SPEC® CFP2006 Result

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Hewlett-Packard Company

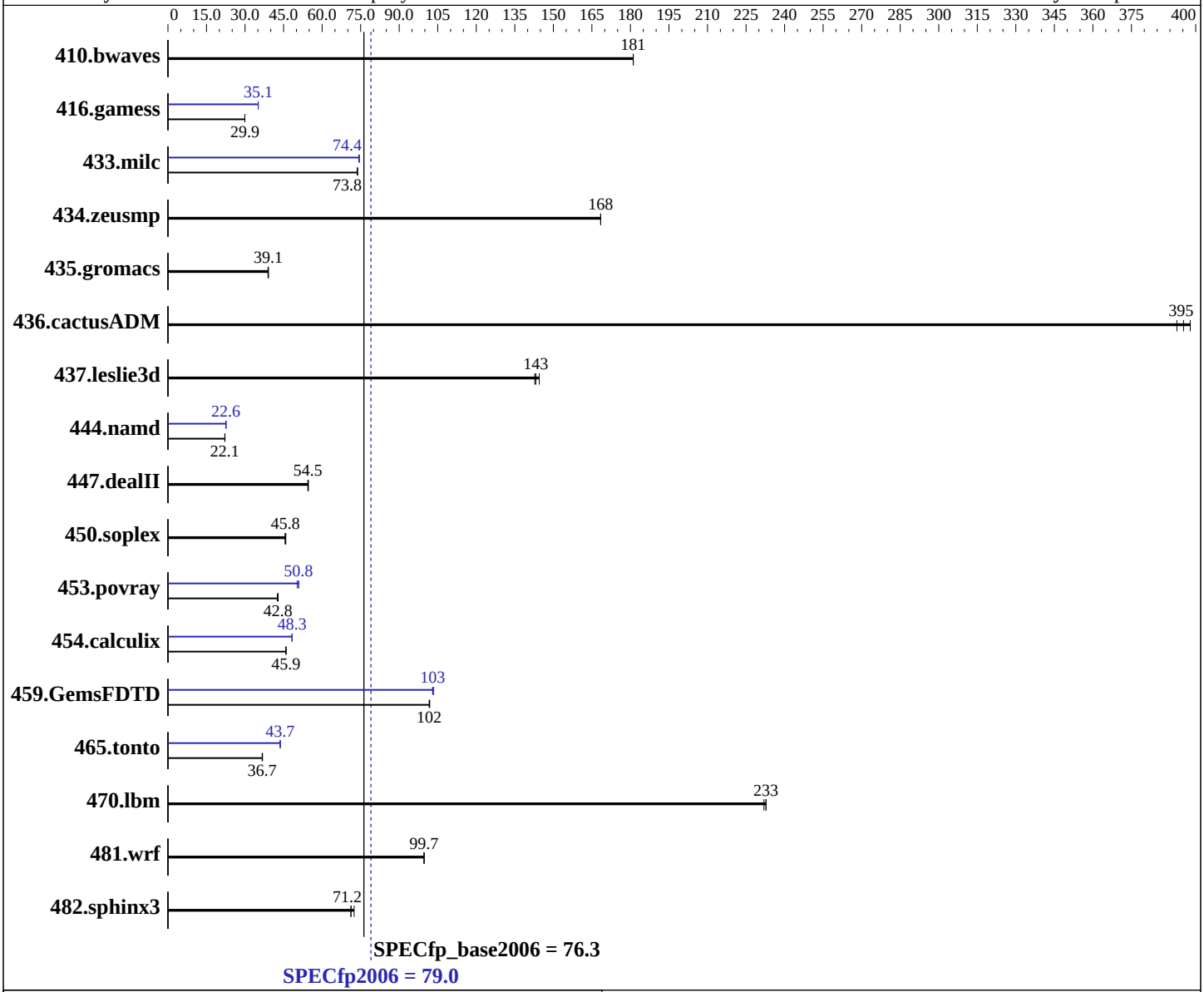
ProLiant DL360e Gen8
(2.40 GHz, Intel Xeon E5-2470 v2)

SPECfp®2006 = 79.0

SPECfp_base2006 = 76.3

CPU2006 license: 3
Test sponsor: Hewlett-Packard Company
Tested by: Hewlett-Packard Company

Test date: Dec-2013
Hardware Availability: Jan-2014
Software Availability: Sep-2013



