



SPEC® CFP2006 Result

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Dell Inc.

PowerEdge T630 (Intel Xeon E5-2695 v3,
2.30 GHz)

SPECfp®_rate2006 = **804**

SPECfp_rate_base2006 = **782**

CPU2006 license: 55

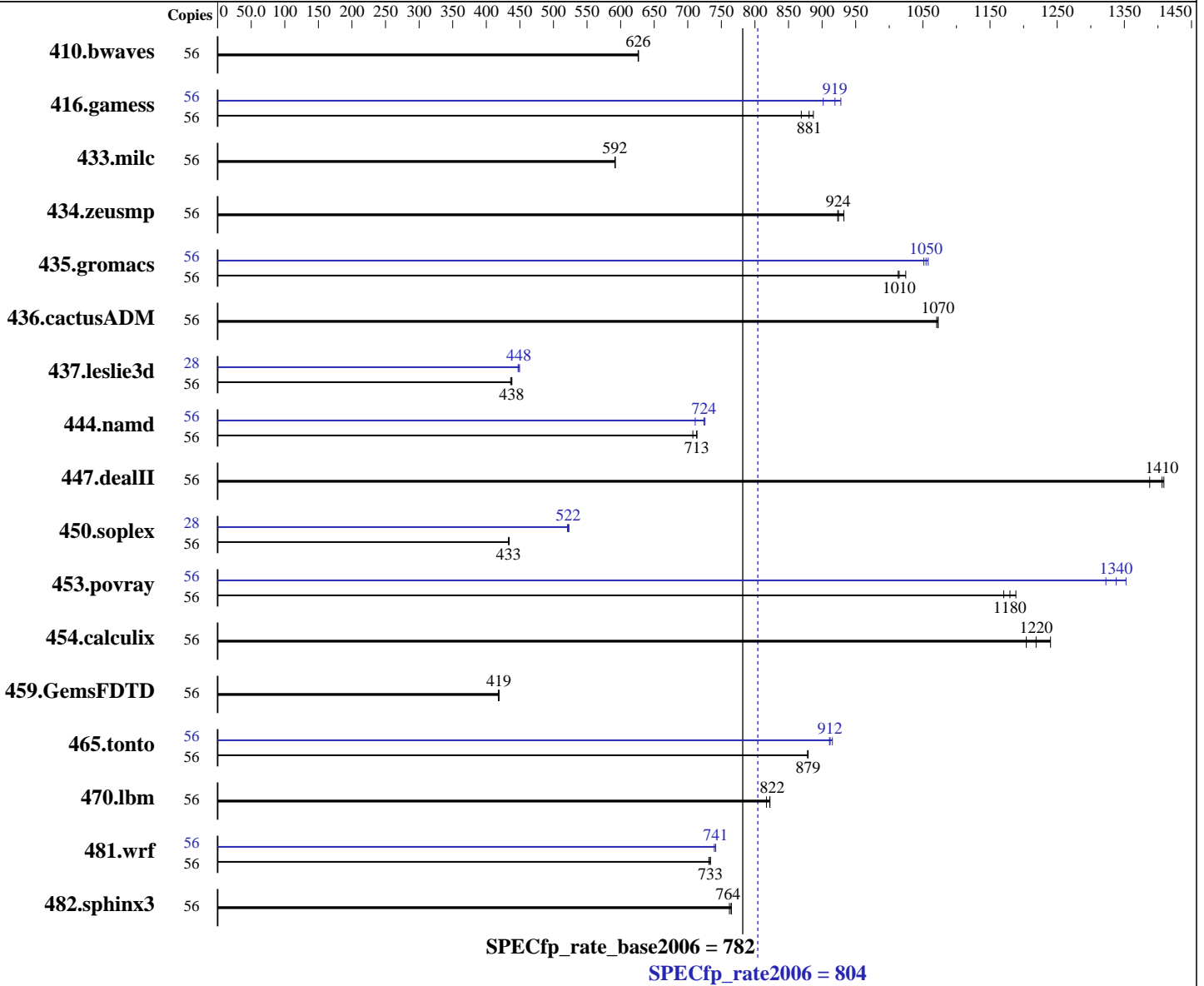
Test sponsor: Dell Inc.

Tested by: Dell Inc.

Test date: Jun-2014

Hardware Availability: Sep-2014

Software Availability: Sep-2014



Hardware

CPU Name: Intel Xeon E5-2695 v3
 CPU Characteristics: Intel Turbo Boost Technology up to 3.30 GHz
 CPU MHz: 2300
 FPU: Integrated
 CPU(s) enabled: 28 cores, 2 chips, 14 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

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Software

Operating System: 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
 System State: Run level 3 (multi-user)

