SPEC® CFP2006 Result
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Hewlett-Packard Company

ProLiant DL580 G7
(1.87 GHz, Intel Xeon E7-4807)

$SPECfp^{®}\_rate2006 =$ 370

$SPECfp\_rate\_base2006 =$ 364

CPU2006 license: 3

Test sponsor: Hewlett-Packard Company

Tested by: Hewlett-Packard Company

Test date: Apr-2012

Hardware Availability: Apr-2011

Software Availability: Dec-2011

Benchmark	Copies	Result
410.bwaves	48	321
416.gamess	48	372
416.gamess	48	363
433.milc	48	355
434.zeusmp	48	384
435.gromacs	48	346
435.gromacs	48	344
436.cactusADM	48	381
437.leslie3d	48	232
444.namd	48	330
444.namd	48	324
447.dealII	48	633
450.soplex	48	278
450.soplex	48	261
453.povray	48	574
453.povray	48	496
454.calculix	48	427
459.GemsFDTD	48	232
465.tonto	48	442
465.tonto	48	428
470.lbm	48	438
481.wrf	48	418
482.sphinx3	48	353
482.sphinx3	48	345

SPECfp_rate_base2006 = 364

SPECfp_rate2006 = 370

Hardware

CPU Name: Intel Xeon E7-4807

CPU Characteristics:

CPU MHz: 1867

FPU: Integrated

CPU(s) enabled: 24 cores, 4 chips, 6 cores/chip, 2 threads/core

CPU(s) orderable: 2,4 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: Red Hat Enterprise Linux Server release 6.2, (Santiago)
Kernel 2.6.32-220.el6.x86_64

Compiler: C/C++: Version 12.1.0.225 of Intel C++ Studio XE for Linux;
Fortran: Version 12.1.0.225 of Intel Fortran Studio XE for Linux

Auto Parallel: No

File System: ext4

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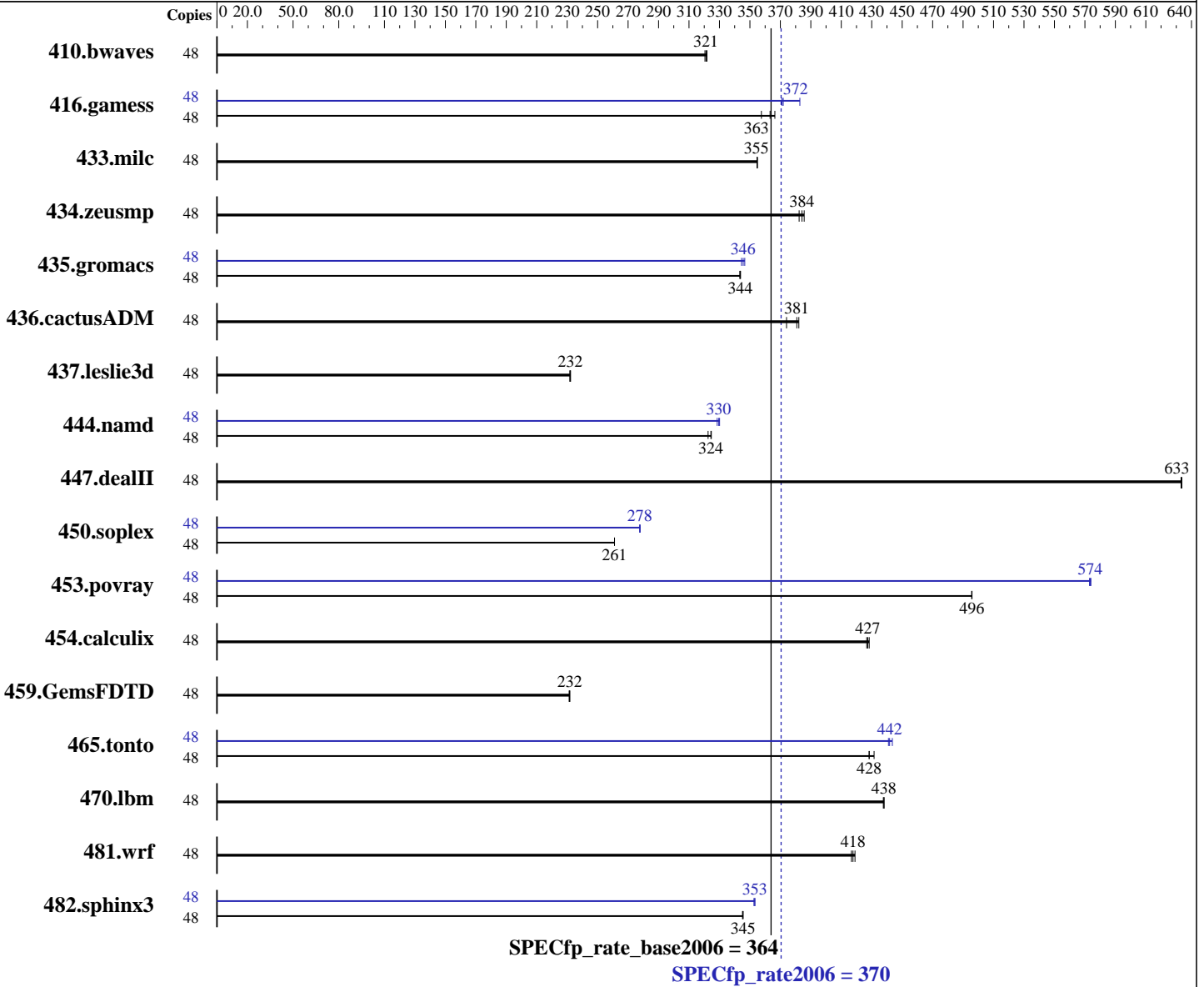|	
CPU2006 license: 3	**Test date:** Apr-2012
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L3 Cache:	18 MB I+D on chip per chip	System State:	Run level 3 (multi-user)
Other Cache:	None	Base Pointers:	32/64-bit
Memory:	512 GB (32 x 16 GB 2Rx4 PC3-10600R-9, ECC)	Peak Pointers:	32/64-bit
Disk Subsystem:	4 x 146 GB 15 K SAS, RAID 0	Other Software:	None
Other Hardware:	None		

Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	48	2035	320	2027	322	**2031**	**321**	48	2035	320	2027	322	**2031**	**321**
416.gamess	48	2565	366	**2587**	**363**	2628	358	48	2533	371	2455	383	**2527**	**372**
433.milc	48	1241	355	1242	355	**1242**	**355**	48	1241	355	1242	355	**1242**	**355**
434.zeusmp	48	1133	386	**1137**	**384**	1142	382	48	1133	386	**1137**	**384**	1142	382
435.gromacs	48	**997**	**344**	997	344	998	343	48	989	347	995	344	**992**	**346**
436.cactusADM	48	1501	382	**1506**	**381**	1533	374	48	1501	382	**1506**	**381**	1533	374
437.leslie3d	48	**1945**	**232**	1947	232	1943	232	48	**1945**	**232**	1947	232	1943	232
444.namd	48	1194	323	1186	325	**1187**	**324**	48	1166	330	**1168**	**330**	1172	329
447.dealII	48	**867**	**633**	867	633	867	634	48	**867**	**633**	867	633	867	634
450.soplex	48	**1533**	**261**	1533	261	1533	261	48	**1442**	**278**	1442	278	1441	278
453.povray	48	515	496	**515**	**496**	515	496	48	446	573	**445**	**574**	445	574
454.calculix	48	924	428	928	427	**927**	**427**	48	924	428	928	427	**927**	**427**
459.GemsFDTD	48	2202	231	**2199**	**232**	2198	232	48	2202	231	**2199**	**232**	2198	232
465.tonto	48	1103	428	1094	432	**1103**	**428**	48	1071	441	**1069**	**442**	1065	444
470.lbm	48	1505	438	1507	438	**1506**	**438**	48	1505	438	1507	438	**1506**	**438**
481.wrf	48	**1284**	**418**	1280	419	1287	417	48	**1284**	**418**	1280	419	1287	417
482.sphinx3	48	2708	346	2711	345	**2708**	**345**	48	2648	353	2653	353	**2649**	**353**

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

Submit Notes

The numactl mechanism was used to bind copies to processors. The config file option 'submit' was used to generate numactl commands to bind each copy to a specific processor. For details, please see the config file.

