SPEC® CFP2006 Result
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Hewlett-Packard Company

ProLiant DL370 G6
(3.06 GHz, Intel Xeon X5675)

$SPECfp^{®}\_rate2006 =$ 258
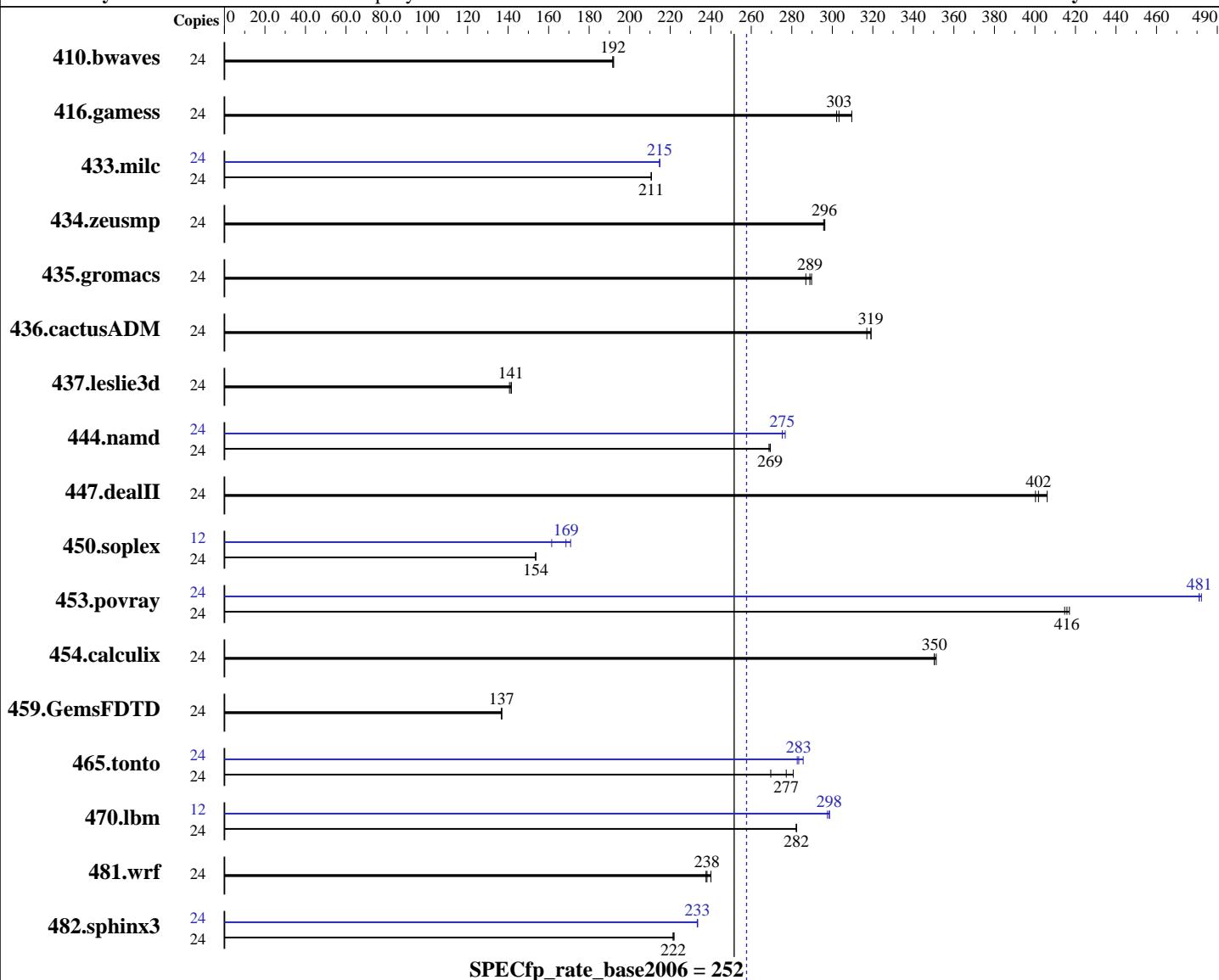
$SPECfp\_rate\_base2006 =$ 252

