



# SPEC® CFP2006 Result

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## Hewlett-Packard Company

**SPECfp®2006 = 71.6**

ProLiant ML10 v2 Gen8  
(3.10 GHz, Intel Xeon E3-1220 v3)

**SPECfp\_base2006 = 69.9**

CPU2006 license: 3

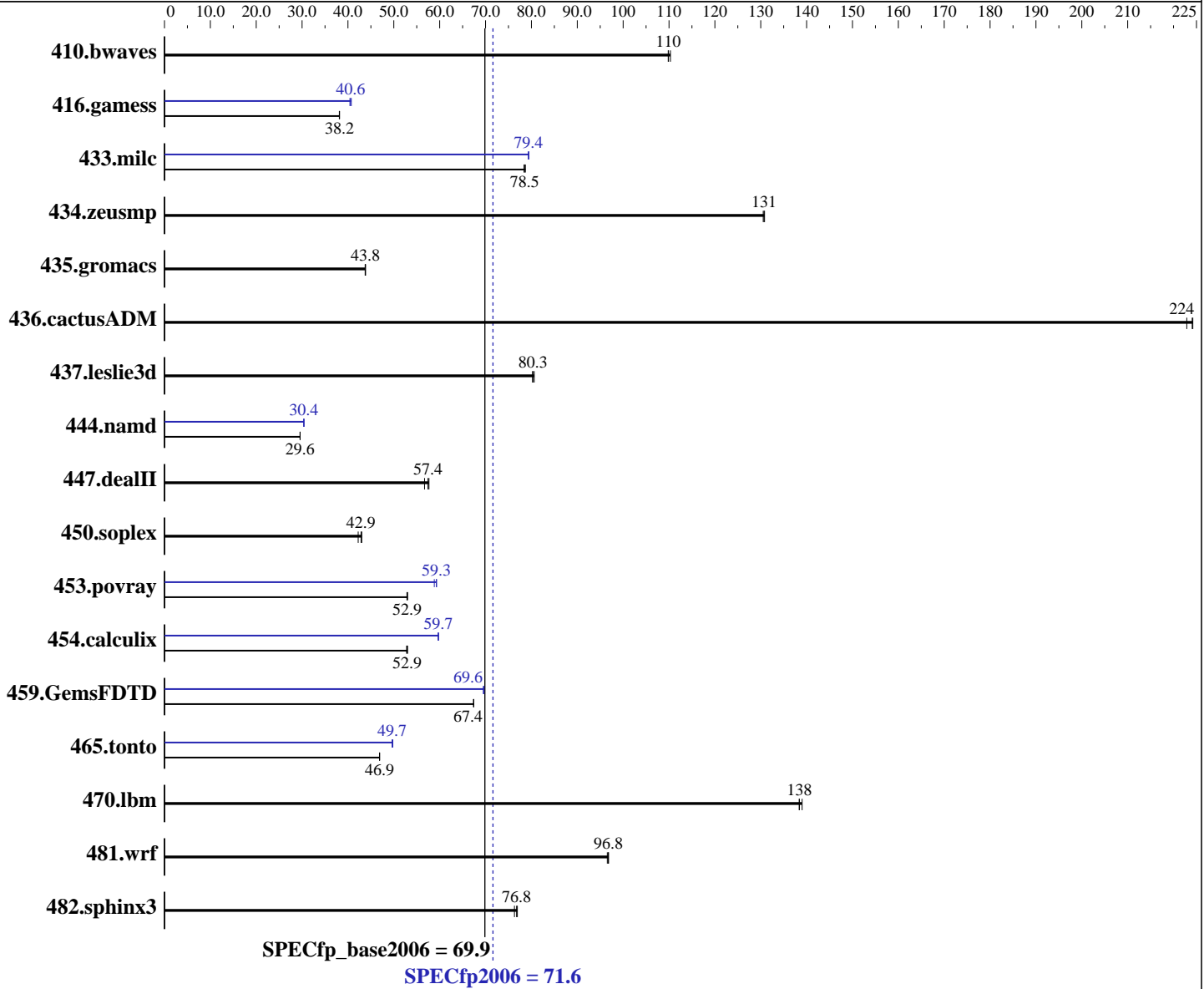
Test date: Feb-2015

Test sponsor: Hewlett-Packard Company

Hardware Availability: Mar-2015

Tested by: Hewlett-Packard Company

Software Availability: Sep-2014



### Hardware

CPU Name: Intel Xeon E3-1220 v3  
 CPU Characteristics: Intel Turbo Boost Technology up to 3.50 GHz  
 CPU MHz: 3100  
 FPU: Integrated  
 CPU(s) enabled: 4 cores, 1 chip, 4 cores/chip  
 CPU(s) orderable: 1 chip  
 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: Red Hat Enterprise Linux Server release 7.0, (Maipo)  
 Kernel 3.10.0-123.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: xfs

