



SPEC[®] CFP2006 Result

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Hewlett-Packard Company

SPECfp[®]2006 = 102

ProLiant BL660c Gen8
(3.30 GHz, Intel Xeon E5-4627 v2)

SPECfp_base2006 = 97.7

CPU2006 license: 3

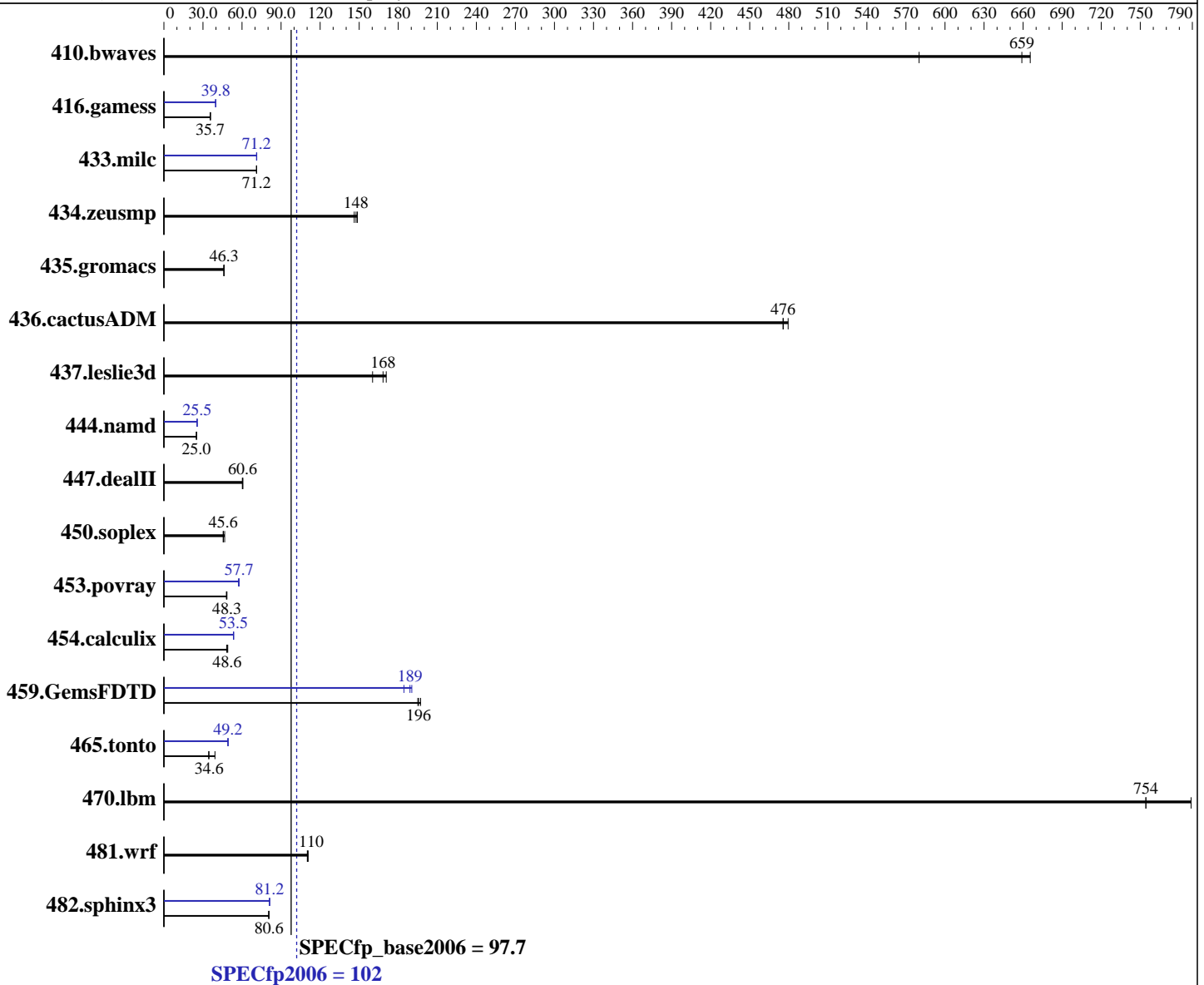
Test date: Feb-2014

Test sponsor: Hewlett-Packard Company

Hardware Availability: Mar-2014

Tested by: Hewlett-Packard Company

Software Availability: Nov-2013



Hardware

CPU Name: Intel Xeon E5-4627 v2
 CPU Characteristics: Intel Turbo Boost Technology up to 3.60 GHz
 CPU MHz: 3300
 FPU: Integrated
 CPU(s) enabled: 32 cores, 4 chips, 8 cores/chip
 CPU(s) orderable: 2,4 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: 16 MB I+D on chip per chip
Other Cache: None
Memory: 256 GB (32 x 8 GB 2Rx4 PC3-14900R-13, ECC)
Disk Subsystem: 1 x 500 GB 7200 RPM SATA, 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	<u>20.6</u>	<u>659</u>	23.4	580	20.4	665	<u>20.6</u>	<u>659</u>	23.4	580	20.4	665
416.gamess	<u>549</u>	<u>35.7</u>	549	35.7	549	35.7	493	39.7	<u>492</u>	<u>39.8</u>	492	39.8
433.milc	129	71.1	<u>129</u>	<u>71.2</u>	129	71.2	129	71.3	129	71.2	<u>129</u>	<u>71.2</u>
434.zeusmp	62.2	146	61.2	149	<u>61.6</u>	<u>148</u>	62.2	146	61.2	149	<u>61.6</u>	<u>148</u>
435.gromacs	154	46.3	<u>154</u>	<u>46.3</u>	156	45.9	154	46.3	<u>154</u>	<u>46.3</u>	156	45.9
436.cactusADM	25.1	476	24.9	480	<u>25.1</u>	<u>476</u>	25.1	476	24.9	480	<u>25.1</u>	<u>476</u>
437.leslie3d	<u>55.8</u>	<u>168</u>	58.6	160	55.0	171	<u>55.8</u>	<u>168</u>	58.6	160	55.0	171
444.namd	321	25.0	<u>321</u>	<u>25.0</u>	321	25.0	314	25.5	314	25.5	<u>314</u>	<u>25.5</u>
447.dealII	<u>189</u>	<u>60.6</u>	189	60.6	190	60.2	<u>189</u>	<u>60.6</u>	189	60.6	190	60.2
450.soplex	179	46.7	183	45.5	<u>183</u>	<u>45.6</u>	179	46.7	183	45.5	<u>183</u>	<u>45.6</u>
453.povray	110	48.4	111	48.0	<u>110</u>	<u>48.3</u>	<u>92.3</u>	<u>57.7</u>	92.2	57.7	92.8	57.3
454.calculix	168	49.0	<u>170</u>	<u>48.6</u>	171	48.2	<u>154</u>	<u>53.5</u>	154	53.5	154	53.4
459.GemsFDTD	<u>54.2</u>	<u>196</u>	53.8	197	54.4	195	55.7	190	<u>56.1</u>	<u>189</u>	57.5	184
465.tonto	286	34.4	251	39.2	<u>284</u>	<u>34.6</u>	<u>200</u>	<u>49.2</u>	200	49.1	199	49.4
470.lbm	<u>18.2</u>	<u>754</u>	17.4	789	18.2	754	<u>18.2</u>	<u>754</u>	17.4	789	18.2	754
481.wrf	101	111	101	110	<u>101</u>	<u>110</u>	101	111	101	110	<u>101</u>	<u>110</u>
482.sphinx3	242	80.5	241	80.7	<u>242</u>	<u>80.6</u>	240	81.3	240	81.1	<u>240</u>	<u>81.2</u>

