SPEC® CFP2006 Result
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Hewlett-Packard Company

ProLiant BL460c Gen8
(3.30 GHz, Intel Xeon E5-2667 v2)

$SPECfp^{®}2006 =$ 110

$SPECfp\_base2006 =$ 105

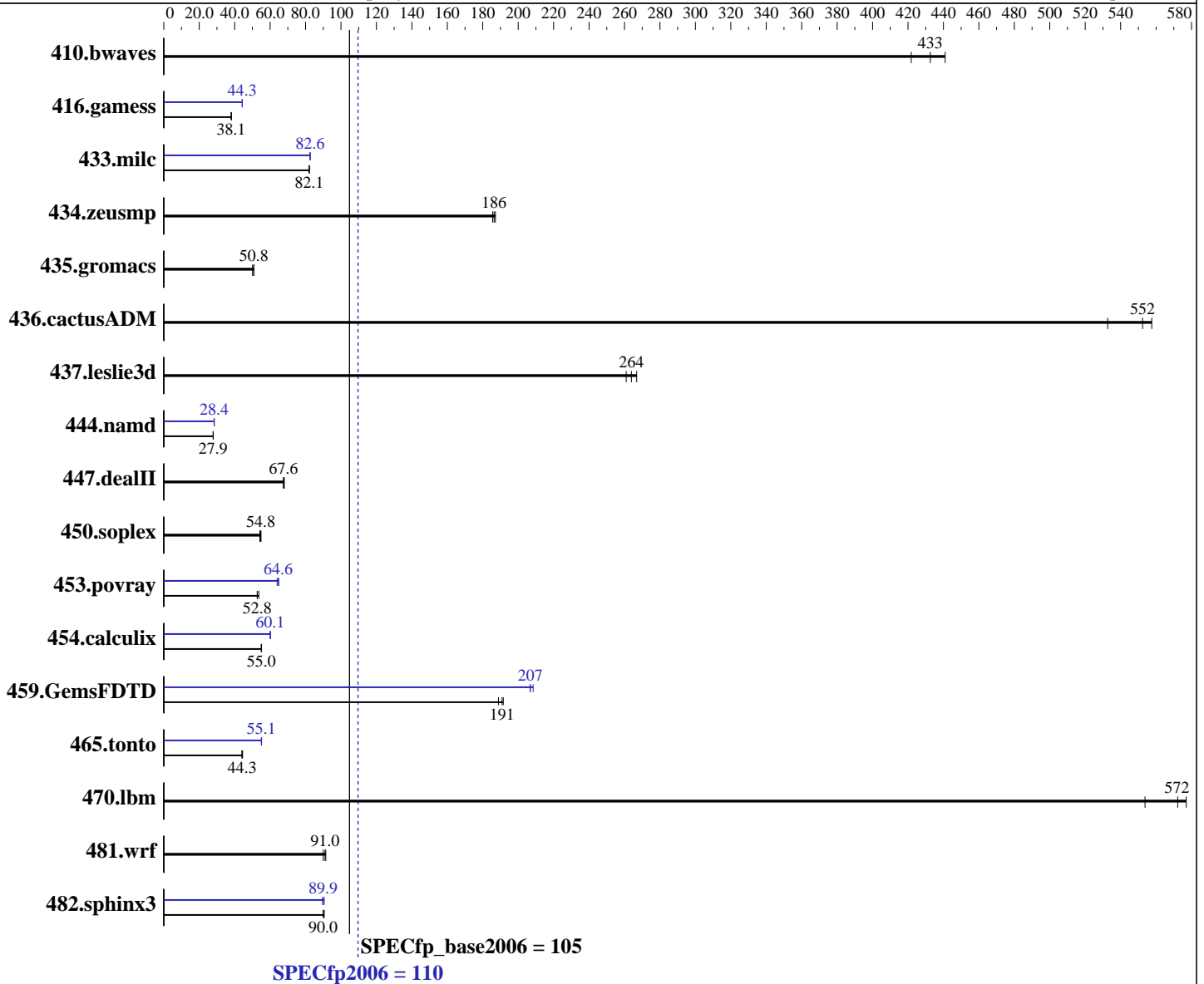|	
CPU2006 license: 3	**Test date:** Sep-2013
Test sponsor: Hewlett-Packard Company	**Hardware Availability:** Sep-2013
Tested by: Hewlett-Packard Company	**Software Availability:** Sep-2013

0 20.0 40.0 60.0 80.0 100 120 140 160 180 200 220 240 260 280 300 320 340 360 380 400 420 440 460 480 500 520 540   580

