



# SPEC® CFP2006 Result

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## Hewlett-Packard Company

**SPECfp®2006 = 114**

ProLiant DL360p Gen8  
(3.30 GHz, Intel Xeon E5-2667 v2)

**SPECfp\_base2006 = 110**

CPU2006 license: 3

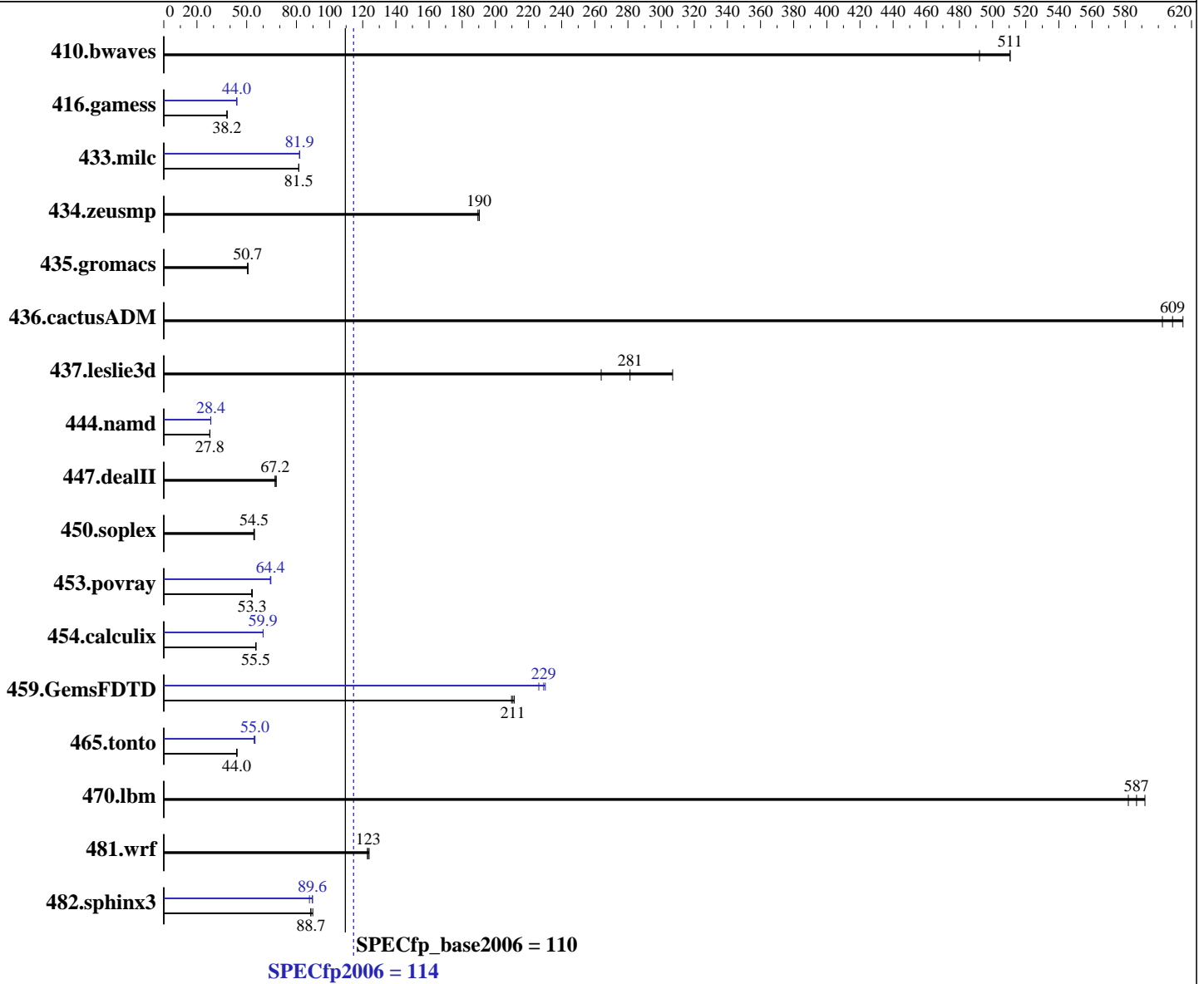
Test date: Feb-2014

Test sponsor: Hewlett-Packard Company

Hardware Availability: Dec-2013

Tested by: Hewlett-Packard Company

Software Availability: Sep-2013



### Hardware

CPU Name: Intel Xeon E5-2667 v2  
 CPU Characteristics: Intel Turbo Boost Technology up to 4.00 GHz  
 CPU MHz: 3300  
 FPU: Integrated  
 CPU(s) enabled: 16 cores, 2 chips, 8 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: 128 GB (16 x 8 GB 2Rx4 PC3-14900R-13, ECC)  
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	<b><u>26.6</u></b>	<b><u>511</u></b>	27.6	492	26.6	511	<b><u>26.6</u></b>	<b><u>511</u></b>	27.6	492	26.6	511
416.gamess	<b><u>513</u></b>	<b><u>38.2</u></b>	514	38.1	513	38.2	445	44.0	445	44.0	<b><u>445</u></b>	<b><u>44.0</u></b>
433.milc	113	81.4	113	81.5	<b><u>113</u></b>	<b><u>81.5</u></b>	<b><u>112</u></b>	<b><u>81.9</u></b>	112	81.9	112	81.9
434.zeusmp	47.8	190	48.0	189	<b><u>47.8</u></b>	<b><u>190</u></b>	47.8	190	48.0	189	<b><u>47.8</u></b>	<b><u>190</u></b>
435.gromacs	141	50.7	<b><u>141</u></b>	<b><u>50.7</u></b>	141	50.5	141	50.7	<b><u>141</u></b>	<b><u>50.7</u></b>	141	50.5
436.cactusADM	<b><u>19.6</u></b>	<b><u>609</u></b>	19.8	602	19.4	615	<b><u>19.6</u></b>	<b><u>609</u></b>	19.8	602	19.4	615
437.leslie3d	35.6	264	30.6	307	<b><u>33.4</u></b>	<b><u>281</u></b>	35.6	264	30.6	307	<b><u>33.4</u></b>	<b><u>281</u></b>
444.namd	289	27.8	289	27.8	<b><u>289</u></b>	<b><u>27.8</u></b>	<b><u>283</u></b>	<b><u>28.4</u></b>	283	28.4	283	28.3
447.dealII	170	67.2	<b><u>170</u></b>	<b><u>67.2</u></b>	169	67.9	170	67.2	<b><u>170</u></b>	<b><u>67.2</u></b>	169	67.9
450.soplex	153	54.7	154	54.3	<b><u>153</u></b>	<b><u>54.5</u></b>	153	54.7	154	54.3	<b><u>153</u></b>	<b><u>54.5</u></b>
453.povray	100	53.0	<b><u>99.9</u></b>	<b><u>53.3</u></b>	99.5	53.5	82.4	64.6	<b><u>82.6</u></b>	<b><u>64.4</u></b>	82.7	64.3
454.calculix	149	55.5	148	55.6	<b><u>149</u></b>	<b><u>55.5</u></b>	138	59.9	<b><u>138</u></b>	<b><u>59.9</u></b>	138	59.9
459.GemsFDTD	50.2	211	<b><u>50.4</u></b>	<b><u>211</u></b>	50.6	210	46.1	230	<b><u>46.3</u></b>	<b><u>229</u></b>	46.9	226
465.tonto	224	44.0	223	44.2	<b><u>223</u></b>	<b><u>44.0</u></b>	181	54.5	<b><u>179</u></b>	<b><u>55.0</u></b>	179	55.0
