SPEC® CFP2006 Result
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Hewlett-Packard Company

ProLiant DL380p Gen8
(3.50 GHz, Intel Xeon E5-2637 v2)

$SPECfp^{®}2006 =$ 101

$SPECfp\_base2006 =$ 97.1
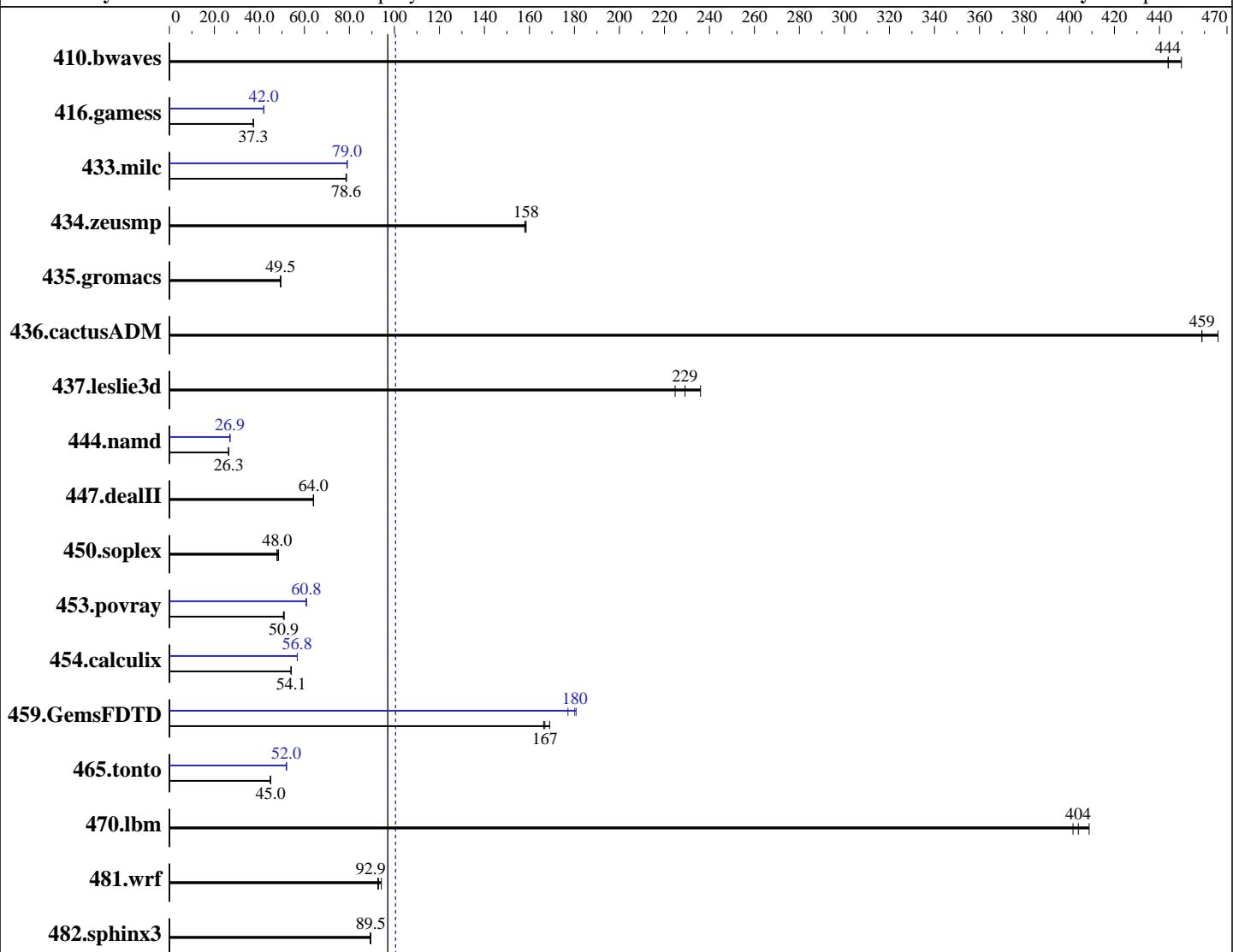
CPU2006 license: 3
Test sponsor: Hewlett-Packard Company
Tested by: Hewlett-Packard Company

Test date: Jan-2014
Hardware Availability: Dec-2013
Software Availability: Sep-2013

410.bwaves		444
416.gamess	42.0 / 37.3	
433.milc	79.0 / 78.6	
434.zeusmp	158	
435.gromacs	49.5	
436.cactusADM		459
437.leslie3d	229	
444.namd	26.9 / 26.3	
447.dealII	64.0	
450.soplex	48.0	
453.povray	60.8 / 50.9	
454.calculix	56.8 / 54.1	
459.GemsFDTD	180 / 167	
465.tonto	52.0 / 45.0	
470.lbm		404
481.wrf	92.9	
482.sphinx3	89.5	