- 410.bwaves 433
- 416.gamess 44.3 / 38.1
- 433.milc 82.6 / 82.1
- 434.zeusmp 186
- 435.gromacs 50.8
- 436.cactusADM 552
- 437.leslie3d 264
- 444.namd 28.4 / 27.9
- 447.dealII 67.6
- 450.soplex 54.8
- 453.povray 64.6 / 52.8
- 454.calculix 60.1 / 55.0
- 459.GemsFDTD 207 / 191
- 465.tonto 55.1 / 44.3
- 470.lbm 572
- 481.wrf 91.0
- 482.sphinx3 89.9 / 90.0

SPECfp_base2006 = 105
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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

Continued on next page

Software

Operating System:	SUSE Linux Enterprise Server 11 (x86_64) Kernel version3.0.76-0.11-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)

Continued on next page

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L3 Cache: 25 MB I+D on chip per chip	Base Pointers: 64-bit
Other Cache: None	Peak Pointers: 32/64-bit
Memory: 128 GB (16 x 8 GB 2Rx4 PC3-14900R-13, ECC)	Other Software: None
Disk Subsystem: 1 x 200 GB SAS SSD, RAID 1	
Other Hardware: None	

Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	32.2	422	30.8	441	**31.4**	**433**	32.2	422	30.8	441	**31.4**	**433**
416.gamess	514	38.1	**514**	**38.1**	514	38.1	442	44.3	442	44.3	**442**	**44.3**
433.milc	112	82.1	**112**	**82.1**	112	82.2	111	82.6	**111**	**82.6**	111	82.6
434.zeusmp	**48.8**	**186**	48.6	187	49.0	186	**48.8**	**186**	48.6	187	49.0	186
435.gromacs	143	50.0	140	50.8	**140**	**50.8**	143	50.0	140	50.8	**140**	**50.8**
436.cactusADM	21.4	558	**21.6**	**552**	22.4	533	21.4	558	**21.6**	**552**	22.4	533
437.leslie3d	35.2	267	**35.6**	**264**	36.0	261	35.2	267	**35.6**	**264**	36.0	261
444.namd	**288**	**27.9**	288	27.9	288	27.9	282	28.4	**282**	**28.4**	282	28.4
447.dealII	168	68.0	**169**	**67.6**	170	67.5	168	68.0	**169**	**67.6**	170	67.5
450.soplex	152	54.8	154	54.2	**152**	**54.8**	152	54.8	154	54.2	**152**	**54.8**
453.povray	**101**	**52.8**	101	52.7	99.2	53.6	**82.3**	**64.6**	82.0	64.8	83.2	63.9
454.calculix	150	55.2	**150**	**55.0**	150	55.0	137	60.1	**137**	**60.1**	137	60.1
459.GemsFDTD	56.2	189	**55.6**	**191**	55.4	192	**51.3**	**207**	51.3	207	50.9	208
465.tonto	**222**	**44.3**	221	44.5	223	44.0	179	55.0	**179**	**55.1**	178	55.2
470.lbm	23.8	577	**24.0**	**572**	24.8	554	23.8	577	**24.0**	**572**	24.8	554
481.wrf	122	91.4	**123**	**91.0**	124	90.0	122	91.4	**123**	**91.0**	124	90.0
482.sphinx3	215	90.6	217	90.0	**217**	**90.0**	217	89.6	**217**	**89.9**	215	90.6

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.
```

Platform Notes

```
BIOS Configuration:
 Intel HyperThreading set to Disabled
 HP Power Profile set to Maximum Performance
```

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Platform Notes (Continued)

```
 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 BL460cGen8-Sys3 Sun Sep 22 23:06:39 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 E5-2667 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:       132130196 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 BL460cGen8-Sys3 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 Sep 21 22:57 last=S

 SPEC is set to: /cpu2006
    Filesystem      Type  Size  Used Avail Use% Mounted on
    /dev/sda3       ext3  176G  9.3G  158G   6% /
```

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Platform Notes (Continued)

```
   Additional information from dmidecode:
     BIOS HP I31 09/08/2013
     Memory:
     16x HP 712382-071 8 GB 1866 MHz

   (End of data from sysinfo program)
   Regarding the sysinfo display about the CPU cores from /proc/cpuinfo, the correct
   mapping should display as cores 0 through 11. The mapping should read as the
   following:
     physical 0: cores 0 1 2 3 4 5 6 7
     physical 1: cores 0 1 2 3 4 5 6 7
```

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 = "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
```

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Base Portability Flags (Continued)

```
     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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Software Availability: Sep-2013

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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