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:	10 cores, 1 chip, 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

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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
Other Cache: None
Memory: 48 GB (6 x 8 GB 2Rx4 PC3-12800R-11, ECC)
Disk Subsystem: 4 x 300 GB 15 K SAS, RAID 5
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	75.0	181	**75.0**	**181**	75.0	181	75.0	181	**75.0**	**181**	75.0	181
416.gamess	**654**	**29.9**	654	29.9	654	29.9	557	35.1	**557**	**35.1**	557	35.1
433.milc	124	73.8	**124**	**73.8**	125	73.7	124	74.3	**123**	**74.4**	123	74.5
434.zeusmp	**54.0**	**168**	54.0	168	54.0	168	**54.0**	**168**	54.0	168	54.0	168
435.gromacs	183	39.1	183	38.9	**183**	**39.1**	183	39.1	183	38.9	**183**	**39.1**
436.cactusADM	30.4	393	30.0	398	**30.2**	**395**	30.4	393	30.0	398	**30.2**	**395**
437.leslie3d	**65.6**	**143**	65.0	145	65.8	143	**65.6**	**143**	65.0	145	65.8	143
444.namd	361	22.2	362	22.1	**362**	**22.1**	355	22.6	**355**	**22.6**	355	22.6
447.dealII	**210**	**54.5**	210	54.5	209	54.7	**210**	**54.5**	210	54.5	209	54.7
450.soplex	182	45.9	183	45.6	**182**	**45.8**	182	45.9	183	45.6	**182**	**45.8**
453.povray	124	42.9	**124**	**42.8**	125	42.6	**105**	**50.8**	106	50.3	104	50.9
454.calculix	**180**	**45.9**	180	45.9	180	45.9	171	48.3	**171**	**48.3**	171	48.3
459.GemsFDTD	104	102	**104**	**102**	104	102	103	103	**103**	**103**	103	103
465.tonto	**268**	**36.7**	268	36.7	267	36.8	**225**	**43.7**	225	43.8	225	43.6
470.lbm	59.2	232	59.0	233	**59.0**	**233**	59.2	232	59.0	233	**59.0**	**233**
481.wrf	112	99.7	112	99.7	**112**	**99.7**	112	99.7	112	99.7	**112**	**99.7**
482.sphinx3	269	72.5	**274**	**71.2**	274	71.2	269	72.5	**274**	**71.2**	274	71.2

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:
 Intel Hyperthreading Options was set to Disabled
 HP Power Profile set to Maximum Performance
 System Locality Information Table Gen8 was set to Enabled
 Thermal Configuration set to Maximum Cooling
 Processor Power and Utilization Monitoring set to Disabled
```

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Platform Notes (Continued)

```
 Memory Refresh Rate was set to 1x
Sysinfo program /home/cpu2006/config/sysinfo.rev6819
$Rev: 6818 $ $Date:: 2012-07-17 #$ 6e76384576c25d0a81352b1f6b6d4262
running on dl360egen8rwen Sun Dec  8 04:19:39 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 E5-2470 v2 @ 2.40GHz
      1 "physical id"s (chips)
      10 "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
   cache size : 25600 KB

From /proc/meminfo
   MemTotal:       49260216 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 Dec 7 22:22 last=S

SPEC is set to: /home/cpu2006
   Filesystem     Type  Size  Used Avail Use% Mounted on
   /dev/sda2      ext3  549G  8.6G  539G   2% /

Additional information from dmidecode:
  BIOS HP P73 11/12/2013
  Memory:
   6x HP 689911-071 8 GB 1600 MHz
   6x UNKNOWN NOT AVAILABLE

(End of data from sysinfo program)
```

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Platform Notes (Continued)

```
Regarding the sysinfo display about the memory installed, the correct amount of
memory is 48 GB and the dmidecode description should have one line reading as:
  6x HP 689911-071 8 GB 1600 MHz
```

General Notes

```
Environment variables set by runspec before the start of the run:
KMP_AFFINITY = "granularity=fine,compact,1,0"
LD_LIBRARY_PATH = "/home/cpu2006/libs/32:/home/cpu2006/libs/64:/home/cpu2006/sh"
OMP_NUM_THREADS = "10"

 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: basepeak = yes

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

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

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Tested with SPEC CPU2006 v1.2.
Report generated on Thu Jul 24 20:19:28 2014 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 14 January 2014.