SPEC® CFP2006 Result

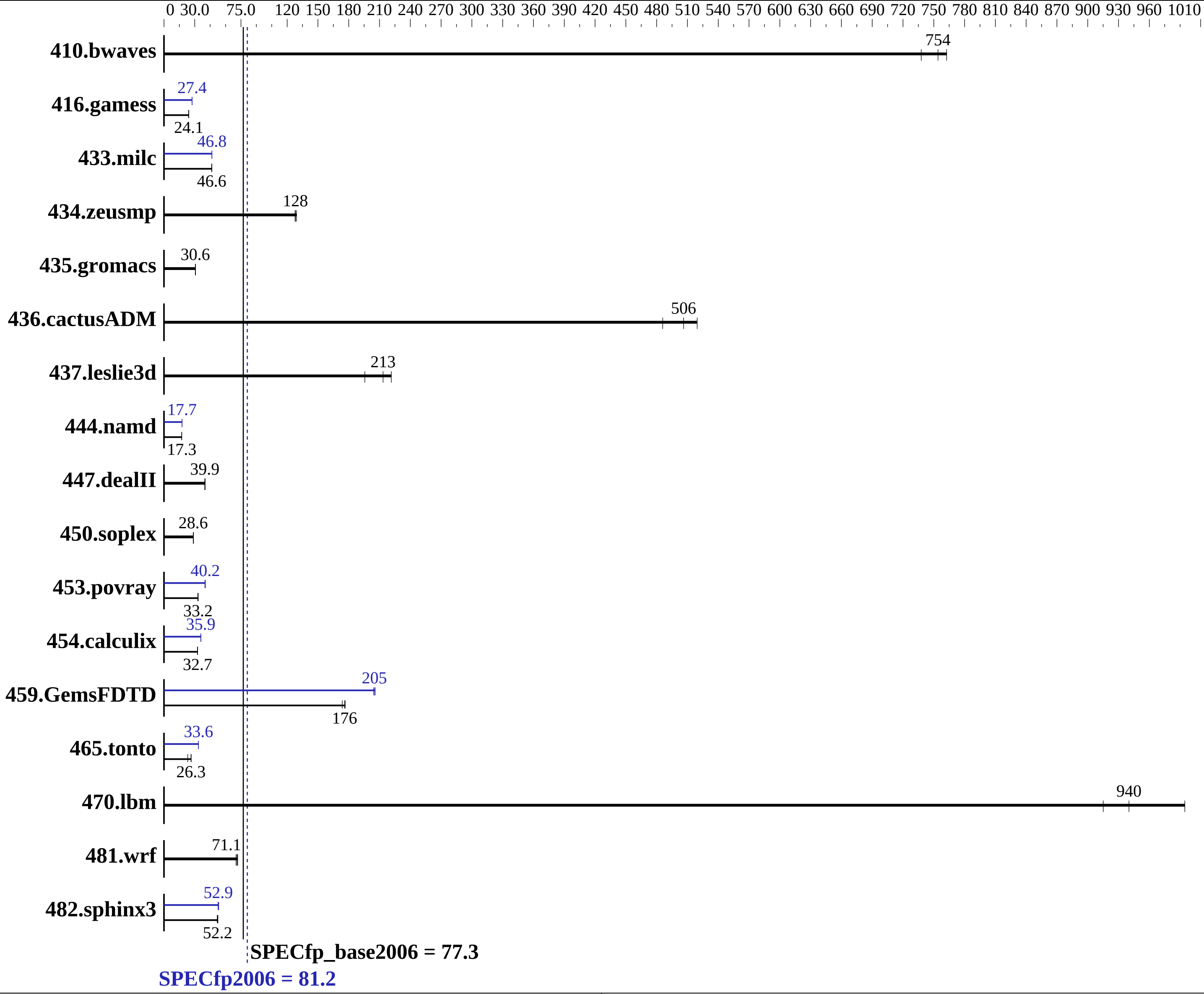
Hewlett-Packard Company

ProLiant DL580 Gen8
(2.00 GHz, Intel Xeon E7-4820 v2)

SPECfp®2006 = 81.2

SPECfp_base2006 = 77.3

CPU2006 license:	3	**Test date:**	May-2014
Test sponsor:	Hewlett-Packard Company	**Hardware Availability:**	Feb-2014
Tested by:	Hewlett-Packard Company	**Software Availability:**	Sep-2013



Hardware

CPU Name:	Intel Xeon E7-4820 v2
CPU Characteristics:	Intel Turbo Boost Technology up to 2.50 GHz
CPU MHz:	2000
FPU:	Integrated
CPU(s) enabled:	32 cores, 4 chips, 8 cores/chip
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

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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: 16 MB I+D on chip per chip
Other Cache: None
Memory: 1 TB (64 x 16 GB 2Rx4 PC3-14900R-13, ECC, running at 1333 MHz and CL9)
Disk Subsystem: 1 x 400 GB SSD SAS, RAID 0
Other Hardware: None