470.lbm	23.2	592	23.6	582	<b><u>23.4</u></b>	<b><u>587</u></b>	23.2	592	23.6	582	<b><u>23.4</u></b>	<b><u>587</u></b>
481.wrf	90.2	124	<b><u>90.6</u></b>	<b><u>123</u></b>	91.0	123	90.2	124	<b><u>90.6</u></b>	<b><u>123</u></b>	91.0	123
482.sphinx3	217	89.9	220	88.7	<b><u>220</u></b>	<b><u>88.7</u></b>	222	87.9	217	89.7	<b><u>217</u></b>	<b><u>89.6</u></b>

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  
runspec command invoked through numactl i.e.:  
numactl --interleave=all runspec <etc>  
Disabled unused Linux services through "stop\_services.sh" before running.

## Platform Notes

BIOS Configuration:  
HP Power Profile set to Maximum Performance  
Memory Power Savings Mode set to Maximum Performance  
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**Test date:** Feb-2014  
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**Software Availability:** Sep-2013

### Platform Notes (Continued)

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  
Intel HyperThreading set to Disabled  
Sysinfo program /cpu2006/config/sysinfo.rev6818  
\$Rev: 6818 \$ \$Date:: 2012-07-17 #\$ e86d102572650a6e4d596a3cee98f191  
running on dl360p-gen8-sles11 Mon May 5 13:59:44 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 E5-2667 v2 @ 3.30GHz
 2 "physical id"s (chips)
 16 "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 : 8
  siblings  : 8
  physical 0: cores 1 2 3 4 8 9 10 11
  physical 1: cores 1 2 3 4 8 9 10 11
cache size : 25600 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 May 2 14:38 last=S
```

```
SPEC is set to: /cpu2006
Filesystem      Type  Size  Used Avail Use% Mounted on
/dev/sda3       ext3  365G  15G  332G   5% /
```

Additional information from dmidecode:  
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## Platform Notes (Continued)

BIOS HP P71 12/20/2013

Memory:

16x HP 712382-071 8 GB 1866 MHz

8x UNKNOWN NOT AVAILABLE

(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 one line reading as:

16x HP 712382-071 8 GB 1866 MHz 2 rank

## General Notes

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

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

KMP\_AFFINITY=granularity = fine, compact

OMP\_NUM\_THREADS = "16"

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

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## Base Portability Flags (Continued)

```

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-revD.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-revD.xml>

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