SPEC® CFP2006 Result

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Hewlett-Packard Company

ProLiant DL360e Gen8
(2.40 GHz, Intel Xeon E5-2470 v2)

$SPECfp^{®}2006 =$ 88.9

$SPECfp\_base2006 =$ 85.1

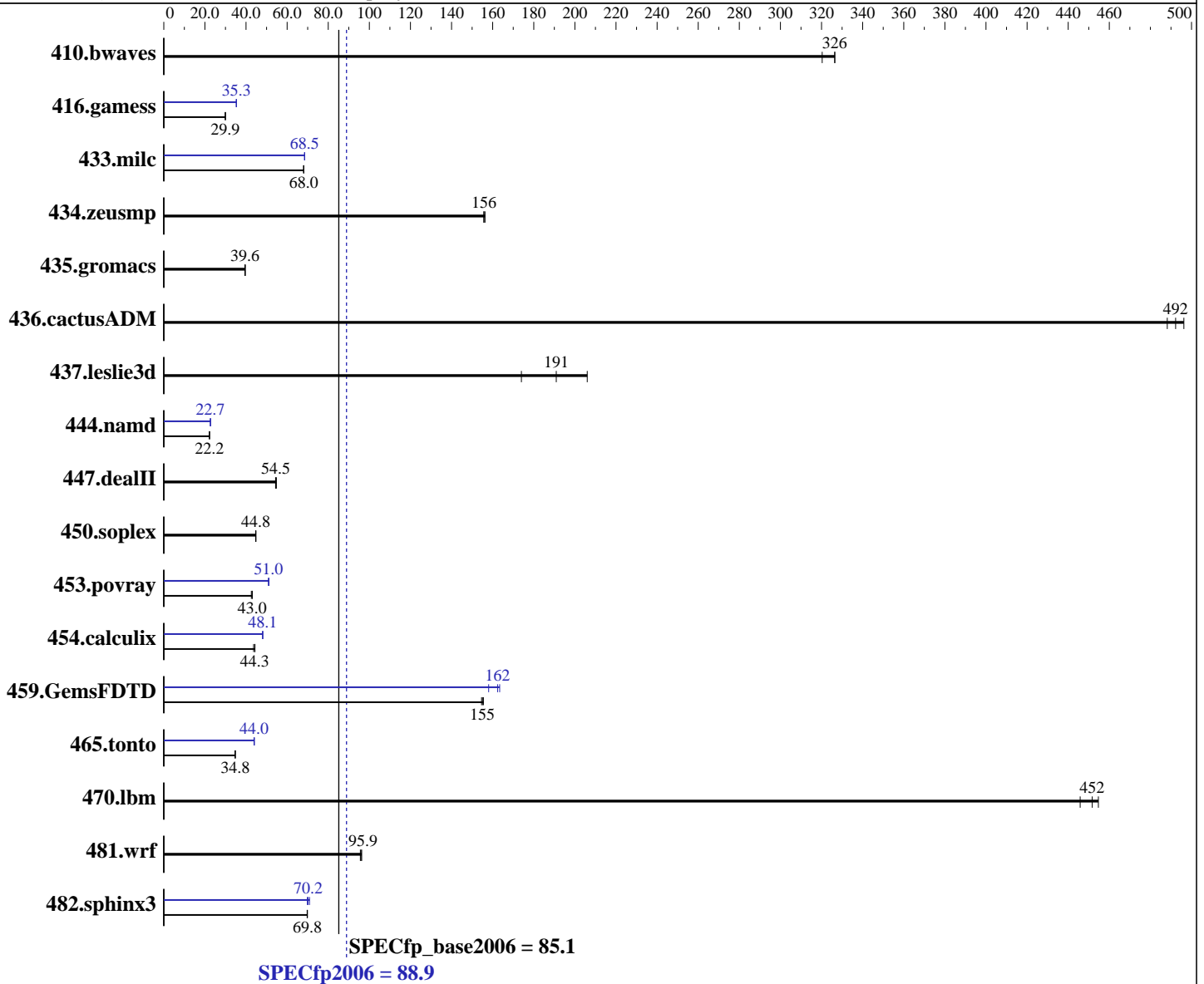|	
CPU2006 license: 3	**Test date:** Jan-2014
Test sponsor: Hewlett-Packard Company	**Hardware Availability:** Jan-2014
Tested by: Hewlett-Packard Company	**Software Availability:** Nov-2013

410.bwaves 326
416.gamess 35.3 / 29.9
433.milc 68.5 / 68.0
434.zeusmp 156
435.gromacs 39.6
436.cactusADM 492
437.leslie3d 191
444.namd 22.7 / 22.2
447.dealII 54.5
450.soplex 44.8
453.povray 51.0 / 43.0
454.calculix 48.1 / 44.3
459.GemsFDTD 162 / 155
465.tonto 44.0 / 34.8
470.lbm 452
481.wrf 95.9
482.sphinx3 70.2 / 69.8

SPECfp_base2006 = 85.1
SPECfp2006 = 88.9

Hardware

CPU Name:	Intel Xeon E5-2470 v2
CPU Characteristics:	Intel Turbo Boost Technology up to 3.20 GHz
CPU MHz:	2400
FPU:	Integrated
CPU(s) enabled:	20 cores, 2 chips, 10 cores/chip
CPU(s) orderable:	1,2 chips
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) SP3 Kernel 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:	ext3
System State:	Run level 3 (multi-user)

