



SPEC[®] CFP2006 Result

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Hewlett-Packard Company

SPECfp[®]2006 = **79.0**

ProLiant DL360e Gen8
(2.40 GHz, Intel Xeon E5-2470 v2)

SPECfp_base2006 = **76.3**

CPU2006 license: 3

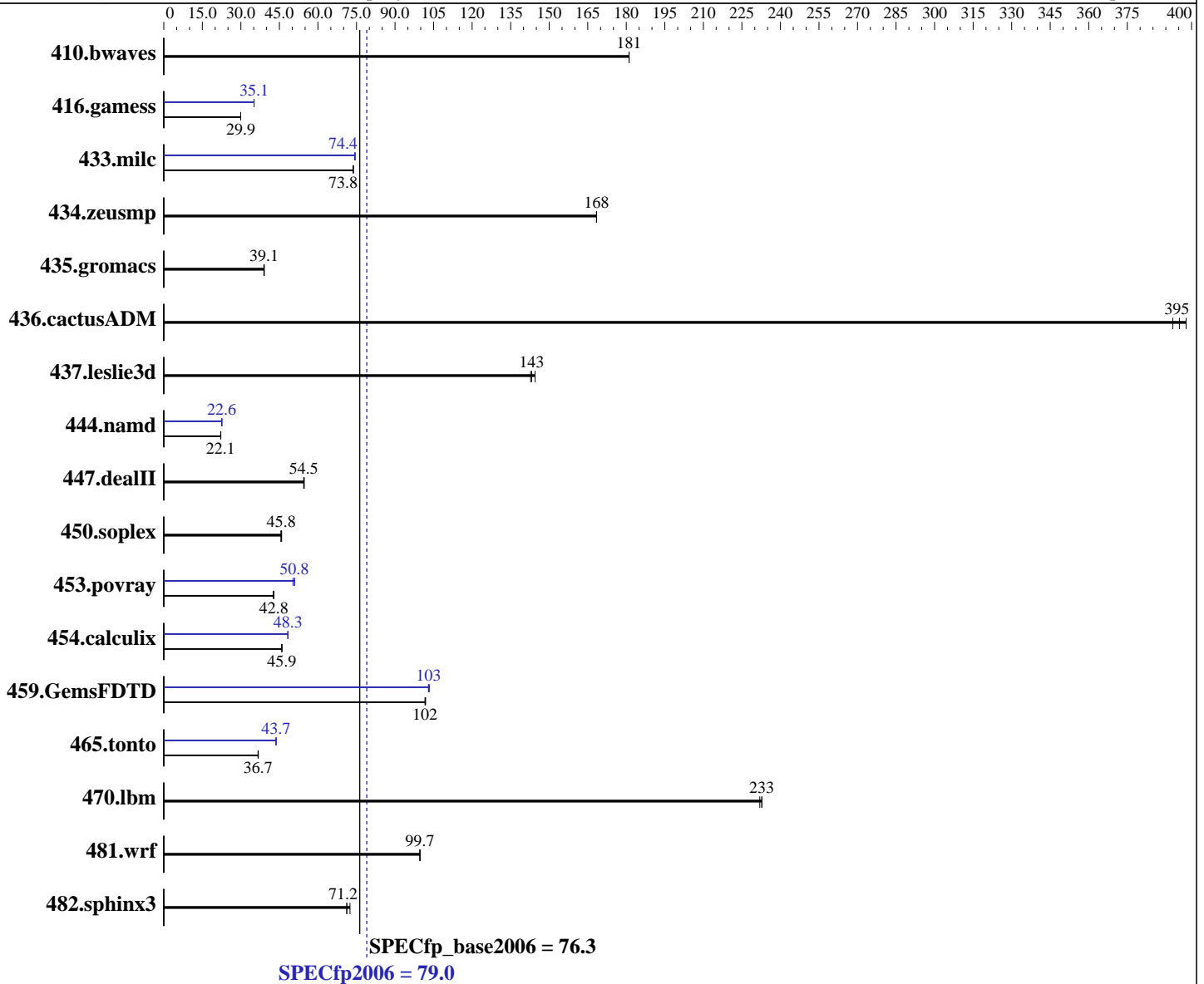
Test date: Dec-2013

Test sponsor: Hewlett-Packard Company

Hardware Availability: Jan-2014

Tested by: Hewlett-Packard Company

Software Availability: Sep-2013



Hardware

CPU Name: Intel Xeon E5-2470 v2
 CPU Characteristics: Intel Turbo Boost Technology up to 3.20 GHz
 CPU MHz: 2400
 FPU: Integrated
 CPU(s) enabled: 10 cores, 1 chip, 10 cores/chip
 CPU(s) orderable: 1,2 chips
 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) 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: 48 GB (6 x 8 GB 2Rx4 PC3-12800R-11, ECC)
Disk Subsystem: 4 x 300 GB 15 K SAS, RAID 5
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 | 75.0 | 181 | 75.0 | 181 | 75.0 | 181 | 75.0 | 181 | 75.0 | 181 | 75.0 | 181 |
| 416.gamess | 654 | 29.9 | 654 | 29.9 | 654 | 29.9 | 557 | 35.1 | 557 | 35.1 | 557 | 35.1 |
| 433.milc | 124 | 73.8 | 124 | 73.8 | 125 | 73.7 | 124 | 74.3 | 123 | 74.4 | 123 | 74.5 |
| 434.zeusmp | 54.0 | 168 | 54.0 | 168 | 54.0 | 168 | 54.0 | 168 | 54.0 | 168 | 54.0 | 168 |
| 435.gromacs | 183 | 39.1 | 183 | 38.9 | 183 | 39.1 | 183 | 39.1 | 183 | 38.9 | 183 | 39.1 |
| 436.cactusADM | 30.4 | 393 | 30.0 | 398 | 30.2 | 395 | 30.4 | 393 | 30.0 | 398 | 30.2 | 395 |
| 437.leslie3d | 65.6 | 143 | 65.0 | 145 | 65.8 | 143 | 65.6 | 143 | 65.0 | 145 | 65.8 | 143 |
| 444.namd | 361 | 22.2 | 362 | 22.1 | 362 | 22.1 | 355 | 22.6 | 355 | 22.6 | 355 | 22.6 |
| 447.dealII | 210 | 54.5 | 210 | 54.5 | 209 | 54.7 | 210 | 54.5 | 210 | 54.5 | 209 | 54.7 |
| 450.soplex | 182 | 45.9 | 183 | 45.6 | 182 | 45.8 | 182 | 45.9 | 183 | 45.6 | 182 | 45.8 |
| 453.povray | 124 | 42.9 | 124 | 42.8 | 125 | 42.6 | 105 | 50.8 | 106 | 50.3 | 104 | 50.9 |
| 454.calculix | 180 | 45.9 | 180 | 45.9 | 180 | 45.9 | 171 | 48.3 | 171 | 48.3 | 171 | 48.3 |
| 459.GemsFDTD | 104 | 102 | 104 | 102 | 104 | 102 | 103 | 103 | 103 | 103 | 103 | 103 |
| 465.tonto | 268 | 36.7 | 268 | 36.7 | 267 | 36.8 | 225 | 43.7 | 225 | 43.8 | 225 | 43.6 |
| 470.lbm | 59.2 | 232 | 59.0 | 233 | 59.0 | 233 | 59.2 | 232 | 59.0 | 233 | 59.0 | 233 |
| 481.wrf | 112 | 99.7 | 112 | 99.7 | 112 | 99.7 | 112 | 99.7 | 112 | 99.7 | 112 | 99.7 |
