



SPEC[®] CFP2006 Result

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Dell Inc.

SPECfp[®]2006 = 97.9

PowerEdge R920 (Intel Xeon E7-8857 v2, 3.00 GHz)

SPECfp_base2006 = 92.0

CPU2006 license: 55

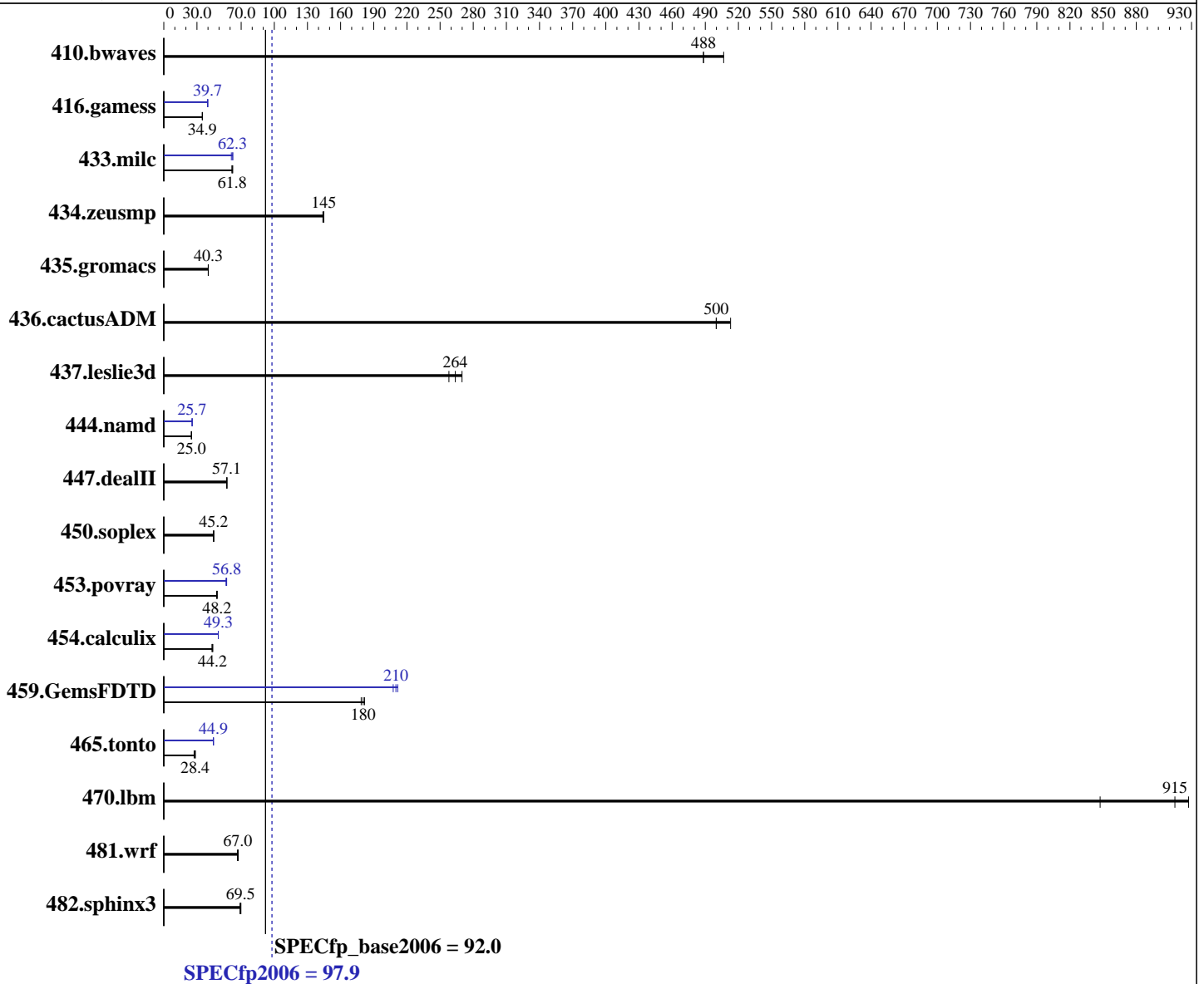
Test date: Jan-2014

Test sponsor: Dell Inc.

