



# SPEC® CFP2006 Result

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## Hewlett-Packard Company

SPECfp®2006 = **64.8**

ProLiant DL380p Gen8  
(2.00 GHz, Intel Xeon E5-2620)

SPECfp\_base2006 = **61.5**

CPU2006 license: 3

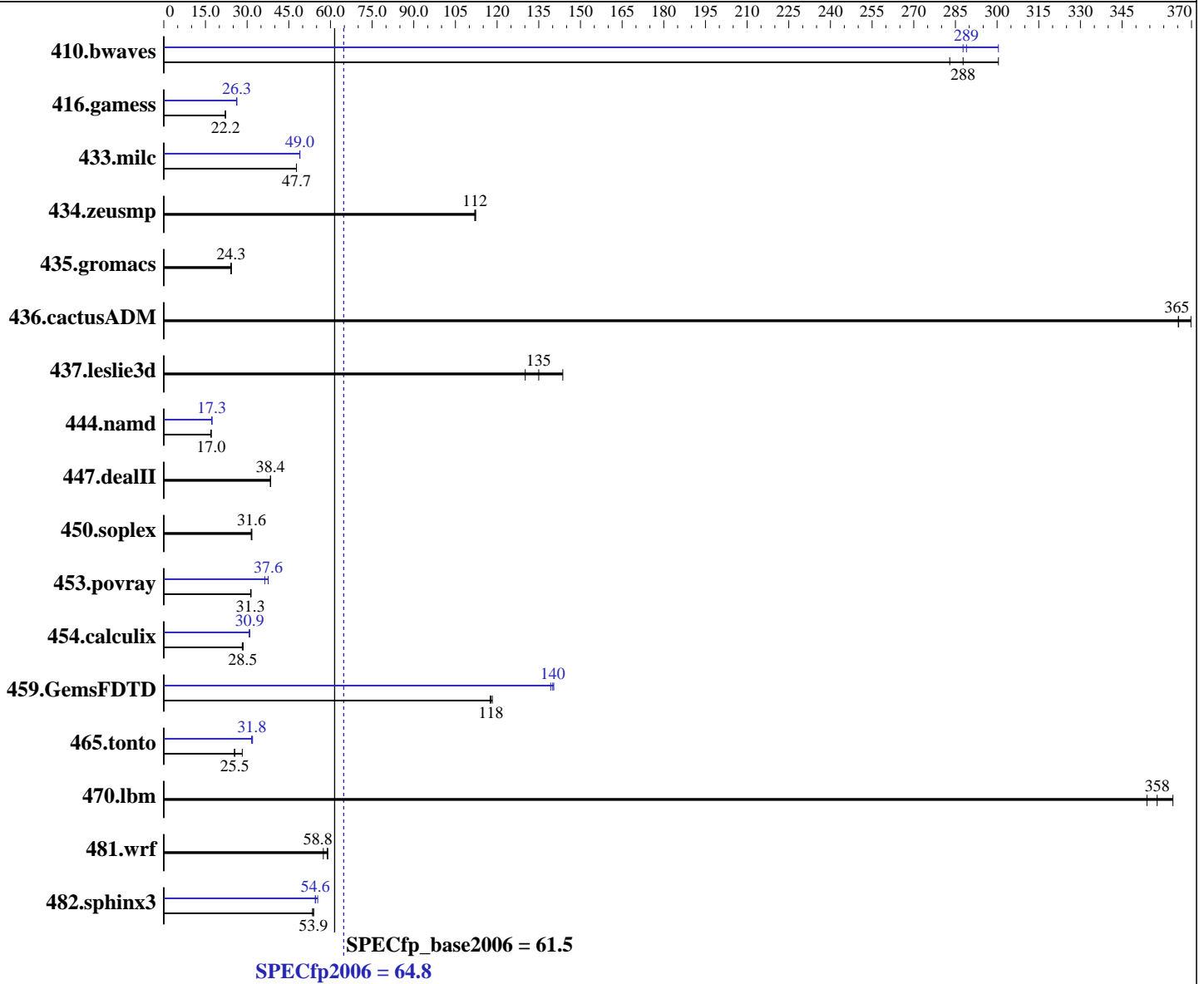
Test date: Jul-2012

Test sponsor: Hewlett-Packard Company

Hardware Availability: Jun-2012

Tested by: Hewlett-Packard Company

Software Availability: Mar-2012



### Hardware

CPU Name: Intel Xeon E5-2620  
 CPU Characteristics: Intel Turbo Boost Technology up to 2.50 GHz  
 CPU MHz: 2000  
 FPU: Integrated  
 CPU(s) enabled: 12 cores, 2 chips, 6 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: Red Hat Enterprise Linux Server release 6.2, (Santiago)  
 Kernel 2.6.32-220.el6.x86\_64  
 Compiler: C/C++: Version 12.1.2.273 of Intel C++ Studio XE for Linux;  
 Fortran: Version 12.1.2.273 of Intel Fortran Studio XE for Linux  
 Auto Parallel: Yes  
 File System: ext4

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L3 Cache: 15 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: 2 x 146 GB 15 K SAS, RAID 1  
Other Hardware: None

System State: Run level 3 (multi-user)  
Base Pointers: 32/64-bit  
Peak Pointers: 32/64-bit  
Other Software: HP Array Configuration Utility, CLI version

## Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	48.0	283	45.2	300	<b>47.2</b>	<b>288</b>	45.2	300	47.2	288	<b>47.0</b>	<b>289</b>
