



# SPEC<sup>®</sup> CFP2006 Result

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## Hewlett-Packard Company

**SPECfp<sup>®</sup>2006 = 106**

ProLiant DL580 Gen8  
(2.80 GHz, Intel Xeon E7-4890 v2)

**SPECfp\_base2006 = 101**

CPU2006 license: 3

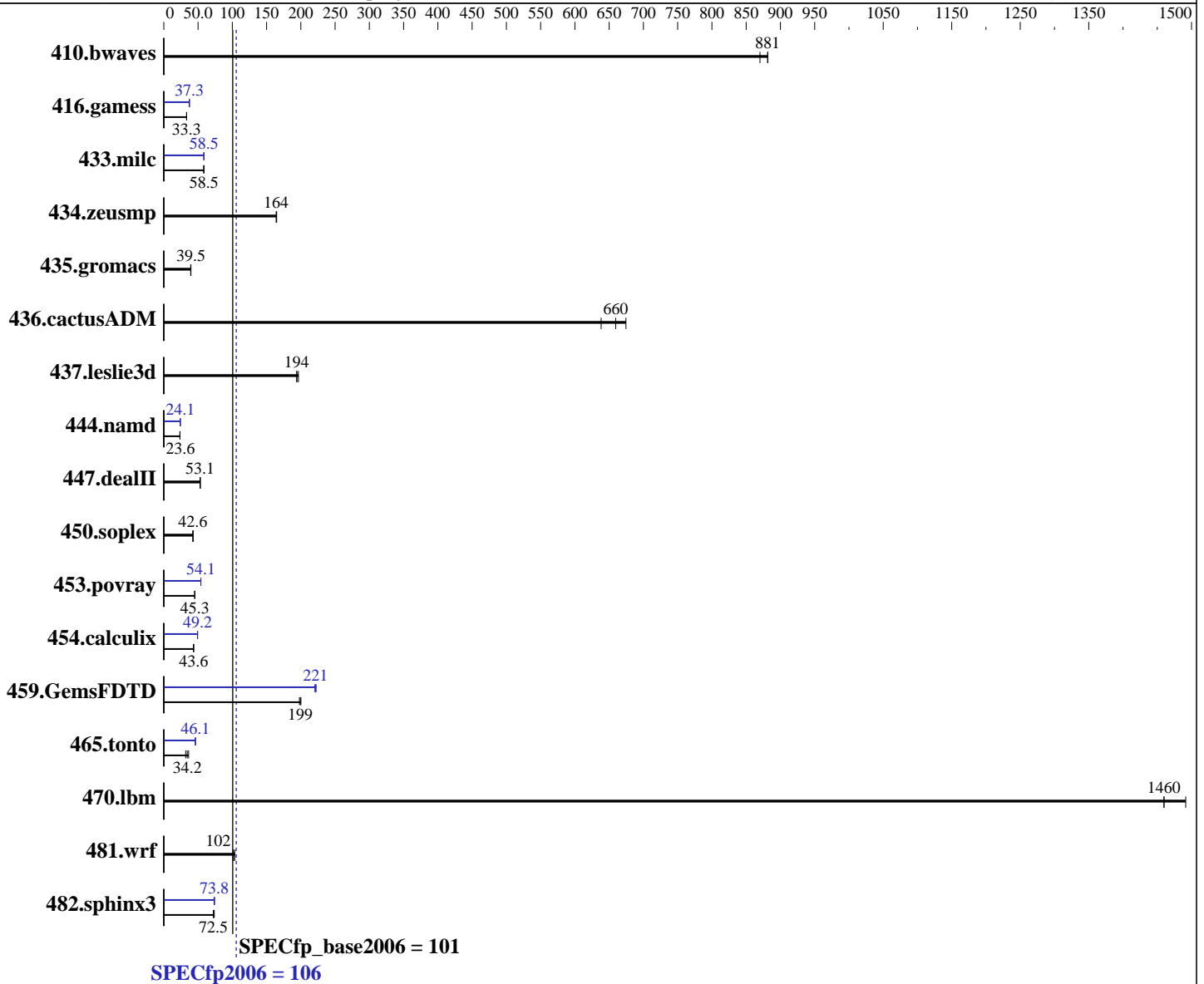
Test date: Feb-2014

Test sponsor: Hewlett-Packard Company

Hardware Availability: Feb-2014

Tested by: Hewlett-Packard Company

Software Availability: Feb-2013



### Hardware

CPU Name: Intel Xeon E7-4890 v2  
 CPU Characteristics: Intel Turbo Boost Technology up to 3.40 GHz  
 CPU MHz: 2800  
 FPU: Integrated  
 CPU(s) enabled: 60 cores, 4 chips, 15 cores/chip  
 CPU(s) orderable: 2,4 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: 37.5 MB I+D on chip per chip  
Other Cache: None  
Memory: 1 TB (64 x 16 GB 2Rx4 PC3-14900R-13, ECC, running at 1333 MHz and CL9)  
Disk Subsystem: 2 x 500 GB SAS, 10 K RPM, RAID 1  
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>15.4</b>	<b>881</b>	15.4	881	15.6	870	<b>15.4</b>	<b>881</b>	15.4	881	15.6	870
416.gamess	<b>588</b>	<b>33.3</b>	588	33.3	588	33.3	524	37.4	<b>524</b>	<b>37.3</b>	525	37.3
433.milc	158	58.2	157	58.6	<b>157</b>	<b>58.5</b>	<b>157</b>	<b>58.5</b>	156	58.7	157	58.4
434.zeusmp	55.2	165	55.4	164	<b>55.4</b>	<b>164</b>	55.2	165	55.4	164	<b>55.4</b>	<b>164</b>
435.gromacs	182	39.2	181	39.6	<b>181</b>	<b>39.5</b>	182	39.2	181	39.6	<b>181</b>	<b>39.5</b>
436.cactusADM	18.7	638	<b>18.1</b>	<b>660</b>	17.7	674	18.7	638	<b>18.1</b>	<b>660</b>	17.7	674
437.leslie3d	47.8	197	48.4	194	<b>48.4</b>	<b>194</b>	47.8	197	48.4	194	<b>48.4</b>	<b>194</b>
444.namd	<b>340</b>	<b>23.6</b>	340	23.6	340	23.6	<b>333</b>	<b>24.1</b>	334	24.0	333	24.1
447.dealII	<b>216</b>	<b>53.1</b>	215	53.3	216	52.9	<b>216</b>	<b>53.1</b>	215	53.3	216	52.9
450.soplex	196	42.6	195	42.7	<b>196</b>	<b>42.6</b>	196	42.6	195	42.7	<b>196</b>	<b>42.6</b>
453.povray	117	45.4	118	45.0	<b>118</b>	<b>45.3</b>	98.3	54.1	98.4	54.0	<b>98.4</b>	<b>54.1</b>
454.calculix	189	43.6	191	43.3	<b>189</b>	<b>43.6</b>	<b>168</b>	<b>49.2</b>	167	49.3	168	49.2
459.GemsFDTD	53.0	200	<b>53.2</b>	<b>199</b>	53.6	198	48.1	220	47.7	222	<b>47.9</b>	<b>221</b>
465.tonto	<b>288</b>	<b>34.2</b>	272	36.2	308	32.0	214	46.1	213	46.1	<b>213</b>	<b>46.1</b>
470.lbm	<b>9.41</b>	<b>1460</b>	9.21	1490	9.41	1460	<b>9.41</b>	<b>1460</b>	9.21	1490	9.41	1460