Base Pointers: 64-bit
Peak Pointers: 32/64-bit
Other Software: None

Results Table

	Base						Peak					
Benchmark	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	17.8	763	18.4	738	**18.0**	**754**	17.8	763	18.4	738	**18.0**	**754**
416.gamess	**811**	**24.1**	812	24.1	811	24.1	**713**	**27.4**	713	27.5	714	27.4
433.milc	197	46.6	**197**	**46.6**	197	46.7	197	46.7	196	46.8	**196**	**46.8**
434.zeusmp	71.2	128	**71.0**	**128**	70.4	129	71.2	128	**71.0**	**128**	70.4	129
435.gromacs	**233**	**30.6**	233	30.6	233	30.7	**233**	**30.6**	233	30.6	233	30.7
436.cactusADM	24.6	486	**23.6**	**506**	23.0	519	24.6	486	**23.6**	**506**	23.0	519
437.leslie3d	48.0	196	42.4	221	**44.0**	**213**	48.0	196	42.4	221	**44.0**	**213**
444.namd	463	17.3	**463**	**17.3**	463	17.3	454	17.7	454	17.7	**454**	**17.7**
447.dealII	**287**	**39.9**	285	40.1	288	39.7	**287**	**39.9**	285	40.1	288	39.7
450.soplex	**292**	**28.6**	291	28.7	292	28.6	**292**	**28.6**	291	28.7	292	28.6
453.povray	**160**	**33.2**	159	33.4	161	33.0	**132**	**40.2**	133	39.9	132	40.3
454.calculix	252	32.8	253	32.6	**252**	**32.7**	229	36.0	**230**	**35.9**	230	35.9
459.GemsFDTD	60.1	177	**60.3**	**176**	61.1	174	**51.8**	**205**	52.0	204	51.6	206
465.tonto	425	23.2	**374**	**26.3**	371	26.5	293	33.6	**292**	**33.6**	292	33.7
470.lbm	15.0	915	**14.6**	**940**	13.8	995	15.0	915	**14.6**	**940**	13.8	995
481.wrf	159	70.2	**157**	**71.1**	155	71.8	159	70.2	**157**	**71.1**	155	71.8
482.sphinx3	371	52.6	376	51.9	**374**	**52.2**	365	53.3	**368**	**52.9**	370	52.7

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
runspec command invoked through numactl i.e.:
 numactl --interleave=all runspec <etc>
Disabled unused Linux services through "stop_services.sh" before running.
```

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Platform Notes

```
  Intel Hyperthreading Options set to Disabled
  HP Power Profile set to Maximum Performance
  Minimum Processor Idle Power Core State set to C1E State to Enabled
  Minimum Processor Idle Power Packages State set to Package C6 (non-retention) State
  Collaborative Power Control set to Disabled
  Thermal Configuration set to Maximum Cooling
  Processor Power and Utilization Monitoring set to Disabled
  Memory Refresh Rate set to Disabled

 Sysinfo program /cpu2006/config/sysinfo.rev6818
 $Rev: 6818 $ $Date:: 2012-07-17 #$ e86d102572650a6e4d596a3cee98f191
 running on DL580-Gen8-sr Mon May 12 17:38:54 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 E7-4820 v2 @ 2.00GHz
       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
    caution.)
       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:       1058855444 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 DL580-Gen8-sr 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 May 12 17:36 last=S
```

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Platform Notes (Continued)

```
 SPEC is set to: /cpu2006
    Filesystem     Type  Size  Used Avail Use% Mounted on
    /dev/sda3      ext3  365G   13G  334G   4% /

 Additional information from dmidecode:
   BIOS HP P79 02/21/2014
   Memory:
    64x HP 712383-081 16 GB 1333 MHz
    32x UNKNOWN NOT AVAILABLE

 (End of data from sysinfo program)
 Regarding the sysinfo display about the memory installed, the correct amount of
 memory is 1 TB and the dmidecode description should have one line reading as:
    64x HP 712383-081 16 GB 1333 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

Assuming that the memory populations rules found in the DL580 Gen8
QuickSpecs are followed, HP supports memory running at 1333 MHz on
the E7-4850 v2, E7-4830 v2, E7-4820 v2, or E7-4809 v2 processors with
any BIOS prior to the 1.03_06-27-2014 ROM. Any BIOS that is the
1.03_06-27-2014 ROM or later, does not support the memory running at
1333 MHz due to a change in the Intel MRC (Memory Reference Code).
```

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

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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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: -xAVX -ipo -O3 -no-prec-div -unroll2 -ansi-alias -parallel

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/Intel-ic14.0-official-linux64.20140128.html
http://www.spec.org/cpu2006/flags/HP-Platform-Flags-Intel-V1.2-revD.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-revD.xml

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

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