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

Dell Inc.

PowerEdge T620 (Intel Xeon E5-2640 v2, 2.00 GHz)

$SPECfp^{®}\_rate2006 = 454$

$SPECfp\_rate\_base2006 = 445$

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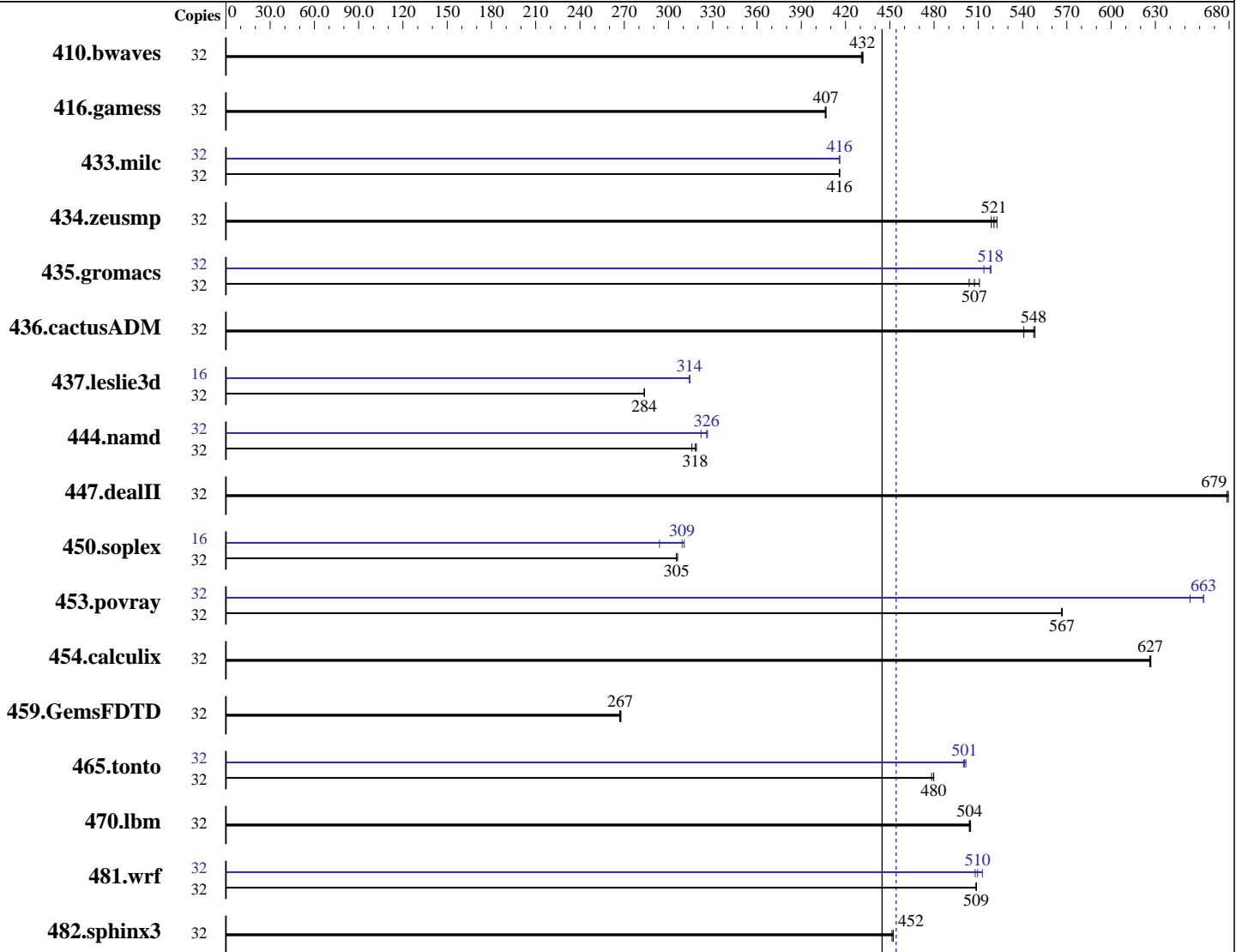**Test sponsor:** Dell Inc.
Tested by: Dell Inc.

