



SPEC® CFP2006 Result

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Hewlett-Packard Company

SPECfp®2006 = 79.2

ProLiant DL380e Gen8
(2.40 GHz, Intel Xeon E5-2470 v2)

SPECfp_base2006 = 76.4

CPU2006 license: 3

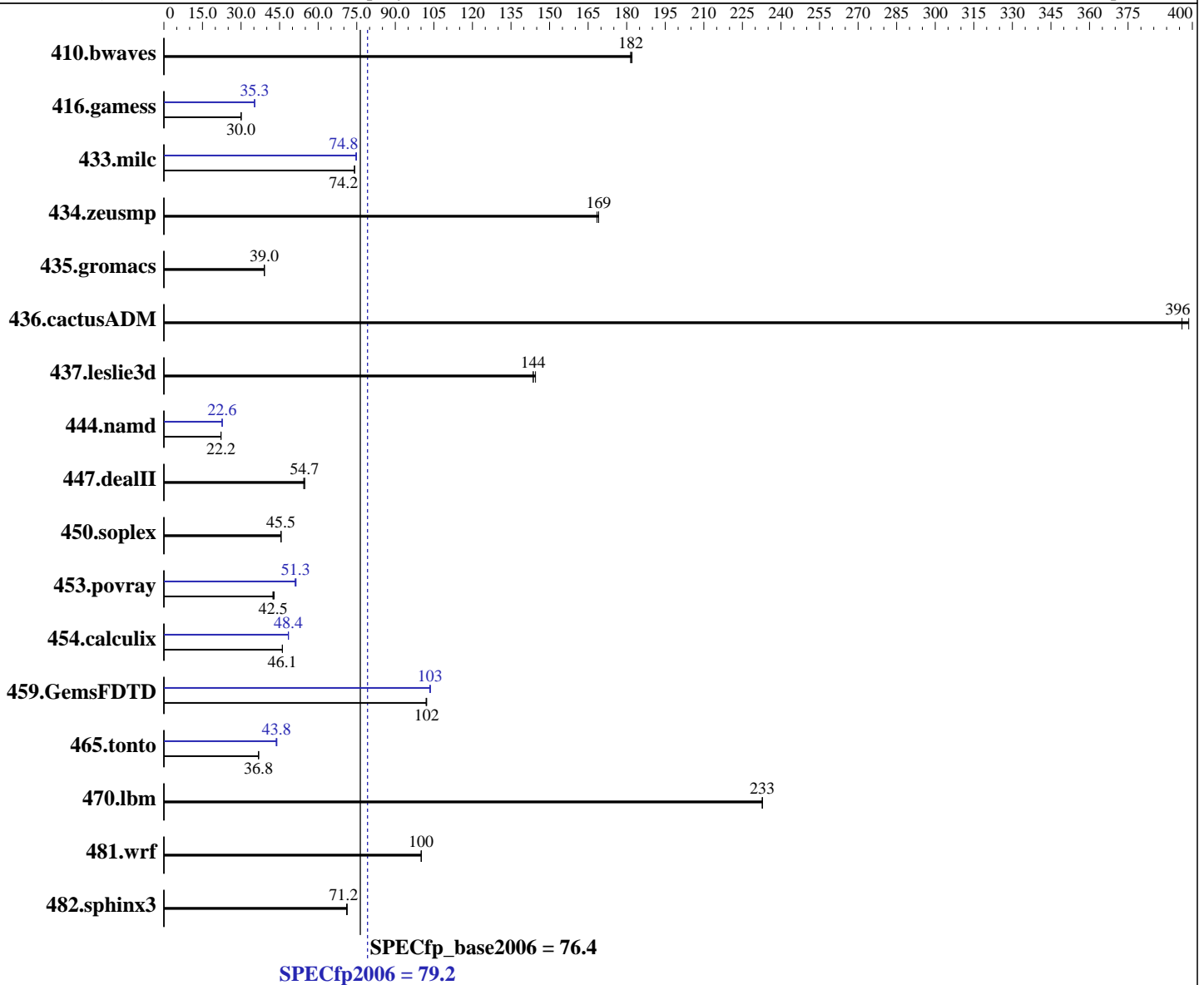
Test date: Jan-2014

Test sponsor: Hewlett-Packard Company

Hardware Availability: Jan-2014

Tested by: Hewlett-Packard Company

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 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) 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: 1 x 300 GB 15 K SAS, RAID 0
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	74.6	182	74.8	182	<u>74.8</u>	<u>182</u>	74.6	182	74.8	182	<u>74.8</u>	<u>182</u>
416.gamess	652	30.0	653	30.0	<u>652</u>	<u>30.0</u>	555	35.3	555	35.3	<u>555</u>	<u>35.3</u>
433.milc	124	74.1	124	74.2	<u>124</u>	<u>74.2</u>	123	74.9	<u>123</u>	<u>74.8</u>	123	74.7
434.zeusmp	<u>53.8</u>	<u>169</u>	53.8	169	54.0	168	<u>53.8</u>	<u>169</u>	53.8	169	54.0	168
435.gromacs	183	39.1	183	39.0	<u>183</u>	<u>39.0</u>	183	39.1	183	39.0	<u>183</u>	<u>39.0</u>
436.cactusADM	30.2	396	<u>30.2</u>	<u>396</u>	30.0	399	30.2	396	<u>30.2</u>	<u>396</u>	30.0	399
437.leslie3d	65.4	144	65.0	145	<u>65.4</u>	<u>144</u>	65.4	144	65.0	145	<u>65.4</u>	<u>144</u>
444.namd	<u>361</u>	<u>22.2</u>	361	22.2	361	22.2	354	22.6	<u>354</u>	<u>22.6</u>	354	22.7
447.dealII	209	54.7	<u>209</u>	<u>54.7</u>	210	54.4	209	54.7	<u>209</u>	<u>54.7</u>	210	54.4
450.soplex	183	45.5	183	45.6	<u>183</u>	<u>45.5</u>	183	45.5	183	45.6	<u>183</u>	<u>45.5</u>
453.povray	<u>125</u>	<u>42.5</u>	125	42.4	124	42.9	104	51.0	104	51.4	<u>104</u>	<u>51.3</u>
454.calculix	<u>179</u>	<u>46.1</u>	179	46.1	179	46.1	<u>170</u>	<u>48.4</u>	170	48.4	170	48.5
459.GemsFDTD	104	102	104	102	<u>104</u>	<u>102</u>	<u>103</u>	<u>103</u>	103	103	102	104
465.tonto	<u>268</u>	<u>36.8</u>	268	36.8	267	36.9	225	43.7	<u>225</u>	<u>43.8</u>	224	43.9
470.lbm	59.0	233	59.0	233	<u>59.0</u>	<u>233</u>	59.0	233	59.0	233	<u>59.0</u>	<u>233</u>
481.wrf	112	100	112	100	<u>112</u>	<u>100</u>	112	100	112	100	<u>112</u>	<u>100</u>
482.sphinx3	274	71.1	273	71.3	<u>274</u>	<u>71.2</u>	274	71.1	273	71.3	<u>274</u>	<u>71.2</u>

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