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CPU2006 license: 55

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Test date: Jun-2014

Hardware Availability: Sep-2014

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L3 Cache: 35 MB I+D on chip per chip
Other Cache: None
Memory: 256 GB (16 x 16 GB 2Rx4 PC4-2133P-R)
Disk Subsystem: 1 x 300 GB 15000 RPM SAS
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 | 56 | 1214 | 627 | <u>1215</u> | <u>626</u> | 1216 | 626 | 56 | 1214 | 627 | <u>1215</u> | <u>626</u> | 1216 | 626 |
| 416.gamess | 56 | <u>1245</u> | <u>881</u> | 1236 | 887 | 1262 | 869 | 56 | 1182 | 928 | 1216 | 902 | <u>1193</u> | <u>919</u> |
| 433.milc | 56 | 868 | 592 | 869 | 592 | <u>869</u> | <u>592</u> | 56 | 868 | 592 | 869 | 592 | <u>869</u> | <u>592</u> |
| 434.zeusmp | 56 | 547 | 932 | 552 | 923 | <u>551</u> | <u>924</u> | 56 | 547 | 932 | 552 | 923 | <u>551</u> | <u>924</u> |
| 435.gromacs | 56 | 390 | 1020 | <u>394</u> | <u>1010</u> | 395 | 1010 | 56 | 378 | 1060 | 380 | 1050 | <u>379</u> | <u>1050</u> |
| 436.cactusADM | 56 | 625 | 1070 | 624 | 1070 | <u>624</u> | <u>1070</u> | 56 | 625 | 1070 | 624 | 1070 | <u>624</u> | <u>1070</u> |
| 437.leslie3d | 56 | <u>1202</u> | <u>438</u> | 1202 | 438 | 1207 | 436 | 28 | 588 | 447 | <u>587</u> | <u>448</u> | 585 | 450 |
| 444.namd | 56 | <u>630</u> | <u>713</u> | 635 | 708 | 629 | 714 | 56 | <u>620</u> | <u>724</u> | 619 | 726 | 632 | 711 |
| 447.dealII | 56 | <u>456</u> | <u>1410</u> | 455 | 1410 | 462 | 1390 | 56 | <u>456</u> | <u>1410</u> | 455 | 1410 | 462 | 1390 |
| 450.soplex | 56 | <u>1078</u> | <u>433</u> | 1076 | 434 | 1078 | 433 | 28 | 446 | 523 | 448 | 521 | <u>447</u> | <u>522</u> |
| 453.povray | 56 | <u>253</u> | <u>1180</u> | 251 | 1190 | 255 | 1170 | 56 | 225 | 1320 | <u>223</u> | <u>1340</u> | 220 | 1350 |
| 454.calculix | 56 | 373 | 1240 | <u>379</u> | <u>1220</u> | 384 | 1200 | 56 | 373 | 1240 | <u>379</u> | <u>1220</u> | 384 | 1200 |
| 459.GemsFDTD | 56 | 1418 | 419 | <u>1419</u> | <u>419</u> | 1421 | 418 | 56 | 1418 | 419 | <u>1419</u> | <u>419</u> | 1421 | 418 |
| 465.tonto | 56 | 627 | 879 | <u>627</u> | <u>879</u> | 627 | 878 | 56 | <u>604</u> | <u>912</u> | 602 | 915 | 605 | 911 |
| 470.lbm | 56 | 936 | 822 | <u>936</u> | <u>822</u> | 942 | 817 | 56 | 936 | 822 | <u>936</u> | <u>822</u> | 942 | 817 |
| 481.wrf | 56 | 855 | 731 | <u>853</u> | <u>733</u> | 853 | 734 | 56 | 843 | 742 | <u>844</u> | <u>741</u> | 846 | 739 |
| 482.sphinx3 | 56 | <u>1428</u> | <u>764</u> | 1427 | 765 | 1432 | 762 | 56 | <u>1428</u> | <u>764</u> | 1427 | 765 | 1432 | 762 |

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 settings:
Snoop Mode set to Cluster on Die
Virtualization Technology disabled

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Platform Notes (Continued)

```

Execute Disable disabled
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 Jun 9 21:52:24 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 E5-2695 v3 @ 2.30GHz
 2 "physical id"s (chips)
 56 "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    : 14
  siblings     : 28
  physical 0   : cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14
  physical 1   : cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14
cache size     : 17920 KB

```

```

From /proc/meminfo
MemTotal:      264571620 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 Jun 9 09:07 last=S

```

SPEC is set to: /root/cpu2006-1.2
Filesystem      Type  Size  Used Avail Use% Mounted on
/dev/sda2       ext2  222G  9.9G  211G   5% /

```

Additional information from dmidecode:

```

BIOS Dell Inc. 0.3.22 06/02/2014
Memory:
8x 002C00B3002C 36ASF2G72PZ-2G1A1 16 GB 2133 MHz
4x 00AD00B300AD HMA42GR7MFR4N-TFTD 16 GB 2133 MHz
Continued on next page

```



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Platform Notes (Continued)

4x 00CE00B300CE M393A2G40DB0-CPB 16 GB 2133 MHz
8x Not Specified Not Specified

(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

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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:

-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

Fortran benchmarks:

ifort -m64

Benchmarks using both Fortran and C:

icc -m64 ifort -m64

Peak Portability Flags

410.bwaves: -DSPEC_CPU_LP64

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Peak Portability Flags (Continued)

```

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: basepeak = yes

470.lbm: basepeak = yes

482.sphinx3: basepeak = yes

C++ benchmarks:

```

444.namd: -xCORE-AVX2(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: -xCORE-AVX2(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: -xCORE-AVX2(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:

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Peak Optimization Flags (Continued)

410.bwaves: basepeak = yes

416.gamess: -xCORE-AVX2(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: -xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch

459.GemsFDTD: basepeak = yes

465.tonto: -xCORE-AVX2(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: -xCORE-AVX2(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

454.calculix: basepeak = yes

481.wrf: -xCORE-AVX2 -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-revC.html>
<http://www.spec.org/cpu2006/flags/Dell-Platform-Settings-V1.2-revD.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-revC.xml>
<http://www.spec.org/cpu2006/flags/Dell-Platform-Settings-V1.2-revD.xml>

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Tested with SPEC CPU2006 v1.2.
Report generated on Wed Sep 24 16:20:38 2014 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 24 September 2014.