



SPEC® CFP2006 Result

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Dell Inc.

SPECfp®2006 = 97.1

PowerEdge R230 (Intel Xeon E3-1260L v5, 2.90 GHz)

SPECfp_base2006 = 94.8

CPU2006 license: 55

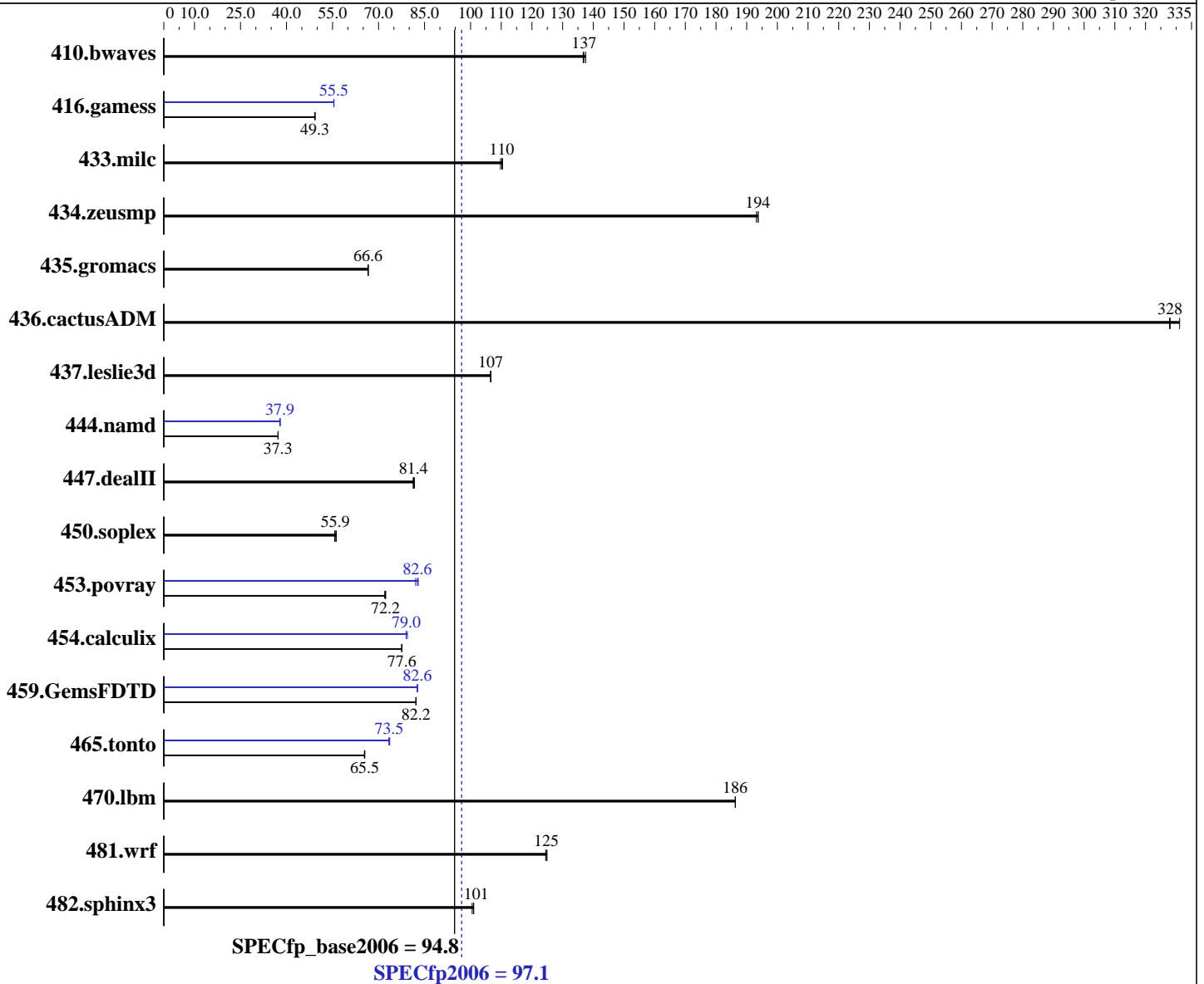
Test date: Oct-2015

Test sponsor: Dell Inc.

Hardware Availability: Nov-2015

Tested by: Dell Inc.

