



# SPEC<sup>®</sup> CFP2006 Result

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## Hewlett-Packard Company

SPECfp<sup>®</sup>2006 = **68.1**

ProLiant DL360p Gen8  
(2.50 GHz, Intel Xeon E5-2609 v2)

SPECfp\_base2006 = **66.1**

CPU2006 license: 3

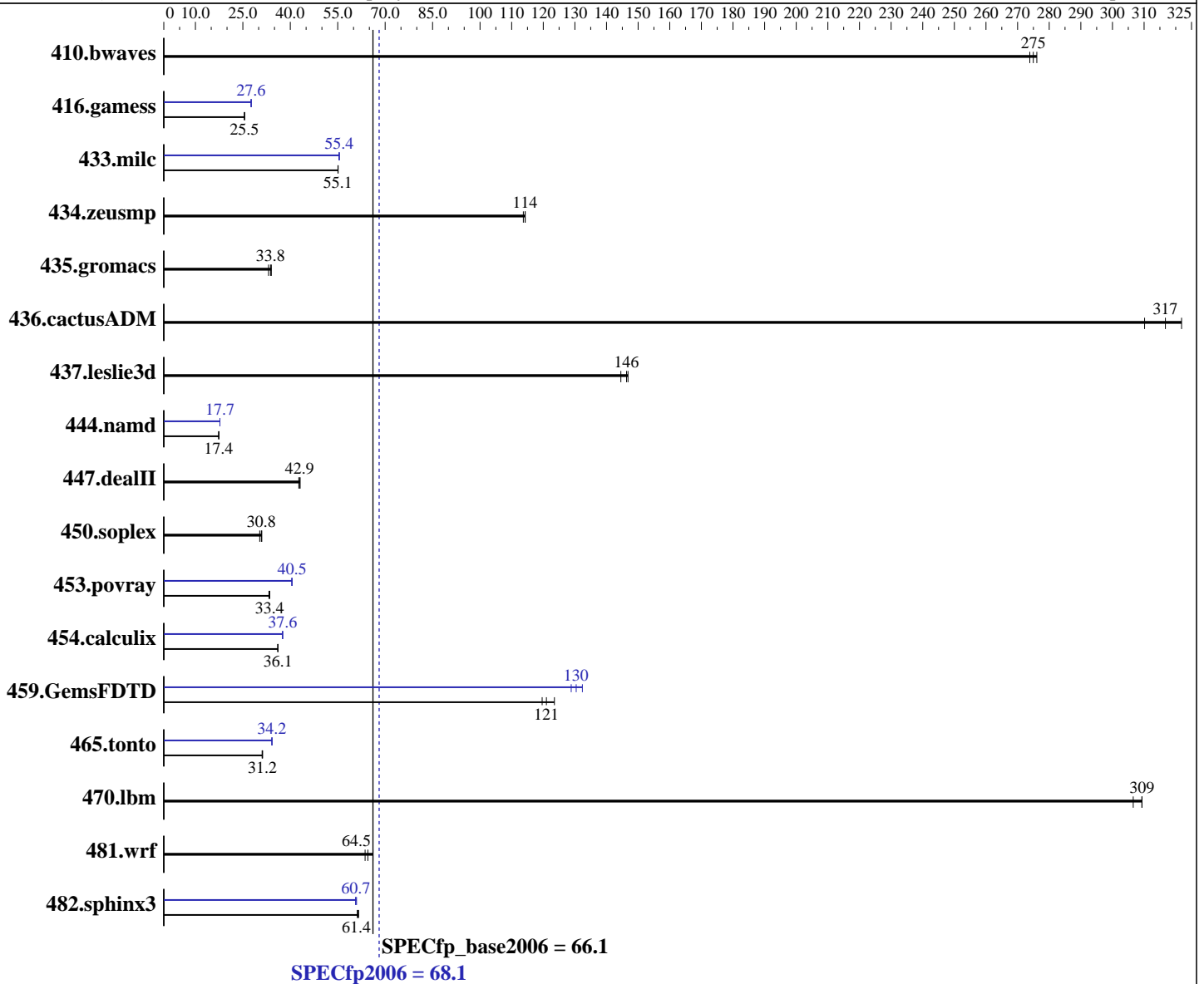
Test date: Oct-2013

Test sponsor: Hewlett-Packard Company

Hardware Availability: Sep-2013

Tested by: Hewlett-Packard Company

Software Availability: Sep-2013



### Hardware

CPU Name: Intel Xeon E5-2609 v2  
 CPU Characteristics:  
 CPU MHz: 2500  
 FPU: Integrated  
 CPU(s) enabled: 8 cores, 2 chips, 4 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

