SPEC® CFP2006 Result

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Hewlett-Packard Company

ProLiant DL380p Gen8
(2.40 GHz, Intel Xeon E5-2695 v2)

$SPECfp®2006 = $ 97.3

$SPECfp_base2006 = $ 92.9

CPU2006 license: 3
Test sponsor: Hewlett-Packard Company
Tested by: Hewlett-Packard Company

Test date: Aug-2014
Hardware Availability: Feb-2014
Software Availability: Jun-2013

Results graph (values):
- 410.bwaves: 482
- 416.gamess: 34.4 / 29.3
- 433.milc: 60.7 / 59.4
- 434.zeusmp: 168
- 435.gromacs: 38.2
- 436.cactusADM: 708
- 437.leslie3d: 322
- 444.namd: 22.4 / 21.9
- 447.dealII: 53.4
- 450.soplex: 43.4
- 453.povray: 50.9 / 42.3
- 454.calculix: 44.3 / 41.9
- 459.GemsFDTD: 225 / 201
- 465.tonto: 42.7 / 34.0
- 470.lbm: 618
- 481.wrf: 94.6
- 482.sphinx3: 65.4

SPECfp_base2006 = 92.9
SPECfp2006 = 97.3

Hardware

CPU Name:	Intel Xeon E5-2695 v2
CPU Characteristics:	Intel Turbo Boost Technology up to 3.20 GHz
CPU MHz:	2400
FPU:	Integrated
CPU(s) enabled:	24 cores, 2 chips, 12 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:	Red Hat Enterprise Linux Server release 7.0 (Maipo), Kernel 3.10.0-123.el7.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:	xfs

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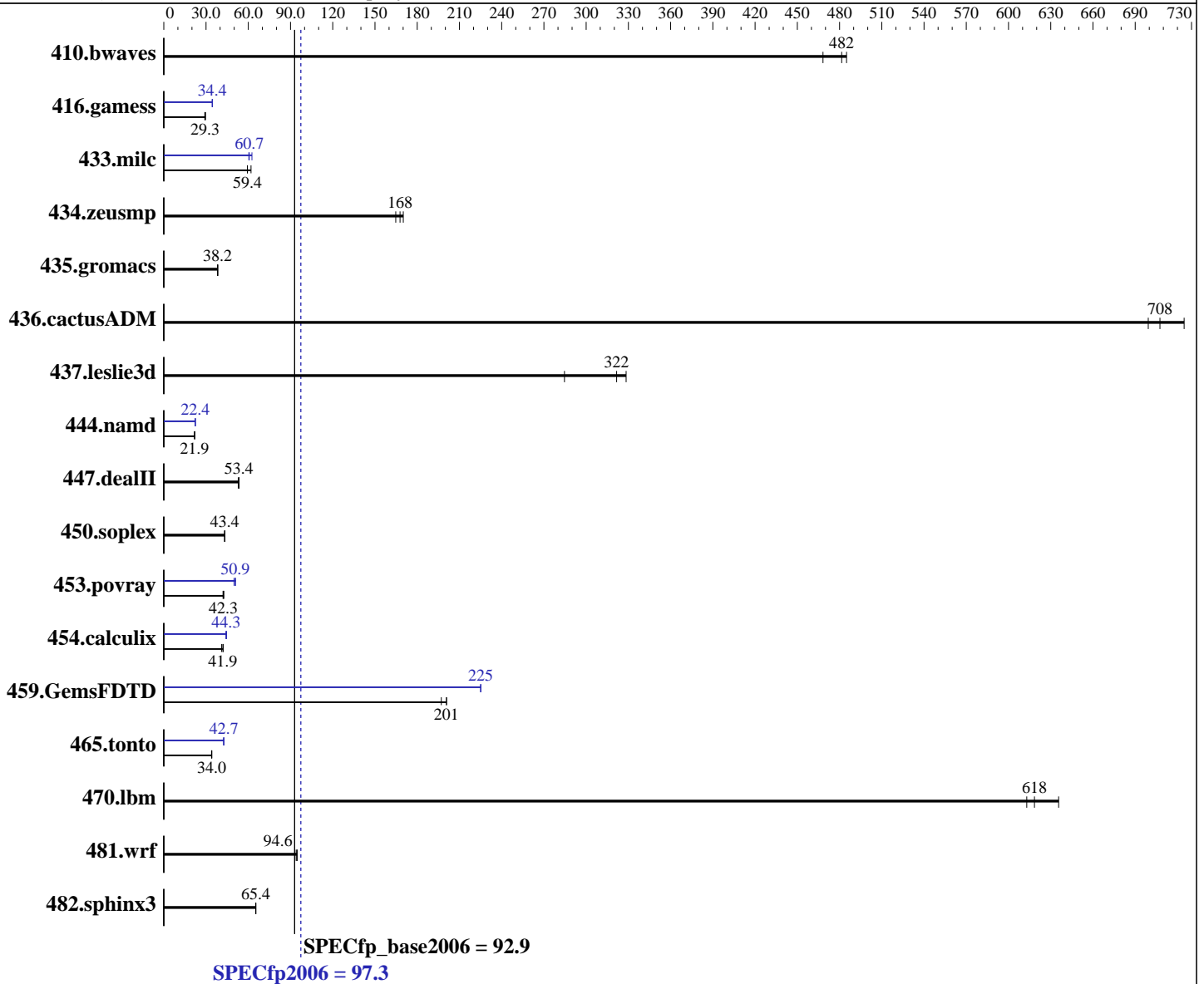|	
CPU2006 license: 3	**Test date:** Aug-2014
Test sponsor: Hewlett-Packard Company	**Hardware Availability:** Feb-2014
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L3 Cache:	30 MB I+D on chip per chip	System State:	Run level 3 (multi-user)
Other Cache:	None	Base Pointers:	64-bit
Memory:	128 GB (16 x 8 GB 2Rx4 PC3-14900R-13, ECC)	Peak Pointers:	32/64-bit
Disk Subsystem:	2 x 300 GB 15 K SAS, RAID 1	Other Software:	None
Other Hardware:	None		

Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	28.0	485	29.0	468	**28.2**	**482**	28.0	485	29.0	468	**28.2**	**482**
416.gamess	660	29.7	672	29.2	**669**	**29.3**	567	34.5	**569**	**34.4**	569	34.4
433.milc	**155**	**59.4**	155	59.3	148	62.0	**151**	**60.7**	147	62.6	152	60.4
434.zeusmp	**54.2**	**168**	55.2	165	53.5	170	**54.2**	**168**	55.2	165	53.5	170
435.gromacs	186	38.4	**187**	**38.2**	187	38.2	186	38.4	**187**	**38.2**	187	38.2
436.cactusADM	**16.9**	**708**	17.1	699	16.5	725	**16.9**	**708**	17.1	699	16.5	725
437.leslie3d	**29.2**	**322**	28.6	328	33.0	285	**29.2**	**322**	28.6	328	33.0	285
444.namd	**366**	**21.9**	365	22.0	367	21.9	**359**	**22.4**	358	22.4	359	22.4
447.dealII	216	52.9	**214**	**53.4**	214	53.5	216	52.9	**214**	**53.4**	214	53.5
450.soplex	192	43.4	194	43.1	**192**	**43.4**	192	43.4	194	43.1	**192**	**43.4**
453.povray	126	42.1	125	42.7	**126**	**42.3**	107	49.9	**105**	**50.9**	105	50.9
454.calculix	**197**	**41.9**	201	41.0	195	42.2	185	44.6	**186**	**44.3**	187	44.2
459.GemsFDTD	**52.8**	**201**	52.8	201	53.8	197	47.1	225	47.1	225	**47.1**	**225**
465.tonto	290	33.9	**290**	**34.0**	288	34.1	232	42.4	230	42.7	**230**	**42.7**
470.lbm	22.4	613	**22.2**	**618**	21.6	636	22.4	613	**22.2**	**618**	21.6	636
481.wrf	**118**	**94.6**	118	94.6	119	94.0	**118**	**94.6**	118	94.6	119	94.0
482.sphinx3	299	65.3	298	65.4	**298**	**65.4**	299	65.3	298	65.4	**298**	**65.4**

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

Platform Notes

```
BIOS Configuration:
   HP Power Profile set to Maximum Performance
   Minimum Processor Idle Power Core State set to C6 State
   Memory Power Savings Mode set to Maximum Performance
   Thermal Configuration 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 /home/cpu/config/sysinfo.rev6818
  $Rev: 6818 $ $Date:: 2012-07-17 #$ e86d102572650a6e4d596a3cee98f191
  running on localhost.localdomain Thu Aug 21 18:05:48 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 E5-2695 v2 @ 2.40GHz
       2 "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 : 12
       siblings  : 24
       physical 0: cores 0 1 2 3 4 5 8 9 10 11 12 13
       physical 1: cores 0 1 2 3 4 5 8 9 10 11 12 13
    cache size : 30720 KB

  From /proc/meminfo
    MemTotal:       131825816 kB
    HugePages_Total:        0
    Hugepagesize:        2048 kB

  From /etc/*release* /etc/*version*
    os-release:
       NAME="Red Hat Enterprise Linux Server"
       VERSION="7.0 (Maipo)"
       ID="rhel"
       ID_LIKE="fedora"
       VERSION_ID="7.0"
       PRETTY_NAME="Red Hat Enterprise Linux Server 7.0 (Maipo)"
       ANSI_COLOR="0;31"
       CPE_NAME="cpe:/o:redhat:enterprise_linux:7.0:GA:server"
    redhat-release: Red Hat Enterprise Linux Server release 7.0 (Maipo)
    system-release: Red Hat Enterprise Linux Server release 7.0 (Maipo)
    system-release-cpe: cpe:/o:redhat:enterprise_linux:7.0:ga:server

  uname -a:
    Linux localhost.localdomain 3.10.0-123.el7.x86_64 #1 SMP Mon May 5 11:16:57
    EDT 2014 x86_64 x86_64 x86_64 GNU/Linux

  run-level 3 Feb 10 11:10

  SPEC is set to: /home/cpu
    Filesystem               Type  Size  Used Avail Use% Mounted on
    /dev/mapper/rootvg01-lv01 xfs   279G   11G  268G   4% /
```

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Platform Notes (Continued)

```
Additional information from dmidecode:
  BIOS HP P70 02/10/2014
  Memory:
   16x HP 712382-071 8 GB 1866 MHz 2 rank
   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,1,0"
LD_LIBRARY_PATH = "/home/cpu/libs/32:/home/cpu/libs/64:/home/cpu/sh"
OMP_NUM_THREADS = "24"

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
```

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Base Portability Flags (Continued)

```
    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
```

Peak Portability Flags

```
Same as Base Portability Flags
```

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Software Availability: Jun-2013

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`

Benchmarks using both Fortran and C:

435.gromacs: basepeak = yes

436.cactusADM: basepeak = yes

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Peak Optimization Flags (Continued)

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

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