SPECfp_base2006 = 97.1
SPECfp2006 = 101

Hardware
CPU Name: Intel Xeon E5-2637 v2
CPU Characteristics: Intel Turbo Boost Technology up to 3.80 GHz
CPU MHz: 3500
FPU: Integrated
CPU(s) enabled: 8 cores, 2 chips, 4 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) 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)

Continued on next page

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L3 Cache:	15 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 146 GB 15 K SAS, RAID 0		
Other Hardware:	None		

Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	30.6	444	30.2	450	**30.6**	**444**	30.6	444	30.2	450	**30.6**	**444**
416.gamess	**525**	**37.3**	525	37.3	525	37.3	466	42.0	**467**	**42.0**	467	41.9
433.milc	**117**	**78.6**	117	78.5	117	78.7	**116**	**79.0**	116	79.0	116	79.0
434.zeusmp	**57.4**	**158**	57.6	158	57.4	158	**57.4**	**158**	57.6	158	57.4	158
435.gromacs	144	49.5	**144**	**49.5**	145	49.3	144	49.5	**144**	**49.5**	145	49.3
436.cactusADM	**26.0**	**459**	26.0	459	25.6	466	**26.0**	**459**	26.0	459	25.6	466
437.leslie3d	41.8	225	39.8	236	**41.0**	**229**	41.8	225	39.8	236	**41.0**	**229**
444.namd	304	26.4	305	26.3	**305**	**26.3**	298	26.9	298	26.9	**298**	**26.9**
447.dealII	**179**	**64.0**	179	64.1	179	63.9	**179**	**64.0**	179	64.1	179	63.9
450.soplex	172	48.5	**174**	**48.0**	175	47.8	172	48.5	**174**	**48.0**	175	47.8
453.povray	105	50.7	**105**	**50.9**	104	51.0	**87.5**	**60.8**	87.3	60.9	87.5	60.8
454.calculix	153	54.1	**153**	**54.1**	153	54.1	145	56.9	**145**	**56.8**	145	56.8
459.GemsFDTD	62.8	169	**63.6**	**167**	63.8	166	59.9	177	58.7	181	**58.9**	**180**
465.tonto	**219**	**45.0**	219	44.9	219	45.0	190	51.9	**189**	**52.0**	189	52.1
470.lbm	**34.0**	**404**	34.2	402	33.6	409	**34.0**	**404**	34.2	402	33.6	409
481.wrf	121	92.6	**120**	**92.9**	119	94.2	121	92.6	**120**	**92.9**	119	94.2
482.sphinx3	218	89.5	218	89.2	**218**	**89.5**	218	89.5	218	89.2	**218**	**89.5**

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
Reclaim mode enabled with:
 echo 1 > /proc/sys/vm/zone_reclaim_mode
runspec command invoked through numactl i.e.:
 numactl --localalloc runspec <etc>
```

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Platform Notes

```
 BIOS Configuration:
  Intel Hyperthreading Options set to Disabled
  HP Power Profile set to Maximum Performance
  Minimum Processor Idle Power Core State set to C1E
  Minimum Processor Idle Power Package State set to C6 (retention)
  Memory Power Savings Mode set to Maximum Performance
  Thermal Configuration set to Maximum Cooling
  Collaborative Power Control set to Disabled
  Dynamic Power Capping Functionality set to Disabled
  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 dl380p-gen8-0s9 Tue Jan 28 15:38:41 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 E5-2637 v2 @ 3.50GHz
      2 "physical id"s (chips)
      8 "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 : 4
      siblings  : 4
      physical 0: cores 1 2 3 4
      physical 1: cores 1 2 3 4
   cache size : 15360 KB

From /proc/meminfo
   MemTotal:       132130192 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 dl380p-gen8-0s9 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 Jan 28 15:27 last=S
```

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Tested by: Hewlett-Packard Company	**Software Availability:** Sep-2013

Platform Notes (Continued)

```
   SPEC is set to: /cpu2006
      Filesystem      Type  Size  Used Avail Use% Mounted on
      /dev/sda1       ext3  135G   15G  120G  11% /

   Additional information from dmidecode:
     BIOS HP P70 12/20/2013
     Memory:
      16x HP 712382-071 8 GB 1866 MHz
       8x UNKNOWN NOT AVAILABLE

   (End of data from sysinfo program)
   Regarding the sysinfo display about the memory installed, the correct amount of
   memory is 128 GB and the dmidecode description should have one line reading as:
      16x HP 712382-071 8 GB 1866 MHz
```

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 = "8"

 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
```

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Base Portability Flags (Continued)

```
   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
    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
```

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Software Availability: Sep-2013

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

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.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

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Peak Optimization Flags (Continued)

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`

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.html`
`http://www.spec.org/cpu2006/flags/Intel-ic14.0-official-linux64.20140128.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.xml`
`http://www.spec.org/cpu2006/flags/Intel-ic14.0-official-linux64.20140128.xml`

For questions about this result, please contact the tester.
For other inquiries, please contact webmaster@spec.org.

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