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L3 Cache:	25 MB I+D on chip per chip	Base Pointers:	64-bit
Other Cache:	None	Peak Pointers:	32/64-bit
Memory:	96 GB (12 x 8 GB 2Rx4 PC3-12800R-11, ECC)	Other Software:	None
Disk Subsystem:	4 x 300 GB 10 K SAS, RAID 5		
Other Hardware:	None		

Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	**41.6**	**326**	42.4	320	41.6	326	**41.6**	**326**	42.4	320	41.6	326
416.gamess	654	29.9	654	30.0	**654**	**29.9**	555	35.3	554	35.3	**555**	**35.3**
433.milc	135	68.1	135	68.0	**135**	**68.0**	**134**	**68.5**	134	68.5	134	68.6
434.zeusmp	58.4	156	**58.4**	**156**	58.2	156	58.4	156	**58.4**	**156**	58.2	156
435.gromacs	181	39.5	**181**	**39.6**	180	39.6	181	39.5	**181**	**39.6**	180	39.6
436.cactusADM	24.1	496	**24.3**	**492**	24.5	488	24.1	496	**24.3**	**492**	24.5	488
437.leslie3d	54.0	174	**49.2**	**191**	45.6	206	54.0	174	**49.2**	**191**	45.6	206
444.namd	**361**	**22.2**	361	22.2	361	22.2	353	22.7	**353**	**22.7**	354	22.7
447.dealII	210	54.4	209	54.8	**210**	**54.5**	210	54.4	209	54.8	**210**	**54.5**
450.soplex	186	44.8	187	44.7	**186**	**44.8**	186	44.8	187	44.7	**186**	**44.8**
453.povray	**124**	**43.0**	124	43.1	125	42.6	104	51.2	104	50.9	**104**	**51.0**
454.calculix	186	44.3	189	43.7	**186**	**44.3**	171	48.2	172	48.1	**171**	**48.1**
459.GemsFDTD	68.6	155	68.2	155	**68.4**	**155**	64.9	163	67.1	158	**65.3**	**162**
465.tonto	283	34.8	283	34.7	**283**	**34.8**	224	43.9	224	44.0	**224**	**44.0**
470.lbm	30.2	455	30.8	446	**30.4**	**452**	30.2	455	30.8	446	**30.4**	**452**
481.wrf	116	96.3	**116**	**95.9**	117	95.6	116	96.3	**116**	**95.9**	117	95.6
482.sphinx3	**279**	**69.8**	279	69.9	279	69.7	275	70.9	279	69.8	**278**	**70.2**

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"
    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
```

Platform Notes

```
    BIOS Configuration:
     HP Power Regulator was set to "HP Static High Performance Mode"
     HP Power Profile was set to "Maximum Performance"
     Intel Hyperthreading was set to "Disabled"
     Memory Refresh Rate was set to "1x Refresh"
    Sysinfo program /home/cpu2006/config/sysinfo.rev6874.hp
```

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Platform Notes (Continued)

```
$Rev: 6874 $ $Date:: 2013-11-20 #$ e05b96ddac6c3d74bfe176502a0a2391
running on dl360egen8rwen Sat Jan 25 00:14:17 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 E5-2470 v2 @ 2.40GHz
      2 "physical id"s (chips)
      20 "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 : 10
      siblings  : 10
      physical 0: cores 0 1 2 3 4 8 9 10 11 12
      physical 1: cores 0 1 2 3 4 8 9 10 11 12
   cache size : 25600 KB

From /proc/meminfo
   MemTotal:        98903452 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 dl360egen8rwen 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 25 00:10 last=S

SPEC is set to: /home/cpu2006
   Filesystem      Type  Size  Used Avail Use% Mounted on
   /dev/sda2       ext3  549G  8.7G  539G   2% /
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
   hardware, firmware, and the "DMTF SMBIOS" standard.

   BIOS HP P73 11/12/2013
   Memory:
```

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Platform Notes (Continued)

```
     12x HP 689911-071 8 GB 1600 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"
LD_LIBRARY_PATH = "/home/cpu2006/libs/32:/home/cpu2006/libs/64:/home/cpu2006/sh"
OMP_NUM_THREADS = "20"

 Binaries compiled on a system with 1x Core i7-860 CPU + 8GB
 memory using RedHat EL 6.4
```

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
        470.lbm: -DSPEC_CPU_LP64
        481.wrf: -DSPEC_CPU_LP64 -DSPEC_CPU_CASE_FLAG -DSPEC_CPU_LINUX
```

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Base Portability Flags (Continued)

```
482.sphinx3: -DSPEC_CPU_LP64
```

Base Optimization Flags

C benchmarks:
```
-xAVX -ipo -O3 -no-prec-div -parallel -opt-prefetch -ansi-alias
```

C++ benchmarks:
```
-xAVX -ipo -O3 -no-prec-div -opt-prefetch -ansi-alias
```

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

Benchmarks using both Fortran and C:
```
-xAVX -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: -xAVX(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: -xAVX -ipo -O3 -no-prec-div -unroll2 -ansi-alias
-parallel

C++ benchmarks:

444.namd: -xAVX(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.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) -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: basepeak = yes

459.GemsFDTD: -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 -opt-prefetch -parallel

465.tonto: -xAVX(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: -xAVX -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/HP-Platform-Flags-Intel-V1.2-revB.20131009.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/HP-Platform-Flags-Intel-V1.2-revB.20131009.xml

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

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