CPU2006 license: 3	**Test date:** Jan-2011
Test sponsor: Hewlett-Packard Company	**Hardware Availability:** Feb-2011
Tested by: Hewlett-Packard Company	**Software Availability:** Dec-2010

SPECfp_rate_base2006 = 252

SPECfp_rate2006 = 258

Hardware

CPU Name:	Intel Xeon X5675
CPU Characteristics:	Intel Turbo Boost Technology up to 3.46 GHz
CPU MHz:	3067
FPU:	Integrated
CPU(s) enabled:	12 cores, 2 chips, 6 cores/chip, 2 threads/core
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) SP1, Kernel 2.6.32.12-0.7-default
Compiler:	Intel C++ Compiler XE for applications running on IA-32 Version 12.0.1.116 Build 20101116
Auto Parallel:	No
File System:	ext3
System State:	Run level 3 (multi-user)
Base Pointers:	32-bit

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L3 Cache:	12 MB I+D on chip per chip	Peak Pointers:	32/64-bit
Other Cache:	None	Other Software:	Microquill SmartHeap V9.01
Memory:	96 GB (12 x 8 GB 2Rx4 PC3-10600R-9, ECC)		
Disk Subsystem:	1 x 146 GB 15 K SAS		
Other Hardware:	None		

Results Table

Benchmark	Base						Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	24	1698	192	**1701**	**192**	1702	192	24	1698	192	**1701**	**192**	1702	192
416.gamess	24	1555	302	**1549**	**303**	1518	310	24	1555	302	**1549**	**303**	1518	310
433.milc	24	**1046**	**211**	1046	211	1046	211	24	1025	215	**1026**	**215**	1026	215
434.zeusmp	24	737	296	**738**	**296**	739	296	24	737	296	**738**	**296**	739	296
435.gromacs	24	591	290	597	287	**593**	**289**	24	591	290	597	287	**593**	**289**
436.cactusADM	24	905	317	899	319	**899**	**319**	24	905	317	899	319	**899**	**319**
437.leslie3d	24	**1595**	**141**	1593	142	1604	141	24	**1595**	**141**	1593	142	1604	141
444.namd	24	**715**	**269**	714	269	716	269	24	699	275	695	277	**699**	**275**
447.dealII	24	686	400	676	406	**683**	**402**	24	686	400	676	406	**683**	**402**
450.soplex	24	**1303**	**154**	1303	154	1303	154	12	586	171	620	162	**594**	**169**
453.povray	24	306	417	**307**	**416**	308	415	24	265	481	**265**	**481**	265	482
454.calculix	24	**565**	**350**	565	350	564	351	24	**565**	**350**	565	350	564	351
459.GemsFDTD	24	1861	137	1861	137	**1861**	**137**	24	1861	137	1861	137	**1861**	**137**
465.tonto	24	**852**	**277**	841	281	876	270	24	827	286	835	283	**833**	**283**
470.lbm	24	1168	282	**1168**	**282**	1168	282	12	552	299	**552**	**298**	554	298
481.wrf	24	**1126**	**238**	1128	238	1117	240	24	**1126**	**238**	1128	238	1117	240
482.sphinx3	24	2108	222	**2112**	**222**	2112	221	24	2002	234	**2004**	**233**	2005	233

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

Submit Notes

```
    The config file option 'submit' was used.
    numactl was used to bind copies to the cores
```

Operating System Notes

```
    'nodev   /mnt/hugepages   hugetlbfs   defaults   0 0' added to /etc/fstab
    'ulimit -s unlimited' was used to set the stacksize to unlimited prior to run
    echo 10800 > /proc/sys/vm/nr_hugepages
    export HUGETLB_MORECORE=yes
    export LD_PRELOAD=/usr/lib64/libhugetlbfs.so
```