481.wrf	110	102	<b>110</b>	<b>102</b>	108	104	110	102	<b>110</b>	<b>102</b>	108	104
482.sphinx3	<b>269</b>	<b>72.5</b>	270	72.2	264	73.7	<b>264</b>	<b>73.8</b>	263	74.1	266	73.4

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

## Platform Notes

BIOS Configuration:  
HP Power Profile was set to Maximum Performance  
Intel Hyperthreading Options was set to Disabled  
Memory Double Refresh Rate was set to Disabled  
Processor Power and Utilization Monitoring was set to Disabled  
Sysinfo program /home/cpu2006/config/sysinfo.rev6874.hp  
\$Rev: 6874 \$ \$Date:: 2013-11-20 #\$ e05b96ddac6c3d74bfe176502a0a2391

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**Software Availability:** Feb-2013

### Platform Notes (Continued)

running on dl580-rwen Mon Feb 10 00:35:52 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 E7-4890 v2 @ 2.80GHz
 4 "physical id"s (chips)
 60 "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 : 15
  siblings  : 15
 physical 0: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
 physical 1: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
 physical 2: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
 physical 3: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
cache size : 38400 KB
```

```
From /proc/meminfo
MemTotal:      1058730268 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 dl580-rwen 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 Feb 9 07:27 last=S
```

```
SPEC is set to: /home/cpu2006
Filesystem      Type  Size  Used Avail Use% Mounted on
/dev/sdb3       ext3  275G  8.7G  265G   4% /
```

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 P79 01/15/2001

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## Platform Notes (Continued)

Memory:

64x HP 712383-081 16 GB 1866 MHz, configured at 1333 MHz  
32x UNKNOWN NOT AVAILABLE

(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 = "60"

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

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## Base Portability Flags (Continued)

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

## 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.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

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>

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