# SPEC® CFP2006 Result

## Hewlett-Packard Company

ProLiant DL560 Gen8
(3.30 GHz, Intel Xeon E5-4627 v2)

**SPECfp®2006 = 102**

**SPECfp_base2006 = 97.5**

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>SPECfp®2006</th>
<th>SPECfp_base2006</th>
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<td>410.bwaves</td>
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<tr>
<td>416.gamess</td>
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<tr>
<td>482.sphinx3</td>
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**SPECfp_base2006 = 97.5**

## 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

## Software

- **Operating System:** Red Hat Enterprise Linux Server release 6.5 (Santiago)
  Kernel 2.6.32-431.el6.x86_64
- **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:** ext4
Hewlett-Packard Company

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CPU2006 license: 3
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L3 Cache: 16 MB I+D on chip per chip
Other Cache: None
Memory: 512 GB (32 x 16 GB 2Rx4 PC3-14900R-13, ECC)
Disk Subsystem: 1 x 400 GB SAS SSD, RAID 0
Other Hardware: None

System State: Run level 3 (multi-user)
Base Pointers: 64-bit
Peak Pointers: 32/64-bit
Other Software: None

Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
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<td>80.7</td>
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</tbody>
</table>

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
HP Power Regulator was set to HP Static High Performance Mode
Minimum Processor Idle Power Core State set to C6 State
Collaborative Power Control was set to Disabled
Dynamic Power Capping Functionality was set to Disabled
Thermal Configuration was set to Maximum Cooling
Processor Power and Utilization Monitoring set to Disabled

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Platform Notes (Continued)

Memory Refresh Rate set to 1x Refresh
Sysinfo program /cpu2006/config/sysinfo.rev6818
$Rev: 6818 $ $Date:: 2012-07-17 #$ e86d102572850a6e4d596a3cee9f191

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
care.
  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:  529233796 kB
  HugePages_Total:       0
  Hugepagesize:       2048 kB

/usr/bin/lsb_release -d
  Red Hat Enterprise Linux Server release 6.5 (Santiago)

From /etc/*release* /etc/*version*
  redhat-release: Red Hat Enterprise Linux Server release 6.5 (Santiago)
  system-release: Red Hat Enterprise Linux Server release 6.5 (Santiago)

uname -a:
  Linux DL560-Gen8-IVB-EP4S.1JL 2.6.32-431.el6.x86_64 #1 SMP Sun Nov 10
  22:19:54 EST 2013 x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Feb 12 18:17

SPEC is set to: /cpu2006

Filesystem   Type  Size  Used Avail Use% Mounted on
/dev/sda3     ext4  365G  13G  334G  4%  /

Additional information from dmidecode:
  BIOS HP P77 02/02/2014
  Memory:
    32x HP 712383-081 16 GB 1866 MHz 2 rank
    16x UNKNOWN NOT AVAILABLE

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Platform Notes (Continued)

(End of data from sysinfo program)
Regarding the sysinfo display about the memory installed, the correct amount of memory is 512 GB and the dmidecode description should have one line reading as:
32x HP 712383-081 16 GB 1866 MHz 2 rank

General Notes

Environment variables set by runspec before the start of the run:
KMP_AFFINITY = "granularity=fine,compact"
LD_LIBRARY_PATH = "/cpu2006/libs/32:/cpu2006/libs/64:/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 -nofor_main
454.calculix: -DSPEC_CPU_LP64 -nofor_main
459.GemsFDTD: -DSPEC_CPU_LP64
465.tonto: -DSPEC_CPU_LP64
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Test date: Feb-2014
Hardware Availability: Mar-2014
Software Availability: Nov-2013

Base Portability Flags (Continued)

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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Software Availability: Nov-2013

Peak Optimization Flags (Continued)

470.lbm: basepeak = yes
482.sphinx3: -xAVX -ipo -O3 -no-prec-div -unroll2 -ansi-alias
-paral-lel

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: basepeak = yes
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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<td>Feb-2014</td>
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<td>Software Availability:</td>
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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-revB.20131009.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/HP-Platform-Flags-Intel-V1.2-revB.20131009.xml](http://www.spec.org/cpu2006/flags/HP-Platform-Flags-Intel-V1.2-revB.20131009.xml)

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For other inquiries, please contact webmaster@spec.org.

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