



SPEC[®] CFP2006 Result

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Hewlett-Packard Company

SPECfp[®]2006 = 110

ProLiant DL380 Gen9
(2.30 GHz, Intel Xeon E5-2670 v3)

SPECfp_base2006 = 105

CPU2006 license: 3

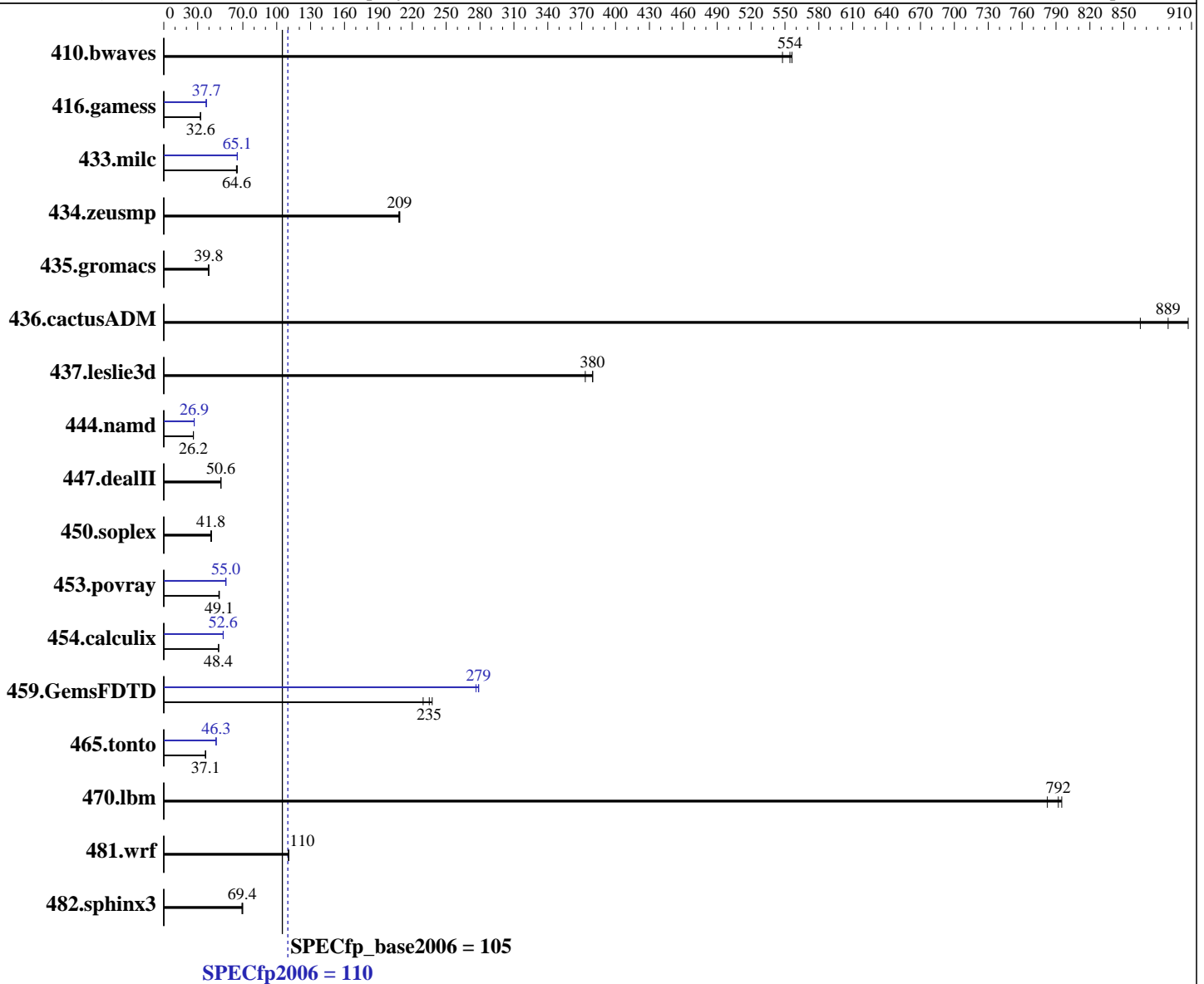
Test date: Oct-2014

Test sponsor: Hewlett-Packard Company

Hardware Availability: Sep-2014

Tested by: Hewlett-Packard Company

Software Availability: Sep-2014



Hardware		Software	
CPU Name:	Intel Xeon E5-2670 v3	Operating System:	Red Hat Enterprise Linux Server release 7.0 (Maipo)
CPU Characteristics:	Intel Turbo Boost Technology up to 3.10 GHz		Kernel 3.10.0-121.el7.x86_64
CPU MHz:	2300	Compiler:	C/C++: Version 15.0.0.090 of Intel C++ Studio XE for Linux;
FPU:	Integrated		Fortran: Version 15.0.0.090 of Intel Fortran Studio XE for Linux
CPU(s) enabled:	24 cores, 2 chips, 12 cores/chip	Auto Parallel:	Yes
CPU(s) orderable:	1,2 chip	File System:	ext4
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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L3 Cache: 30 MB I+D on chip per chip
Other Cache: None
Memory: 256 GB (16 x 16 GB 2Rx4 PC4-2133P-R)
Disk Subsystem: 1 x 400 GB SAS SSD, RAID 0
Other Hardware: None

