SPEC® CFP2006 Result

Hewlett-Packard Company

ProLiant DL380 Gen9
(3.00 GHz, Intel Xeon E5-2623 v3)

$SPECfp^{®}2006 =$ 97.8

$SPECfp\_base2006 =$ 94.9

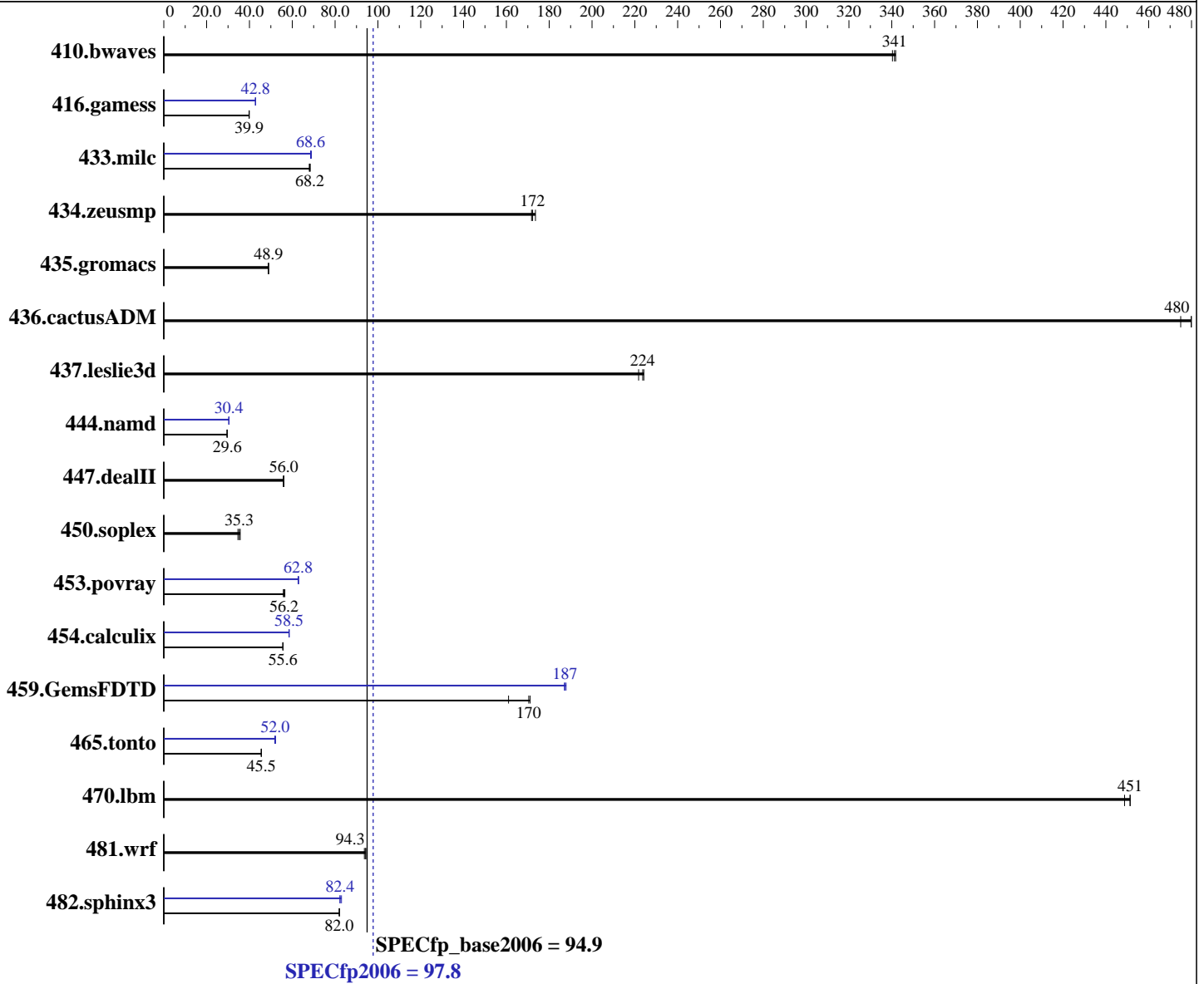**CPU2006 license:** 3　　　　　　　　　　　　　　　　　　　　**Test date:** Nov-2014
Test sponsor: Hewlett-Packard Company　　　　　　　　　**Hardware Availability:** Sep-2014
Tested by: Hewlett-Packard Company　　　　　　　　　　**Software Availability:** Sep-2014

