: Aug-2013

Platform Notes (Continued)

```
System Profile set to Performance
Sysinfo program /root/cpu2006-1.2/config/sysinfo.rev6818
$Rev: 6818 $ $Date:: 2012-07-17 #$ e86d102572650a6e4d596a3cee98f191
running on linux Mon Feb 24 23:51:30 2014

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 E5-4603 v2 @ 2.20GHz
      4 "physical id"s (chips)
      32 "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 : 4
      siblings  : 8
      physical 0: cores 0 1 2 3
      physical 1: cores 0 1 2 3
      physical 2: cores 0 1 2 3
      physical 3: cores 0 1 2 3
   cache size : 10240 KB

From /proc/meminfo
   MemTotal:       529392220 kB
   HugePages_Total:        0
   Hugepagesize:        2048 kB

/usr/bin/lsb_release -d
   SUSE Linux Enterprise Server 11 (x86_64)

From /etc/*release* /etc/*version*
   SuSE-release:
      SUSE Linux Enterprise Server 11 (x86_64)
      VERSION = 11
      PATCHLEVEL = 3

uname -a:
   Linux linux 3.0.76-0.11-default #1 SMP Fri Jun 14 08:21:43 UTC 2013 (ccab990)
   x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Feb 24 09:11 last=S

SPEC is set to: /root/cpu2006-1.2
   Filesystem      Type  Size  Used Avail Use% Mounted on
   /dev/sda2       ext2  909G   36G  872G   4% /

Additional information from dmidecode:
   BIOS Dell Inc. 2.0.24 01/21/2014
   Memory:
   8x 002C04B3002C 36JSF2G72PZ-1G9E1 16 GB 1333 MHz
```
Continued on next page

SPEC CFP2006 Result

Dell Inc.

PowerEdge M820 (Intel Xeon E5-4603 v2, 2.20 GHz)

SPECfp_rate2006 =   508

SPECfp_rate_base2006 =   496

Platform Notes (Continued)

```
    21x 00CE00B300CE M393B2G70DB0-CMA 16 GB 1333 MHz
    3x 00CE04B300CE M393B2G70DB0-CMA 16 GB 1333 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 1x Core i7-860 CPU + 8GB
 memory using RedHat EL 6.4
 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>
```

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
  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
```

Continued on next page

SPEC CFP2006 Result
Copyright 2006-2014 Standard Performance Evaluation Corporation

Dell Inc.

PowerEdge M820 (Intel Xeon E5-4603 v2, 2.20 GHz)

SPECfp_rate2006 =   508

SPECfp_rate_base2006 =   496

CPU2006 license: 55

Test sponsor: Dell Inc.

Tested by: Dell Inc.

Test date: Feb-2014

Hardware Availability: Mar-2014

Software Availability: Aug-2013

Base Portability Flags (Continued)

```
    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:
```
    -xAVX -ipo -O3 -no-prec-div -opt-prefetch -auto-p32 -ansi-alias
    -opt-mem-layout-trans=3
```

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

Fortran benchmarks:
```
    -xAVX -ipo -O3 -no-prec-div -opt-prefetch
```

Benchmarks using both Fortran and C:
```
    -xAVX -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:
```
    icpc  -m64
```

Fortran benchmarks:
```
    ifort -m64
```

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

Peak Portability Flags

```
Same as Base Portability Flags
```

SPEC CFP2006 Result
Copyright 2006-2014 Standard Performance Evaluation Corporation

Dell Inc.

PowerEdge M820 (Intel Xeon E5-4603 v2, 2.20 GHz)

SPECfp_rate2006 =   508

SPECfp_rate_base2006 =   496

CPU2006 license: 55
Test sponsor: Dell Inc.
Tested by: Dell Inc.

Test date: Feb-2014
Hardware Availability: Mar-2014
Software Availability: Aug-2013

Peak Optimization Flags

C benchmarks:

> 433.milc: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
> -no-prec-div(pass 2) -opt-mem-layout-trans=3(pass 2)
> -prof-use(pass 2) -auto-ilp32

> 470.lbm: basepeak = yes

> 482.sphinx3: basepeak = yes

C++ benchmarks:

> 444.namd: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
> -no-prec-div(pass 2) -opt-mem-layout-trans=3(pass 2)
> -prof-use(pass 2) -fno-alias -auto-ilp32

> 447.dealII: basepeak = yes

> 450.soplex: basepeak = yes

> 453.povray: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
> -no-prec-div(pass 2) -opt-mem-layout-trans=3(pass 2)
> -prof-use(pass 2) -unroll4 -ansi-alias

Fortran benchmarks:

> 410.bwaves: basepeak = yes

> 416.gamess: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
> -no-prec-div(pass 2) -prof-use(pass 2) -unroll2
> -inline-level=0 -scalar-rep-

> 434.zeusmp: basepeak = yes

> 437.leslie3d: -xAVX -ipo -O3 -no-prec-div -opt-prefetch

> 459.GemsFDTD: basepeak = yes

> 465.tonto: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
> -no-prec-div(pass 2) -prof-use(pass 2) -unroll4 -auto
> -inline-calloc -opt-malloc-options=3

Benchmarks using both Fortran and C:

> 435.gromacs: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
> -no-prec-div(pass 2) -opt-mem-layout-trans=3(pass 2)
> -prof-use(pass 2) -opt-prefetch -auto-ilp32

> 436.cactusADM: basepeak = yes

Dell Inc.

PowerEdge M820 (Intel Xeon E5-4603 v2, 2.20 GHz)

SPECfp_rate2006 =   508

SPECfp_rate_base2006 =   496

CPU2006 license: 55		**Test date:**	Feb-2014
Test sponsor:	Dell Inc.	**Hardware Availability:**	Mar-2014
Tested by:	Dell Inc.	**Software Availability:**	Aug-2013

Peak Optimization Flags (Continued)

454.calculix: basepeak = yes

481.wrf: -xAVX -ipo -O3 -no-prec-div -auto-ilp32

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/Intel-ic14.0-official-linux64.20140128.html
http://www.spec.org/cpu2006/flags/Dell-Platform-Settings-V1.2-revC.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic14.0-official-linux64.20140128.xml
http://www.spec.org/cpu2006/flags/Dell-Platform-Settings-V1.2-revC.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 Thu Jul 24 22:33:19 2014 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 8 April 2014.