Hardware Availability: Mar-2014

Tested by: Dell Inc.

Software Availability: Mar-2014



Hardware

CPU Name: Intel Xeon E7-8857 v2
 CPU Characteristics: Intel Turbo Boost Technology up to 3.60 GHz
 CPU MHz: 3000
 FPU: Integrated
 CPU(s) enabled: 48 cores, 4 chips, 12 cores/chip
 CPU(s) orderable: 2,4 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: Yes
 File System: ext2
 System State: Run level 3 (multi-user)

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L3 Cache: 30 MB I+D on chip per chip
Other Cache: None
Memory: 1 TB (64 x 16 GB 2Rx4 PC3L-12800R-11, ECC)
Disk Subsystem: 1 x 400 GB SAS6 SSD
Other Hardware: None

Base Pointers: 64-bit
Peak Pointers: 32/64-bit
Other Software: None

Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	27.8	488	26.8	507	<u>27.8</u>	<u>488</u>	27.8	488	26.8	507	<u>27.8</u>	<u>488</u>
416.gamess	562	34.8	<u>561</u>	<u>34.9</u>	561	34.9	493	39.7	493	39.7	<u>493</u>	<u>39.7</u>
433.milc	149	61.7	147	62.4	<u>148</u>	<u>61.8</u>	<u>147</u>	<u>62.3</u>	147	62.4	150	61.1
434.zeusmp	<u>62.8</u>	<u>145</u>	62.8	145	63.2	144	<u>62.8</u>	<u>145</u>	62.8	145	63.2	144
435.gromacs	<u>177</u>	<u>40.3</u>	177	40.3	178	40.2	<u>177</u>	<u>40.3</u>	177	40.3	178	40.2
436.cactusADM	23.9	500	23.3	513	<u>23.9</u>	<u>500</u>	23.9	500	23.3	513	<u>23.9</u>	<u>500</u>
437.leslie3d	<u>35.6</u>	<u>264</u>	34.8	270	36.4	258	<u>35.6</u>	<u>264</u>	34.8	270	36.4	258
444.namd	<u>320</u>	<u>25.0</u>	321	25.0	320	25.0	312	25.7	<u>313</u>	<u>25.7</u>	313	25.6
447.dealII	<u>201</u>	<u>57.1</u>	201	57.1	200	57.1	<u>201</u>	<u>57.1</u>	201	57.1	200	57.1
450.soplex	186	44.9	184	45.3	<u>185</u>	<u>45.2</u>	186	44.9	184	45.3	<u>185</u>	<u>45.2</u>
453.povray	110	48.3	<u>110</u>	<u>48.2</u>	111	47.8	94.6	56.3	<u>93.6</u>	<u>56.8</u>	93.5	56.9
454.calculix	189	43.6	186	44.3	<u>187</u>	<u>44.2</u>	<u>167</u>	<u>49.3</u>	167	49.3	167	49.3
459.GemsFDTD	59.4	179	58.4	182	<u>58.8</u>	<u>180</u>	51.1	208	<u>50.5</u>	<u>210</u>	50.1	212
465.tonto	346	28.4	<u>346</u>	<u>28.4</u>	359	27.4	<u>219</u>	<u>44.9</u>	219	44.9	219	44.9
470.lbm	16.2	847	14.8	927	<u>15.0</u>	<u>915</u>	16.2	847	14.8	927	<u>15.0</u>	<u>915</u>
481.wrf	168	66.6	166	67.4	<u>167</u>	<u>67.0</u>	168	66.6	166	67.4	<u>167</u>	<u>67.0</u>
482.sphinx3	<u>280</u>	<u>69.5</u>	283	68.9	279	69.8	<u>280</u>	<u>69.5</u>	283	68.9	279	69.8

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

Operating System Notes

Stack size set to unlimited using "ulimit -s unlimited"