416.gamess	886	22.1	<b>880</b>	<b>22.2</b>	879	22.3	746	26.2	<b>746</b>	<b>26.3</b>	746	26.3
433.milc	192	47.8	<b>192</b>	<b>47.7</b>	192	47.7	187	49.0	187	49.0	<b>187</b>	<b>49.0</b>
434.zeusmp	81.2	112	81.0	112	<b>81.2</b>	<b>112</b>	81.2	112	81.0	112	<b>81.2</b>	<b>112</b>
435.gromacs	<b>294</b>	<b>24.3</b>	294	24.3	295	24.2	<b>294</b>	<b>24.3</b>	294	24.3	295	24.2
436.cactusADM	32.7	365	<b>32.7</b>	<b>365</b>	32.3	370	32.7	365	<b>32.7</b>	<b>365</b>	32.3	370
437.leslie3d	<b>69.6</b>	<b>135</b>	65.4	144	72.2	130	<b>69.6</b>	<b>135</b>	65.4	144	72.2	130
444.namd	471	17.0	<b>471</b>	<b>17.0</b>	471	17.0	463	17.3	<b>463</b>	<b>17.3</b>	464	17.3
447.dealII	297	38.5	<b>298</b>	<b>38.4</b>	298	38.4	297	38.5	<b>298</b>	<b>38.4</b>	298	38.4
450.soplex	265	31.5	263	31.7	<b>264</b>	<b>31.6</b>	265	31.5	263	31.7	<b>264</b>	<b>31.6</b>
453.povray	169	31.4	170	31.3	<b>170</b>	<b>31.3</b>	<b>142</b>	<b>37.6</b>	142	37.6	146	36.4
454.calculix	<b>290</b>	<b>28.5</b>	292	28.2	289	28.6	268	30.7	267	30.9	<b>267</b>	<b>30.9</b>
459.GemsFDTD	89.7	118	90.3	117	<b>90.1</b>	<b>118</b>	<b>75.8</b>	<b>140</b>	76.2	139	75.6	140
465.tonto	387	25.4	348	28.2	<b>385</b>	<b>25.5</b>	<b>310</b>	<b>31.8</b>	308	32.0	311	31.6
470.lbm	<b>38.4</b>	<b>358</b>	38.8	354	37.8	363	<b>38.4</b>	<b>358</b>	38.8	354	37.8	363
481.wrf	<b>190</b>	<b>58.8</b>	189	59.1	195	57.4	<b>190</b>	<b>58.8</b>	189	59.1	195	57.4
482.sphinx3	362	53.9	364	53.5	<b>362</b>	<b>53.9</b>	<b>357</b>	<b>54.6</b>	352	55.4	357	54.6