System State: Run level 3 (multi-user)
Base Pointers: 64-bit
Peak Pointers: 32/64-bit
Other Software: None

Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	24.4	556	<u>24.5</u>	<u>554</u>	24.8	548	24.4	556	<u>24.5</u>	<u>554</u>	24.8	548
416.gamess	604	32.4	601	32.6	<u>601</u>	<u>32.6</u>	522	37.5	<u>520</u>	<u>37.7</u>	519	37.7
433.milc	143	64.3	<u>142</u>	<u>64.6</u>	141	65.1	141	65.1	<u>141</u>	<u>65.1</u>	141	65.0
434.zeusmp	<u>43.6</u>	<u>209</u>	43.5	209	43.7	208	<u>43.6</u>	<u>209</u>	43.5	209	43.7	208
435.gromacs	<u>179</u>	<u>39.8</u>	179	39.9	181	39.4	<u>179</u>	<u>39.8</u>	179	39.9	181	39.4
436.cactusADM	<u>13.4</u>	<u>889</u>	13.2	907	13.8	865	<u>13.4</u>	<u>889</u>	13.2	907	13.8	865
437.leslie3d	<u>24.8</u>	<u>380</u>	24.7	380	25.2	373	<u>24.8</u>	<u>380</u>	24.7	380	25.2	373
444.namd	306	26.2	306	26.2	<u>306</u>	<u>26.2</u>	298	26.9	<u>298</u>	<u>26.9</u>	298	26.9
447.dealII	226	50.5	<u>226</u>	<u>50.6</u>	226	50.6	226	50.5	<u>226</u>	<u>50.6</u>	226	50.6
450.soplex	197	42.3	<u>200</u>	<u>41.8</u>	200	41.7	197	42.3	<u>200</u>	<u>41.8</u>	200	41.7
453.povray	109	48.8	<u>108</u>	<u>49.1</u>	108	49.1	<u>96.8</u>	<u>55.0</u>	96.6	55.1	97.1	54.8
454.calculix	170	48.6	<u>170</u>	<u>48.4</u>	170	48.4	<u>157</u>	<u>52.6</u>	157	52.5	157	52.7
459.GemsFDTD	<u>45.1</u>	<u>235</u>	44.6	238	46.2	230	38.4	276	<u>38.1</u>	<u>279</u>	38.0	279
465.tonto	<u>265</u>	<u>37.1</u>	265	37.2	268	36.7	213	46.3	<u>212</u>	<u>46.3</u>	212	46.3
470.lbm	17.3	795	<u>17.3</u>	<u>792</u>	17.6	782	17.3	795	<u>17.3</u>	<u>792</u>	17.6	782
481.wrf	<u>101</u>	<u>110</u>	101	110	101	111	<u>101</u>	<u>110</u>	101	110	101	111
482.sphinx3	279	69.9	281	69.3	<u>281</u>	<u>69.4</u>	279	69.9	281	69.3	<u>281</u>	<u>69.4</u>

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
Filesystem page cache cleared with:
echo 1 > /proc/sys/vm/drop_caches
```

Platform Notes

BIOS Configuration:
Intel Hyperthreading Options set to Disabled
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
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Platform Notes (Continued)

QPI Snoop Configuration set to Home Snoop
Thermal Configuration set to Maximum Cooling
Collaborative Power Control set to Disabled
Processor Power and Utilization Monitoring set to Disabled
Memory Double Refresh Rate set to 1x Refresh

Sysinfo program /cpu2006/config/sysinfo.rev6914
\$Rev: 6914 \$ \$Date:: 2014-06-25 #\$ e3fbb8667b5a285932ceab81e28219e1
running on DL380-Gen9 Mon Oct 6 09:25:35 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 E5-2670 v3 @ 2.30GHz
 2 "physical id"s (chips)
 24 "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      : 12
  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:      263845844 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 DL380-Gen9 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 Oct 6 09:20
```

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Platform Notes (Continued)

SPEC is set to: /cpu2006

Filesystem	Type	Size	Used	Avail	Use%	Mounted on
/dev/sda4	ext4	362G	187G	157G	55%	/

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:

```
2x HP 752369-081 16 GB 2 rank 2133 MHz
14x HP NOT AVAILABLE 16 GB 2 rank 2133 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:

```
2x HP 752369-081 16 GB 2 rank 2133 MHz
14x HP NOT AVAILABLE 16 GB 2 rank 2133 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 = "24"
```

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: basepeak = yes

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>

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