Benchmark results chart:

- 410.bwaves: 341
- 416.gamess: 42.8 / 39.9
- 433.milc: 68.6 / 68.2
- 434.zeusmp: 172
- 435.gromacs: 48.9
- 436.cactusADM: 480
- 437.leslie3d: 224
- 444.namd: 30.4 / 29.6
- 447.dealII: 56.0
- 450.soplex: 35.3
- 453.povray: 62.8 / 56.2
- 454.calculix: 58.5 / 55.6
- 459.GemsFDTD: 187 / 170
- 465.tonto: 52.0 / 45.5
- 470.lbm: 451
- 481.wrf: 94.3
- 482.sphinx3: 82.4 / 82.0

SPECfp_base2006 = 94.9
SPECfp2006 = 97.8

Hardware

CPU Name:	Intel Xeon E5-2623 v3
CPU Characteristics:	Intel Turbo Boost Technology up to 3.50 GHz
CPU MHz:	3000
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:	Red Hat Enterprise Linux Server release 7.0 (Maipo) Kernel 3.10.0-121.el7.x86_64
Compiler:	C/C++: Version 15.0.0.090 of Intel C++ Studio XE for Linux; Fortran: Version 15.0.0.090 of Intel Fortran Studio XE for Linux
Auto Parallel:	Yes
File System:	ext4

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L3 Cache:	10 MB I+D on chip per chip	System State:	Run level 3 (multi-user)
Other Cache:	None	Base Pointers:	64-bit
Memory:	256 GB (16 x 16 GB 2Rx4 PC4-2133P-R, running at 1866 MHz)	Peak Pointers:	32/64-bit
		Other Software:	None
Disk Subsystem:	1 x 400 GB SSD SAS, RAID 0		
Other Hardware:	None		

Results Table

	Base						Peak					
Benchmark	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	39.8	342	**39.8**	**341**	39.9	340	39.8	342	**39.8**	**341**	39.9	340
416.gamess	491	39.9	**491**	**39.9**	491	39.8	**457**	**42.8**	457	42.8	457	42.8
433.milc	135	67.9	134	68.4	**135**	**68.2**	133	68.9	**134**	**68.6**	134	68.5
434.zeusmp	52.4	174	**52.8**	**172**	53.0	172	52.4	174	**52.8**	**172**	53.0	172
435.gromacs	146	48.9	146	48.9	**146**	**48.9**	146	48.9	146	48.9	**146**	**48.9**
436.cactusADM	25.2	475	**24.9**	**480**	24.9	480	25.2	475	**24.9**	**480**	24.9	480
437.leslie3d	42.4	222	**42.0**	**224**	41.9	224	42.4	222	**42.0**	**224**	41.9	224
444.namd	271	29.6	**271**	**29.6**	271	29.6	**264**	**30.4**	264	30.4	264	30.4
447.dealII	205	55.8	**204**	**56.0**	204	56.1	205	55.8	**204**	**56.0**	204	56.1
450.soplex	**236**	**35.3**	241	34.6	234	35.7	**236**	**35.3**	241	34.6	234	35.7
453.povray	**94.7**	**56.2**	94.1	56.5	95.3	55.8	84.8	62.7	84.5	63.0	**84.7**	**62.8**
454.calculix	148	55.7	148	55.6	**148**	**55.6**	141	58.5	**141**	**58.5**	141	58.5
459.GemsFDTD	62.0	171	**62.3**	**170**	65.9	161	**56.6**	**187**	56.5	188	56.7	187
465.tonto	216	45.5	216	45.5	**216**	**45.5**	188	52.2	**189**	**52.0**	190	51.8
470.lbm	30.6	449	30.4	451	**30.4**	**451**	30.6	449	30.4	451	**30.4**	**451**
481.wrf	119	93.7	**118**	**94.3**	118	94.3	119	93.7	**118**	**94.3**	118	94.3
482.sphinx3	238	81.9	238	82.0	**238**	**82.0**	235	83.0	**237**	**82.4**	237	82.3