Test date: Aug-2013
Hardware Availability: Sep-2013
Software Availability: Sep-2013

Benchmark	Copies	Result
410.bwaves	32	432
416.gamess	32	407
433.milc	32	416
433.milc	32	416
434.zeusmp	32	521
435.gromacs	32	518
435.gromacs	32	507
436.cactusADM	32	548
437.leslie3d	16	314
437.leslie3d	32	284
444.namd	32	326
444.namd	32	318
447.dealII	32	679
450.soplex	16	309
450.soplex	32	305
453.povray	32	663
453.povray	32	567
454.calculix	32	627
459.GemsFDTD	32	267
465.tonto	32	501
465.tonto	32	480
470.lbm	32	504
481.wrf	32	510
481.wrf	32	509
482.sphinx3	32	452

SPECfp_rate_base2006 = 445

SPECfp_rate2006 = 454

Hardware

CPU Name: Intel Xeon E5-2640 v2
CPU Characteristics: Intel Turbo Boost Technology up to 2.50 GHz
CPU MHz: 2000
FPU: Integrated
CPU(s) enabled: 16 cores, 2 chips, 8 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
Continued on next page

Software

Operating System: SUSE Linux Enterprise Server 11 SP3 (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
System State: Run level 3 (multi-user)
Continued on next page

SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

Dell Inc.

PowerEdge T620 (Intel Xeon E5-2640 v2, 2.00 GHz)

SPECfp_rate2006 =	454
SPECfp_rate_base2006 =	445

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

L3 Cache:	20 MB I+D on chip per chip	Base Pointers:	32/64-bit
Other Cache:	None	Peak Pointers:	32/64-bit
Memory:	256 GB (16 x 16 GB 2Rx4 PC3-14900R-13, ECC, running at 1600 MHz)	Other Software:	None
Disk Subsystem:	1 x 300 GB 15000 RPM SAS		
Other Hardware:	None		

Results Table

Benchmark	Base						Peak					
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	32	1007	432	**1008**	**432**	1010	431	32	1007	432	**1008**	**432**	1010	431
416.gamess	32	**1541**	**407**	1540	407	1542	406	32	**1541**	**407**	1540	407	1542	406
433.milc	32	707	416	**706**	**416**	706	416	32	**706**	**416**	706	416	706	416
434.zeusmp	32	557	523	561	519	**559**	**521**	32	557	523	561	519	**559**	**521**
435.gromacs	32	**450**	**507**	447	511	454	504	32	441	518	445	514	**441**	**518**
436.cactusADM	32	697	548	707	541	**698**	**548**	32	697	548	707	541	**698**	**548**
437.leslie3d	32	1061	284	**1061**	**284**	1060	284	16	478	314	479	314	**479**	**314**
444.namd	32	805	319	**807**	**318**	812	316	32	786	326	797	322	**788**	**326**
447.dealII	32	539	680	**539**	**679**	540	679	32	539	680	**539**	**679**	540	679
450.soplex	32	872	306	**874**	**305**	874	305	16	454	294	**432**	**309**	430	311
453.povray	32	301	566	300	567	**300**	**567**	32	257	663	**257**	**663**	261	654
454.calculix	32	421	627	422	626	**421**	**627**	32	421	627	422	626	**421**	**627**
459.GemsFDTD	32	**1270**	**267**	1272	267	1268	268	32	**1270**	**267**	1272	267	1268	268
465.tonto	32	658	478	**656**	**480**	656	480	32	**629**	**501**	630	500	628	502
470.lbm	32	873	504	**872**	**504**	871	505	32	873	504	**872**	**504**	871	505
481.wrf	32	703	508	**703**	**509**	703	509	32	697	513	704	508	**702**	**510**
482.sphinx3	32	1379	452	1381	451	**1379**	**452**	32	1379	452	1381	451	**1379**	**452**

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"

Dell Inc.