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: 10 MB I+D on chip per chip  
Other Cache: None  
Memory: 128 GB (16 x 8 GB 2Rx4 PC3-12800R-11, ECC, running at 1333 MHz and CL9)  
Disk Subsystem: 1 x 400 GB SAS SSD, 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	49.2	276	49.6	274	<b>49.4</b>	<b>275</b>	49.2	276	49.6	274	<b>49.4</b>	<b>275</b>
416.gamess	768	25.5	<b>767</b>	<b>25.5</b>	766	25.6	709	27.6	<b>709</b>	<b>27.6</b>	709	27.6
433.milc	166	55.1	<b>167</b>	<b>55.1</b>	167	55.1	<b>166</b>	<b>55.4</b>	166	55.4	165	55.5
434.zeusmp	79.6	114	<b>79.6</b>	<b>114</b>	80.0	114	79.6	114	<b>79.6</b>	<b>114</b>	80.0	114
435.gromacs	210	34.0	<b>212</b>	<b>33.8</b>	216	33.1	210	34.0	<b>212</b>	<b>33.8</b>	216	33.1
436.cactusADM	37.1	322	<b>37.7</b>	<b>317</b>	38.5	310	37.1	322	<b>37.7</b>	<b>317</b>	38.5	310
437.leslie3d	<b>64.2</b>	<b>146</b>	65.0	145	64.0	147	<b>64.2</b>	<b>146</b>	65.0	145	64.0	147
444.namd	462	17.4	<b>461</b>	<b>17.4</b>	461	17.4	<b>452</b>	<b>17.7</b>	452	17.8	452	17.7
447.dealII	<b>267</b>	<b>42.9</b>	268	42.7	265	43.1	<b>267</b>	<b>42.9</b>	268	42.7	265	43.1
450.soplex	269	31.0	275	30.3	<b>270</b>	<b>30.8</b>	269	31.0	275	30.3	<b>270</b>	<b>30.8</b>
453.povray	159	33.5	160	33.2	<b>159</b>	<b>33.4</b>	131	40.6	<b>131</b>	<b>40.5</b>	131	40.5
454.calculix	<b>229</b>	<b>36.1</b>	229	36.0	229	36.1	220	37.6	220	37.6	<b>220</b>	<b>37.6</b>
459.GemsFDTD	88.7	120	<b>87.7</b>	<b>121</b>	85.9	124	82.4	129	<b>81.4</b>	<b>130</b>	80.2	132
465.tonto	315	31.2	<b>316</b>	<b>31.2</b>	317	31.1	<b>288</b>	<b>34.2</b>	288	34.2	288	34.2
470.lbm	44.8	307	<b>44.4</b>	<b>309</b>	44.4	309	44.8	307	<b>44.4</b>	<b>309</b>	44.4	309
481.wrf	<b>173</b>	<b>64.5</b>	169	66.1	175	63.7	<b>173</b>	<b>64.5</b>	169	66.1	175	63.7
482.sphinx3	<b>317</b>	<b>61.4</b>	319	61.2	316	61.6	<b>321</b>	<b>60.7</b>	320	61.0	321	60.6

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/redhat_transparent_hugepage/enabled
Filesystem page cache cleared with:
echo 1 > /proc/sys/vm/drop_caches
runspec command invoked through numactl i.e.:
numactl --interleave=all runspec <etc>
Disabled unused Linux services through "stop_services.sh" before running.
```



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**Tested by:** Hewlett-Packard Company

**Test date:** Oct-2013  
**Hardware Availability:** Sep-2013  
**Software Availability:** Sep-2013

### Platform Notes

#### BIOS Configuration:

HP Power Profile set to Maximum Performance  
Memory Power Savings Mode set to Maximum Performance  
Collaborative Power Control set to Disabled  
Dynamic Power Capping Functionality set to Disabled  
Thermal Configuration set to Maximum Cooling  
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 dl360p-gen8-sles11 Wed Oct 30 18:42:09 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 E5-2609 v2 @ 2.50GHz
 2 "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  : 4
  physical 0: cores 0 1 2 3
  physical 1: cores 0 1 2 3
 cache size : 10240 KB
```

#### From /proc/meminfo

```
MemTotal:      132130192 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 dl360p-gen8-sles11 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 Oct 30 10:50 last=S

#### SPEC is set to: /cpu2006

```
Filesystem      Type  Size  Used Avail Use% Mounted on
Continued on next page
```



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## Platform Notes (Continued)

/dev/sda3 ext3 365G 8.9G 338G 3% /

Additional information from dmidecode:

BIOS HP P71 09/08/2013

Memory:

8x HP NOT AVAILABLE 8 GB 1333 MHz

8x UNKNOWN NOT AVAILABLE

8x UNKNOWN NOT AVAILABLE 8 GB 1333 MHz

(End of data from sysinfo program)

Regarding the sysinfo display about the memory installed, the correct amount of memory is 128 GB and the dmidecode description should have two lines reading as:

8x HP NOT AVAILABLE 8 GB 1333 MHz

8x UNKNOWN NOT AVAILABLE 8 GB 1333 MHz

## General Notes

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

LD\_LIBRARY\_PATH = "/cpu2006/libs/32:/cpu2006/libs/64:/cpu2006/sh"

OMP\_NUM\_THREADS = "8"

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

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## Base Portability Flags (Continued)

```

437.leslie3d: -DSPEC_CPU_LP64
444.namd: -DSPEC_CPU_LP64
447.deall: -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

## Peak Portability Flags

Same as Base Portability Flags



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## 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: -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

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## Peak Optimization Flags (Continued)

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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