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
```

Platform Notes

```
BIOS Configuration:
HP Power Profile set to Custom
HP Power Regulator to HP Static High Performance Mode
Minimum Processor Idle Power Core State set to C6 State
Minimum Processor Idle Power Package State set to No Package State
QPI Snoop Configuration set to Home Snoop
Thermal Configuration set to Maximum Cooling
```

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Software Availability: Sep-2014

Platform Notes (Continued)

```
 Collaborative Power Control set to Disabled
 Processor Power and Utilization Monitoring set to Disabled
 Memory Double Refresh Rate set to 1x Refresh
 Intel Hyperthreading Options set to Disabled
Sysinfo program /cpu2006/config/sysinfo.rev6914
$Rev: 6914 $ $Date:: 2014-06-25 #$ e3fbb8667b5a285932ceab81e28219e1
running on R112-BAO-DL380-Gen9VP2 Tue Nov 11 13:22:07 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 E5-2623 v3 @ 3.00GHz
      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 0 1 2 3
      physical 1: cores 0 1 2 3
   cache size : 10240 KB

From /proc/meminfo
   MemTotal:       263847700 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 R112-BAO-DL380-Gen9VP2 3.10.0-121.el7.x86_64 #1 SMP Tue Apr 8 10:48:19
   EDT 2014 x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Nov 11 13:06

SPEC is set to: /cpu2006
   Filesystem     Type   Size   Used Avail Use% Mounted on
```

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

Platform Notes (Continued)

```
    /dev/sda4      ext4  362G  203G  141G  60% /
 Additional information from dmidecode:

    Warning: Use caution when you interpret this section. The 'dmidecode' program
    reads system data which is "intended to allow hardware to be accurately
    determined", but the intent may not be met, as there are frequent changes to
    hardware, firmware, and the "DMTF SMBIOS" standard.

  BIOS HP P89 07/11/2014
  Memory:
   1x HP 752369-081 16 GB 2 rank 2133 MHz, configured at 1866 MHz
   15x HP NOT AVAILABLE 16 GB 2 rank 2133 MHz, configured at 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 256 GB and the dmidecode description should have two lines reading as:
 1x HP 752369-081 16 GB 2 rank 2133 MHz, configured at 1866 MHz
 15x HP NOT AVAILABLE 16 GB 2 rank 2133 MHz, configured at 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 i5-4670K CPU + 16GB
 memory using RedHat EL 7.0
```

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
```

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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:
```
    -xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -opt-prefetch
    -ansi-alias
```

C++ benchmarks:
```
    -xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch -ansi-alias
```

Fortran benchmarks:
```
    -xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -opt-prefetch
```

Benchmarks using both Fortran and C:
```
    -xCORE-AVX2 -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
```

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Peak Compiler Invocation (Continued)

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

Peak Portability Flags

```
Same as Base Portability Flags
```

Peak Optimization Flags

C benchmarks:

```
    433.milc: -xCORE-AVX2(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: -xCORE-AVX2 -ipo -O3 -no-prec-div -unroll2 -ansi-alias
              -parallel
```

C++ benchmarks:

```
   444.namd: -xCORE-AVX2(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: -xCORE-AVX2(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: -xCORE-AVX2(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
```

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Peak Optimization Flags (Continued)

459.GemsFDTD: `-xCORE-AVX2(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: `-xCORE-AVX2(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`

454.calculix: `-xCORE-AVX2 -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-ic15.0-official-linux64.html
http://www.spec.org/cpu2006/flags/HP-Platform-Flags-Intel-V1.2-HSW-revE.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic15.0-official-linux64.xml
http://www.spec.org/cpu2006/flags/HP-Platform-Flags-Intel-V1.2-HSW-revE.xml

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

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