Platform Notes

BIOS settings:
Virtualization Technology disabled
Execute Disable disabled
System Profile set to Custom
ClE enabled
C States enabled
Memory Patrol Scrub set to disabled
Sysinfo program
/root/Desktop/Performance/ic14.0_Oct17_2013/config/sysinfo.rev6818
\$Rev: 6818 \$ \$Date:: 2012-07-17 # \$ e86d102572650a6e4d596a3cee98f191

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Platform Notes (Continued)

running on slesperf2 Fri Jan 31 03:43:15 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 E7-8857 v2 @ 3.00GHz
 4 "physical id"s (chips)
 48 "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     : 12
  siblings     : 12
 physical 0:   cores 0 1 2 3 4 5 8 9 10 11 12 13
 physical 1:   cores 0 1 2 3 4 5 8 9 10 11 12 13
 physical 2:   cores 0 1 2 3 4 5 8 9 10 11 12 13
 physical 3:   cores 0 1 2 3 4 5 8 9 10 11 12 13
 cache size    : 30720 KB

```

From /proc/meminfo

```

MemTotal:      1058789108 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 slesperf2 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 Jan 30 20:11 last=S

SPEC is set to: /root/Desktop/Performance/ic14.0_Oct17_2013

```

Filesystem      Type  Size  Used Avail Use% Mounted on
 /dev/sda2      ext2  365G  190G  174G  53% /

```

Additional information from dmidecode:

BIOS Dell Inc. 1.0.0 12/16/2013

Memory:

```

47x 00CE00B300CE M393B2G70BH0-YK0 16 GB 1333 MHz
11x 00CE04B300CE M393B2G70BH0-YK0 16 GB 1333 MHz
6x  00CE04B300CE M393B2G70CB0-YK0 16 GB 1333 MHz

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Platform Notes (Continued)

(End of data from sysinfo program)

General Notes

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

KMP_AFFINITY = "granularity=fine,compact,1,0"

LD_LIBRARY_PATH = "/root/Desktop/Performance/icl4.0_Oct17_2013/libs/32:/root/Desktop/Performance/icl4.0_Oct17_2013/libs/64:/root/Desktop/Performance/icl4.0_Oct17_2013/sh"

OMP_NUM_THREADS = "48"

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

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
 454.calculix: -DSPEC_CPU_LP64 -nofor_main
 459.GemsFDTD: -DSPEC_CPU_LP64
 465.tonto: -DSPEC_CPU_LP64

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Base Portability Flags (Continued)

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:
-xSSE4.2 -ipo -O3 -no-prec-div -parallel -opt-prefetch -ansi-alias
C++ benchmarks:
-xSSE4.2 -ipo -O3 -no-prec-div -opt-prefetch -ansi-alias
Fortran benchmarks:
-xSSE4.2 -ipo -O3 -no-prec-div -parallel -opt-prefetch
Benchmarks using both Fortran and C:
-xSSE4.2 -ipo -O3 -no-prec-div -parallel -opt-prefetch -ansi-alias

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

Peak Optimization Flags

C benchmarks:
433.milc: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -prof-use(pass 2) -auto-ilp32
-ansi-alias

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Peak Optimization Flags (Continued)

470.lbm: basepeak = yes

482.sphinx3: basepeak = yes

C++ benchmarks:

444.namd: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -prof-use(pass 2) -fno-alias
-auto-ilp32

447.dealIII: basepeak = yes

450.soplex: basepeak = yes

453.povray: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -prof-use(pass 2) -unroll4 -ansi-alias

Fortran benchmarks:

410.bwaves: basepeak = yes

416.gamess: -xSSE4.2(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: basepeak = yes

459.GemsFDTD: -xSSE4.2(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 -opt-prefetch -parallel

465.tonto: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -prof-use(pass 2) -inline-calloc
-opt-malloc-options=3 -auto -unroll4

Benchmarks using both Fortran and C:

435.gromacs: basepeak = yes

436.cactusADM: basepeak = yes

454.calculix: -xSSE4.2 -ipo -O3 -no-prec-div -auto-ilp32 -ansi-alias

481.wrf: basepeak = yes



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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>

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For questions about this result, please contact the tester.
For other inquiries, please contact webmaster@spec.org.

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