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

Platform Notes

BIOS Configuration:
HP Power Regulator was set to HP Static High Performance Mode
HP Power Profile was set to Maximum Performance
Thermal Configuration was set to Maximum Cooling
Collaborative Power Control was set to Disabled
Dynamic Power Capping Functionality was set to Disabled

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Platform Notes (Continued)

Memory Refresh Rate was set to 1x Refresh
Sysinfo program /home/cpu2006/config/sysinfo.rev6874.hp
\$Rev: 6874 \$ \$Date:: 2013-11-20 #\$ e05b96ddac6c3d74bfe176502a0a2391
running on bl660-bl4-rwen Sat Feb 22 00:10:52 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 E5-4627 v2 @ 3.30GHz
 4 "physical id"s (chips)
 32 "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 0 1 2 3 4 5 6 7
physical 1: cores 0 1 2 3 4 5 6 7
physical 2: cores 0 1 2 3 4 5 6 7
physical 3: cores 0 1 2 3 4 5 6 7
cache size : 16384 KB
```

```
From /proc/meminfo
MemTotal: 264505672 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 bl660-bl4-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 5 Feb 21 03:40 last=S
```

```
SPEC is set to: /home/cpu2006
Filesystem Type Size Used Avail Use% Mounted on
/dev/sda2 ext3 274G 8.3G 264G 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

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Platform Notes (Continued)

hardware, firmware, and the "DMTF SMBIOS" standard.

BIOS HP I32 02/02/2014

Memory:

32x HP 712382-071 8 GB 1866 MHz

(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 = "32"

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

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Base Portability Flags (Continued)

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

Peak Optimization Flags

C benchmarks:

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Peak Optimization Flags (Continued)

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

454.calculix: -xAVX -ipo -O3 -no-prec-div -auto-ilp32 -ansi-alias

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Peak Optimization Flags (Continued)

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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Tested with SPEC CPU2006 v1.2.
Report generated on Thu Jul 24 21:35:55 2014 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 11 March 2014.