Software Availability: Sep-2015



Hardware

CPU Name: Intel Xeon E3-1260L v5
 CPU Characteristics: Intel Turbo Boost Technology up to 3.90 GHz
 CPU MHz: 2900
 FPU: Integrated
 CPU(s) enabled: 4 cores, 1 chip, 4 cores/chip, 2 threads/core
 CPU(s) orderable: 1 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 12 3.12.28-4-default
 Compiler: C/C++: Version 16.0.0.101 of Intel C++ Studio XE for Linux;
 Fortran: Version 16.0.0.101 of Intel Fortran Studio XE for Linux
 Auto Parallel: Yes
 File System: ext4
 System State: Run level 3 multi-user

Continued on next page



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L3 Cache: 8 MB I+D on chip per chip
Other Cache: None
Memory: 64 GB (4 x 16 GB 2Rx8 PC4-2133P-U)
Disk Subsystem: 1 x 500 GB 7200 RPM SATA
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 | 99.4 | 137 | 98.8 | 138 | <u>99.2</u> | <u>137</u> | 99.4 | 137 | 98.8 | 138 | <u>99.2</u> | <u>137</u> |
| 416.gamess | 397 | 49.3 | 398 | 49.3 | <u>397</u> | <u>49.3</u> | 353 | 55.4 | <u>353</u> | <u>55.5</u> | 353 | 55.5 |
| 433.milc | 83.1 | 110 | <u>83.3</u> | <u>110</u> | 83.7 | 110 | 83.1 | 110 | <u>83.3</u> | <u>110</u> | 83.7 | 110 |
| 434.zeusmp | <u>47.0</u> | <u>194</u> | 47.0 | 194 | 47.1 | 193 | <u>47.0</u> | <u>194</u> | 47.0 | 194 | 47.1 | 193 |
| 435.gromacs | 107 | 66.6 | <u>107</u> | <u>66.6</u> | 107 | 66.7 | 107 | 66.6 | <u>107</u> | <u>66.6</u> | 107 | 66.7 |
| 436.cactusADM | 36.1 | 331 | 36.5 | 328 | <u>36.4</u> | <u>328</u> | 36.1 | 331 | 36.5 | 328 | <u>36.4</u> | <u>328</u> |
| 437.leslie3d | <u>88.2</u> | <u>107</u> | 88.1 | 107 | 88.3 | 106 | <u>88.2</u> | <u>107</u> | 88.1 | 107 | 88.3 | 106 |
| 444.namd | 216 | 37.2 | <u>215</u> | <u>37.3</u> | 215 | 37.3 | 211 | 38.0 | <u>212</u> | <u>37.9</u> | 212 | 37.8 |
| 447.dealII | 140 | 81.7 | <u>141</u> | <u>81.4</u> | 141 | 81.3 | 140 | 81.7 | <u>141</u> | <u>81.4</u> | 141 | 81.3 |
| 450.soplex | 148 | 56.3 | <u>149</u> | <u>55.9</u> | 150 | 55.7 | 148 | 56.3 | <u>149</u> | <u>55.9</u> | 150 | 55.7 |
| 453.povray | <u>73.6</u> | <u>72.2</u> | 73.5 | 72.3 | 73.9 | 72.0 | <u>64.4</u> | <u>82.6</u> | 64.8 | 82.1 | 64.1 | 83.0 |
| 454.calculix | <u>106</u> | <u>77.6</u> | 106 | 77.6 | 106 | 77.5 | 104 | 79.0 | 104 | 79.4 | <u>104</u> | <u>79.0</u> |
| 459.GemsFDTD | <u>129</u> | <u>82.2</u> | 129 | 82.2 | 129 | 82.2 | 128 | 82.7 | 128 | 82.6 | <u>128</u> | <u>82.6</u> |
| 465.tonto | <u>150</u> | <u>65.5</u> | 150 | 65.5 | 150 | 65.4 | <u>134</u> | <u>73.5</u> | 134 | 73.6 | 134 | 73.4 |
| 470.lbm | 73.8 | 186 | 73.7 | 186 | <u>73.8</u> | <u>186</u> | 73.8 | 186 | 73.7 | 186 | <u>73.8</u> | <u>186</u> |
| 481.wrf | 89.4 | 125 | 89.7 | 124 | <u>89.6</u> | <u>125</u> | 89.4 | 125 | 89.7 | 124 | <u>89.6</u> | <u>125</u> |
| 482.sphinx3 | 193 | 101 | <u>193</u> | <u>101</u> | 194 | 101 | 193 | 101 | <u>193</u> | <u>101</u> | 194 | 101 |