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/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>
Drive Write Cache set to Enabled in HP Array Configuration Utility, CLI version
Accelerator Ratio for Reads/Writes set to = 100% Read / 0% Write in HP Array Configuration Utility, CLI version
```



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### Platform Notes

#### BIOS Configuration:

```

HP Power Profile set to Custom
Intel HyperThreading set to Disabled
Energy/Performance Bias is set to Maximum Performance
Thermal Configuration set to Maximum Cooling
Collaborative Power Control set to Disabled
Processor Power and Utilization Monitoring set to Disabled
Sysinfo program /cpu2006/config/sysinfo.rev6800
$Rev: 6800 $ $Date:: 2011-10-11 #$ 6f2ebdff5032aaa42e583f96b07f99d3
running on DL380G8-4 Sat Jul 28 01:21:02 2012

```

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 E5-2620 0 @ 2.00GHz
 2 "physical id"s (chips)
 12 "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 : 6
  siblings  : 6
  physical 0: cores 0 1 2 3 4 5
  physical 1: cores 0 1 2 3 4 5
cache size : 15360 KB

```

#### From /proc/meminfo

```

MemTotal:      132119936 kB
HugePages_Total:      0
Hugepagesize:    2048 kB

```

#### /usr/bin/lsb\_release -d

Red Hat Enterprise Linux Server release 6.2 (Santiago)

#### From /etc/\*release\* /etc/\*version\*

```

redhat-release: Red Hat Enterprise Linux Server release 6.2 (Santiago)
system-release: Red Hat Enterprise Linux Server release 6.2 (Santiago)
system-release-cpe: cpe:/o:redhat:enterprise_linux:6server:ga:server

```

#### uname -a:

```

Linux DL380G8-4 2.6.32-220.el6.x86_64 #1 SMP Wed Nov 9 08:03:13 EST 2011
x86_64 x86_64 x86_64 GNU/Linux

```

#### run-level 3 Jul 27 17:27 last=5

#### SPEC is set to: /cpu2006

```

Filesystem      Type      Size  Used Avail Use% Mounted on
/dev/mapper/vg_rh62-lv_root
ext4            50G    8.9G   38G  19% /

```

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## Platform Notes (Continued)

Additional information from dmidecode:

BIOS HP P70 08/06/2012

Memory:

16x HP Not Specified 8 GB 1600 MHz 2 rank

(End of data from sysinfo program)

## General Notes

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

KMP\_AFFINITY = "granularity=fine,scatter"

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

OMP\_NUM\_THREADS = "12"

Binaries compiled on a system with 1x Core i7-860 CPU + 8GB  
memory using RHEL5.5

## 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

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## Base Portability Flags (Continued)

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 -static -parallel -opt-prefetch  
-ansi-alias

C++ benchmarks:

-xAVX -ipo -O3 -no-prec-div -static -opt-prefetch -ansi-alias

Fortran benchmarks:

-xAVX -ipo -O3 -no-prec-div -static -parallel -opt-prefetch

Benchmarks using both Fortran and C:

-xAVX -ipo -O3 -no-prec-div -static -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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**Software Availability:** Mar-2012

## 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) -static -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: -xAVX -ipo -O3 -no-prec-div -opt-prefetch -parallel  
-static

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- -static

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

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## Peak Optimization Flags (Continued)

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/HP-Platform-Flags-Intel-V1.2-A.20120425.html>

<http://www.spec.org/cpu2006/flags/Intel-ic12.1-official-linux64.20120425.html>

You can also download the XML flags sources by saving the following links:

<http://www.spec.org/cpu2006/flags/HP-Platform-Flags-Intel-V1.2-A.20120425.xml>

<http://www.spec.org/cpu2006/flags/Intel-ic12.1-official-linux64.20120425.xml>

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For other inquiries, please contact [webmaster@spec.org](mailto:webmaster@spec.org).

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