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Platform Notes

```
 BIOS configuration:
  HP Power Profile set to Maximum Performance
  Thermal Configuration set to Increased Cooling
  Data Reuse set to Disabled
```

General Notes

```
 Binaries were compiled on RHEL5.5 with Binutils binutils-2.17.50.0.6-14.el5
```

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
      482.sphinx3: -DSPEC_CPU_LP64
```

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Base Optimization Flags

C benchmarks:
```
-xSSE4.2 -ipo -O3 -no-prec-div -static -ansi-alias
```

C++ benchmarks:
```
-xSSE4.2 -ipo -O3 -no-prec-div -static -ansi-alias
```

Fortran benchmarks:
```
-xSSE4.2 -ipo -O3 -no-prec-div -static
```

Benchmarks using both Fortran and C:
```
-xSSE4.2 -ipo -O3 -no-prec-div -static -ansi-alias
```

Peak Compiler Invocation

C benchmarks (except as noted below):
```
icc    -m64
```

```
482.sphinx3: icc -m32
```

C++ benchmarks (except as noted below):
```
icpc   -m64
```

```
450.soplex: icpc -m32
```

Fortran benchmarks:
```
ifort -m64
```

Benchmarks using both Fortran and C:
```
icc    -m64 ifort -m64
```

Peak 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
     453.povray: -DSPEC_CPU_LP64
    454.calculix: -DSPEC_CPU_LP64 -nofor_main
 459.GemsFDTD: -DSPEC_CPU_LP64
       465.tonto: -DSPEC_CPU_LP64
```

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Peak Portability Flags (Continued)

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

Peak Optimization Flags

C benchmarks:

433.milc: `-xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)`
`-no-prec-div(pass 2) -prof-use(pass 2) -static -auto-ilp32`

470.lbm: `-xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)`
`-no-prec-div(pass 2) -prof-use(pass 2) -opt-malloc-options=3`
`-ansi-alias -opt-prefetch -static -auto-ilp32`

482.sphinx3: `-xSSE4.2 -ipo -O3 -no-prec-div -unroll2`

C++ benchmarks:

444.namd: `-xSSE4.2(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: `-xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)`
`-no-prec-div(pass 2) -prof-use(pass 2) -opt-malloc-options=3`
`-B /usr/share/libhugetlbfs/ -Wl,-hugetlbfs-link=BDT`

453.povray: `-xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)`
`-no-prec-div(pass 2) -prof-use(pass 2) -unroll4 -ansi-alias`
`-B /usr/share/libhugetlbfs/ -Wl,-melf_x86_64 -Wl,-hugetlbfs-link=BDT`

Fortran benchmarks:

410.bwaves: `basepeak = yes`

416.gamess: `basepeak = yes`

434.zeusmp: `basepeak = yes`

437.leslie3d: `basepeak = yes`

459.GemsFDTD: `basepeak = yes`

465.tonto: `-xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)`
`-no-prec-div(pass 2) -prof-use(pass 2) -unroll4 -auto`
`-inline-calloc -opt-malloc-options=3`
`-B /usr/share/libhugetlbfs/ -Wl,-melf_x86_64 -Wl,-hugetlbfs-link=BDT`

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Peak Optimization Flags (Continued)

Benchmarks using both Fortran and C:

435.gromacs: basepeak = yes

436.cactusADM: basepeak = yes

454.calculix: basepeak = yes

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-ic12.0-linux64-revA.html
http://www.spec.org/cpu2006/flags/HP-Intel-Linux-Settings-flags.20110216.00.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic12.0-linux64-revA.xml
http://www.spec.org/cpu2006/flags/HP-Intel-Linux-Settings-flags.20110216.00.xml

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Tested with SPEC CPU2006 v1.1.
Report generated on Wed Jul 23 15:06:41 2014 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 16 February 2011.