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
runspec command invoked through numactl i.e.:
numactl --interleave=all runspec <etc>

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Platform Notes

```
BIOS Configuration:
 HP Power Profile set to Maximum Performance
 Thermal Configuration set to Increased Cooling
 Collaborative Power Control set to Disabled
Sysinfo program /cpu2006/config/sysinfo.rev6800
$Rev: 6800 $ $Date:: 2011-10-11 #$ 6f2ebdff5032aaa42e583f96b07f99d3
running on dl580g7-da Tue Apr 17 09:29:44 2012

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 E7- 4807 @ 1.87GHz
      4 "physical id"s (chips)
      48 "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 : 6
      siblings  : 12
      physical 0: cores 1 8 9 16 17 24
      physical 1: cores 0 8 9 16 17 25
      physical 2: cores 1 8 9 16 17 24
      physical 3: cores 0 8 9 16 17 25
   cache size : 18432 KB

From /proc/meminfo
   MemTotal:       529265536 kB
   HugePages_Total:        0
   Hugepagesize:       2048 kB

/usr/bin/lsb_release -d
   Red Hat Enterprise Linux Server release 6.2 (Santiago)

From /etc/*release* /etc/*version*
   redhat-release: Red Hat Enterprise Linux Server release 6.2 (Santiago)
   system-release: Red Hat Enterprise Linux Server release 6.2 (Santiago)
   system-release-cpe: cpe:/o:redhat:enterprise_linux:6server:ga:server

uname -a:
   Linux dl580g7-da 2.6.32-220.el6.x86_64 #1 SMP Wed Nov 9 08:03:13 EST 2011
   x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Apr 16 09:01

SPEC is set to: /cpu2006
   Filesystem     Type    Size  Used Avail Use% Mounted on
   /dev/sda3      ext4    537G   48G  462G  10% /

Additional information from dmidecode:
   BIOS HP P65 05/23/2011
```

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Platform Notes (Continued)

```
    Memory:
     32x Not Specified Not Specified 16 GB 1333 MHz 2 rank

  (End of data from sysinfo program)
```

General Notes

```
Environment variables set by runspec before the start of the run:
LD_LIBRARY_PATH = "/cpu2006/libs/32:/cpu2006/libs/64"

 Binaries compiled on a system with 1x Core i7-860 CPU + 8GB
 memory using RHEL5.5
```

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 -opt-prefetch -auto-p32
-ansi-alias -opt-mem-layout-trans=3
```

C++ benchmarks:
```
-xSSE4.2 -ipo -O3 -no-prec-div -static -opt-prefetch -auto-p32
-ansi-alias -opt-mem-layout-trans=3
```

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

Benchmarks using both Fortran and C:
```
-xSSE4.2 -ipo -O3 -no-prec-div -static -opt-prefetch -auto-p32
-ansi-alias -opt-mem-layout-trans=3
```

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`

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Peak Portability Flags (Continued)

```
    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
```

Peak Optimization Flags

C benchmarks:

```
      433.milc: basepeak = yes

       470.lbm: basepeak = yes

    482.sphinx3: -xSSE4.2 -ipo -O3 -no-prec-div -opt-mem-layout-trans=3
                 -unroll2
```

C++ benchmarks:

```
      444.namd: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
                 -no-prec-div(pass 2) -opt-mem-layout-trans=3(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) -opt-mem-layout-trans=3(pass 2)
                 -prof-use(pass 2) -opt-malloc-options=3

     453.povray: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
                 -no-prec-div(pass 2) -opt-mem-layout-trans=3(pass 2)
                 -prof-use(pass 2) -unroll4 -ansi-alias
```

Fortran benchmarks:

```
     410.bwaves: basepeak = yes

     416.gamess: -xSSE4.2(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- -static

     434.zeusmp: basepeak = yes

    437.leslie3d: basepeak = yes

   459.GemsFDTD: basepeak = yes
```

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Peak Optimization Flags (Continued)

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

Benchmarks using both Fortran and C:

435.gromacs: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -opt-mem-layout-trans=3(pass 2)
-prof-use(pass 2) -opt-prefetch -static -auto-ilp32

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-ic12.1-official-linux64.20120425.html
http://www.spec.org/cpu2006/flags/HP-Platform-Flags-Intel-V1.2-A.20120425.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic12.1-official-linux64.20120425.xml
http://www.spec.org/cpu2006/flags/HP-Platform-Flags-Intel-V1.2-A.20120425.xml

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

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