PowerEdge T620 (Intel Xeon E5-2640 v2, 2.00 GHz)

$SPECfp\_rate2006 =$ 454

$SPECfp\_rate\_base2006 =$ 445

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

Test date: Aug-2013
Hardware Availability: Sep-2013
Software Availability: Sep-2013

Platform Notes

```
BIOS settings:
Virtualization Technology disabled
Execute Disable disabled
Logical Processor enabled
System Profile set to Performance
Sysinfo program /root/cpu2006.1.2.ic13/config/sysinfo.rev6818
$Rev: 6818 $ $Date:: 2012-07-17 #$ e86d102572650a6e4d596a3cee98f191
running on linux Tue Aug 27 00:55:55 2013

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 v2 @ 2.00GHz
      2 "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 : 8
      siblings  : 16
      physical 0: cores 0 1 2 3 4 5 6 7
      physical 1: cores 0 1 2 3 4 5 6 7
   cache size : 20480 KB

From /proc/meminfo
   MemTotal:      264601764 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 Aug 26 10:45 last=S

SPEC is set to: /root/cpu2006.1.2.ic13
   Filesystem      Type  Size  Used Avail Use% Mounted on
   /dev/sda2       ext2  267G   40G  226G  16% /

Additional information from dmidecode:
   BIOS Dell Inc. 2.0.18 08/10/2013
```

Dell Inc.

PowerEdge T620 (Intel Xeon E5-2640 v2, 2.00 GHz)

SPECfp_rate2006 =   454

SPECfp_rate_base2006 =   445

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

Test date: Aug-2013
Hardware Availability: Sep-2013
Software Availability: Sep-2013

Platform Notes (Continued)

```
    Memory:
     2x 00AD00B300AD HMT42GR7MFR4C-RD 16 GB 1600 MHz
     8x 00AD04B300AD HMT42GR7AFR4C-RD 16 GB 1600 MHz
     6x 00CE00B300CE M393B2G70CB0-CMA 16 GB 1600 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.ic13/libs/32:/root/cpu2006.1.2.ic13/libs/64:/root/cpu2006.1.2.ic13/sh"

 Binaries compiled on a system with 1x Core i7-860 CPU + 8GB
 memory using RHEL5.5
 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
```

SPEC CFP2006 Result
Copyright 2006-2014 Standard Performance Evaluation Corporation

Dell Inc.

PowerEdge T620 (Intel Xeon E5-2640 v2, 2.00 GHz)

SPECfp_rate2006 =   454

SPECfp_rate_base2006 =   445

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

Test date: Aug-2013
Hardware Availability: Sep-2013
Software Availability: Sep-2013

Base Portability Flags (Continued)

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

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

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

Benchmarks using both Fortran and C:
```
-xAVX -ipo -O3 -no-prec-div -static -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
```

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

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

Dell Inc.

PowerEdge T620 (Intel Xeon E5-2640 v2, 2.00 GHz)

$SPECfp\_rate2006 = 454$

$SPECfp\_rate\_base2006 = 445$

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

Test date: Aug-2013
Hardware Availability: Sep-2013
Software Availability: Sep-2013

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
        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: -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) -static -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: -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-malloc-options=3
```

```
        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:

Dell Inc.

PowerEdge T620 (Intel Xeon E5-2640 v2, 2.00 GHz)

$SPECfp_rate2006 = $ 454

$SPECfp_rate_base2006 = $ 445

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

Test date: Aug-2013
Hardware Availability: Sep-2013
Software Availability: Sep-2013

Peak Optimization Flags (Continued)

410.bwaves: basepeak = yes

416.gamess: basepeak = yes

434.zeusmp: basepeak = yes

437.leslie3d: -xAVX -ipo -O3 -no-prec-div -static -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 -static -auto-ilp32

436.cactusADM: basepeak = yes

454.calculix: basepeak = yes

481.wrf: -xAVX -ipo -O3 -no-prec-div -static -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-revB.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-revB.xml

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 18:40:15 2014 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 22 October 2013.