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
System Profile set to Performance
Sysinfo program /root/cpu2006-1.2/config/sysinfo.rev6914
\$Rev: 6914 \$ \$Date:: 2014-06-25 #\$ e3fbb8667b5a285932ceab81e28219e1
running on linux-8px2 Mon Oct 5 13:20:21 2015

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>

Continued on next page



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Platform Notes (Continued)

```

From /proc/cpuinfo
model name : Intel(R) Xeon(R) CPU E3-1260L v5 @ 2.90GHz
 1 "physical id"s (chips)
 8 "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
cache size : 8192 KB

```

```

From /proc/meminfo
MemTotal:      66066084 kB
HugePages_Total:      0
Hugepagesize:    2048 kB

```

```

/usr/bin/lsb_release -d
SUSE Linux Enterprise Server 12

```

```

From /etc/*release* /etc/*version*
SuSE-release:
SUSE Linux Enterprise Server 12 (x86_64)
VERSION = 12
PATCHLEVEL = 0
# 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"
VERSION_ID="12"
PRETTY_NAME="SUSE Linux Enterprise Server 12"
ID="sles"
ANSI_COLOR="0;32"
CPE_NAME="cpe:/o:suse:sles:12"

```

```

uname -a:
Linux linux-8px2 3.12.28-4-default #1 SMP Thu Sep 25 17:02:34 UTC 2014
(9879bd4) x86_64 x86_64 x86_64 GNU/Linux

```

run-level 3 Oct 5 09:09

```

SPEC is set to: /root/cpu2006-1.2
Filesystem      Type  Size  Used Avail Use% Mounted on
/dev/sda2       ext4  451G   11G  440G   3% /

```

Additional information from dmidecode:

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

Continued on next page



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Platform Notes (Continued)

hardware, firmware, and the "DMTF SMBIOS" standard.

BIOS Dell Inc. 0.3.16 09/09/2015

Memory:

1x 00AD00000000 HMA82GU7MFR8N-TF 16 GB 2 rank 2133 MHz

2x 00AD0000020B HMA82GU7MFR8N-TF 16 GB 2 rank 2133 MHz

1x 00AD00000800 HMA82GU7MFR8N-TF 16 GB 2 rank 2133 MHz

(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/cpu2006-1.2/libs/32:/root/cpu2006-1.2/libs/64:/root/cpu2006-1.2/sh"

OMP_NUM_THREADS = "4"

Binaries compiled on a system with 1x Intel Core i5-4670K CPU + 32GB memory using RedHat EL 7.1

Transparent Huge Pages enabled with:

echo always > /sys/kernel/mm/transparent_hugepage/enabled

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.lelie3d: -DSPEC_CPU_LP64

444.namd: -DSPEC_CPU_LP64

Continued on next page

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Page 4



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Base Portability Flags (Continued)

```

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:
-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -opt-prefetch
-ansi-alias

C++ benchmarks:
-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch -ansi-alias

Fortran benchmarks:
-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -opt-prefetch

Benchmarks using both Fortran and C:
-xCORE-AVX2 -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



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Software Availability: Sep-2015

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:threadsafe(pass 1)
-ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2)
-par-num-threads=1(pass 1) -prof-use(pass 2) -fno-alias
-auto-ilp32

447.dealII: basepeak = yes

450.soplex: basepeak = yes

453.povray: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)
-ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2)
-par-num-threads=1(pass 1) -prof-use(pass 2) -unroll4
-ansi-alias

Fortran benchmarks:

410.bwaves: basepeak = yes

416.gamess: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)
-ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2)
-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: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)
-ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2)
-par-num-threads=1(pass 1) -prof-use(pass 2) -unroll2
-inline-level=0 -opt-prefetch -parallel

465.tonto: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)
-ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2)
-par-num-threads=1(pass 1) -prof-use(pass 2) -inline-calloc
-opt-malloc-options=3 -auto -unroll4

Benchmarks using both Fortran and C:

Continued on next page



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Peak Optimization Flags (Continued)

435.gromacs: basepeak = yes

436.cactusADM: basepeak = yes

454.calculix: -xCORE-AVX2 -ipo -O3 -no-prec-div -auto-ilp32 -ansi-alias

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.html>

<http://www.spec.org/cpu2006/flags/Dell-Platform-Settings-V1.2-revD.20151006.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.xml>

<http://www.spec.org/cpu2006/flags/Dell-Platform-Settings-V1.2-revD.20151006.xml>

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