Reclaim mode enabled with:
echo 1 > /proc/sys/vm/zone_reclaim_mode
runspec command invoked through numactl i.e.:
numactl --localalloc runspec <etc>
```



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Platform Notes

BIOS Configuration:

Intel Hyperthreading Options set to Disabled
HP Power Profile set to Maximum Performance
Minimum Processor Idle Power Core State set to C1E state
Minimum Processor Idle Power Package State set to Package C6 (retention) State
Memory Power Savings Mode set to Maximum Performance
Thermal Configuration set to Maximum Cooling
Collaborative Power Control set to Disabled
Dynamic Power Capping Functionality set to Disabled
Processor Power and Utilization Monitoring set to Disabled
Memory Refresh Rate set to 1x

Sysinfo program /cpu2006/config/sysinfo.rev6818
\$Rev: 6818 \$ \$Date:: 2012-07-17 #\$ e86d102572650a6e4d596a3cee98f191
running on DL380e-Gen8-RF0 Thu Jan 16 17:29:00 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
 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:      49391292 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 DL380e-Gen8-RF0 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 16 11:31 last=S
```

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Platform Notes (Continued)

SPEC is set to: /cpu2006

Filesystem	Type	Size	Used	Avail	Use%	Mounted on
/dev/sda3	ext3	273G	28G	232G	11%	/

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)

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 = "/cpu2006/libs/32:/cpu2006/libs/64:/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

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Base Portability Flags (Continued)

```

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
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



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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

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.dealIII: 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

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Peak Optimization Flags (Continued)

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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