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L3 Cache: 8 MB I+D on chip per chip  
Other Cache: None  
Memory: 16 GB (2 x 8 GB 2Rx8 PC3-12800E-11, ECC)  
Disk Subsystem: 1 x 250 GB SATA 7500 RPM, 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	124	110	123	110	<b><u>124</u></b>	<b><u>110</u></b>	124	110	123	110	<b><u>124</u></b>	<b><u>110</u></b>
416.gamess	<b><u>513</u></b>	<b><u>38.2</u></b>	513	38.2	514	38.1	484	40.4	<b><u>483</u></b>	<b><u>40.6</u></b>	481	40.7
433.milc	<b><u>117</u></b>	<b><u>78.5</u></b>	117	78.4	117	78.7	<b><u>116</u></b>	<b><u>79.4</u></b>	116	79.5	116	79.3
434.zeusmp	69.7	131	69.6	131	<b><u>69.6</u></b>	<b><u>131</u></b>	69.7	131	69.6	131	<b><u>69.6</u></b>	<b><u>131</u></b>
435.gromacs	<b><u>163</u></b>	<b><u>43.8</u></b>	163	43.8	163	43.7	<b><u>163</u></b>	<b><u>43.8</u></b>	163	43.8	163	43.7
436.cactusADM	53.3	224	<b><u>53.3</u></b>	<b><u>224</u></b>	53.6	223	53.3	224	<b><u>53.3</u></b>	<b><u>224</u></b>	53.6	223
437.leslie3d	<b><u>117</u></b>	<b><u>80.3</u></b>	117	80.6	117	80.2	<b><u>117</u></b>	<b><u>80.3</u></b>	117	80.6	117	80.2
444.namd	271	29.6	271	29.6	<b><u>271</u></b>	<b><u>29.6</u></b>	264	30.4	264	30.4	<b><u>264</u></b>	<b><u>30.4</u></b>
447.dealII	<b><u>199</u></b>	<b><u>57.4</u></b>	198	57.7	202	56.7	<b><u>199</u></b>	<b><u>57.4</u></b>	198	57.7	202	56.7
450.soplex	194	43.0	197	42.2	<b><u>195</u></b>	<b><u>42.9</u></b>	194	43.0	197	42.2	<b><u>195</u></b>	<b><u>42.9</u></b>
453.povray	<b><u>101</u></b>	<b><u>52.9</u></b>	100	53.0	101	52.9	89.7	59.3	<b><u>89.7</u></b>	<b><u>59.3</u></b>	90.4	58.8
454.calculix	156	52.8	156	53.0	<b><u>156</u></b>	<b><u>52.9</u></b>	<b><u>138</u></b>	<b><u>59.7</u></b>	138	59.8	138	59.7
459.GemsFDTD	157	67.4	<b><u>157</u></b>	<b><u>67.4</u></b>	157	67.4	152	69.7	<b><u>152</u></b>	<b><u>69.6</u></b>	153	69.5
465.tonto	210	46.9	<b><u>210</u></b>	<b><u>46.9</u></b>	210	46.9	<b><u>198</u></b>	<b><u>49.7</u></b>	198	49.8	198	49.6
470.lbm	<b><u>99.3</u></b>	<b><u>138</u></b>	99.3	138	98.8	139	<b><u>99.3</u></b>	<b><u>138</u></b>	99.3	138	98.8	139
481.wrf	<b><u>115</u></b>	<b><u>96.8</u></b>	116	96.5	115	96.8	<b><u>115</u></b>	<b><u>96.8</u></b>	116	96.5	115	96.8
482.sphinx3	253	76.9	<b><u>254</u></b>	<b><u>76.8</u></b>	255	76.3	<b><u>253</u></b>	<b><u>76.9</u></b>	<b><u>254</u></b>	<b><u>76.8</u></b>	255	76.3

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/redhat\_transparent\_hugepage/enabled

## Platform Notes

BIOS Configuration:  
HP Power Profile set to Custom  
HP Power Regulator to High Performance Mode  
Minimum Processor Idle Power Core C-State set to C6 Package  
Minimum Processor Idle Power Package C-State set to No Package State  
Collaborative Power Control set to Disabled  
Thermal Configuration set to Maximum Cooling  
Processor Power and Utilization Monitoring set to Disabled

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ProLiant ML10 v2 Gen8  
(3.10 GHz, Intel Xeon E3-1220 v3)

SPECfp\_base2006 = 69.9

**CPU2006 license:** 3  
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**Test date:** Feb-2015  
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**Software Availability:** Sep-2014

### Platform Notes (Continued)

Memory Double Refresh Rate set to 1x Refresh

Sysinfo program /home/cpu2006/config/sysinfo.rev6914  
\$Rev: 6914 \$ \$Date:: 2014-06-25 #\$ e3fbb8667b5a285932ceab81e28219e1  
running on ML10-G8-v2 Wed Feb 25 11:01:31 2015

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 E3-1220 v3 @ 3.10GHz
 1 "physical id"s (chips)
 4 "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
cache size : 8192 KB
```

```
From /proc/meminfo
MemTotal:      16098992 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 ML10-G8-v2 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 25 05:50

SPEC is set to: /home/cpu2006

Filesystem	Type	Size	Used	Avail	Use%	Mounted on
/dev/mapper/rhel_ml10--g8--v2-home	xfs	175G	7.7G	167G	5%	/home

Additional information from dmidecode:

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## Platform Notes (Continued)

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 J10 02/02/2015

Memory:

2x HP 669239-081 8 GB 2 rank 1600 MHz

2x UNKNOWN NOT AVAILABLE

(End of data from sysinfo program)

## General Notes

Environment variables set by runspec before the start of the run:

KMP\_AFFINITY = "granularity=fine,compact"

LD\_LIBRARY\_PATH = "/home/cpu2006/libs/32:/home/cpu2006/libs/64:/home/cpu2006/sh"

OMP\_NUM\_THREADS = "4"

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

## 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.lelie3d: -DSPEC\_CPU\_LP64

444.namd: -DSPEC\_CPU\_LP64

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## Base Portability Flags (Continued)

```

447.deallI: -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

```

Benchmarks using both Fortran and C:

```

icc -m64 ifort -m64

```

## Peak Portability Flags

Same as Base Portability Flags



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**Software Availability:** Sep-2014

## 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.dealIII: 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

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

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## Peak Optimization Flags (Continued)

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-revD.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-revD.xml>

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For questions about this result, please contact the tester.  
For other inquiries, please contact [webmaster@spec.org](mailto:webmaster@spec.org).

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