| 482.sphinx3 | 269 | 72.5 | 274 | 71.2 | 274 | 71.2 | 269 | 72.5 | 274 | 71.2 | 274 | 71.2 |

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:
Intel Hyperthreading Options was set to Disabled
HP Power Profile set to Maximum Performance
System Locality Information Table Gen8 was set to Enabled
Thermal Configuration set to Maximum Cooling
Processor Power and Utilization Monitoring set to Disabled
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Platform Notes (Continued)

Memory Refresh Rate was set to 1x
Sysinfo program /home/cpu2006/config/sysinfo.rev6819
\$Rev: 6818 \$ \$Date:: 2012-07-17 # \$ 6e76384576c25d0a81352b1f6b6d4262
running on dl360egen8rwen Sun Dec 8 04:19:39 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 E5-2470 v2 @ 2.40GHz
 1 "physical id"s (chips)
 10 "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 : 10
  siblings  : 10
  physical 0: cores 0 1 2 3 4 8 9 10 11 12
  cache size : 25600 KB
```

```
From /proc/meminfo
MemTotal:      49260216 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 dl360egen8rwen 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 Dec 7 22:22 last=S
```

```
SPEC is set to: /home/cpu2006
Filesystem      Type  Size  Used Avail Use% Mounted on
/dev/sda2       ext3  549G  8.6G  539G   2% /
```

```
Additional information from dmidecode:
BIOS HP P73 11/12/2013
Memory:
6x HP 689911-071 8 GB 1600 MHz
6x UNKNOWN NOT AVAILABLE
```

(End of data from sysinfo program)
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Platform Notes (Continued)

Regarding the sysinfo display about the memory installed, the correct amount of memory is 48 GB and the dmidecode description should have one line reading as:
6x HP 689911-071 8 GB 1600 MHz

General Notes

Environment variables set by runspec before the start of the run:
KMP_AFFINITY = "granularity=fine,compact,1,0"
LD_LIBRARY_PATH = "/home/cpu2006/libs/32:/home/cpu2006/libs/64:/home/cpu2006/sh"
OMP_NUM_THREADS = "10"

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
470.lbm: -DSPEC_CPU_LP64
481.wrf: -DSPEC_CPU_LP64 -DSPEC_CPU_CASE_FLAG -DSPEC_CPU_LINUX

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Base Portability Flags (Continued)

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: basepeak = yes

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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