



# SPEC® CFP2006 Result

Copyright 2006-2015 Standard Performance Evaluation Corporation

## Hewlett-Packard Company

SPECfp®2006 = 113

ProLiant DL560 Gen9  
(2.90 GHz, Intel Xeon E5-4655 v3)

SPECfp\_base2006 = 108

CPU2006 license: 3

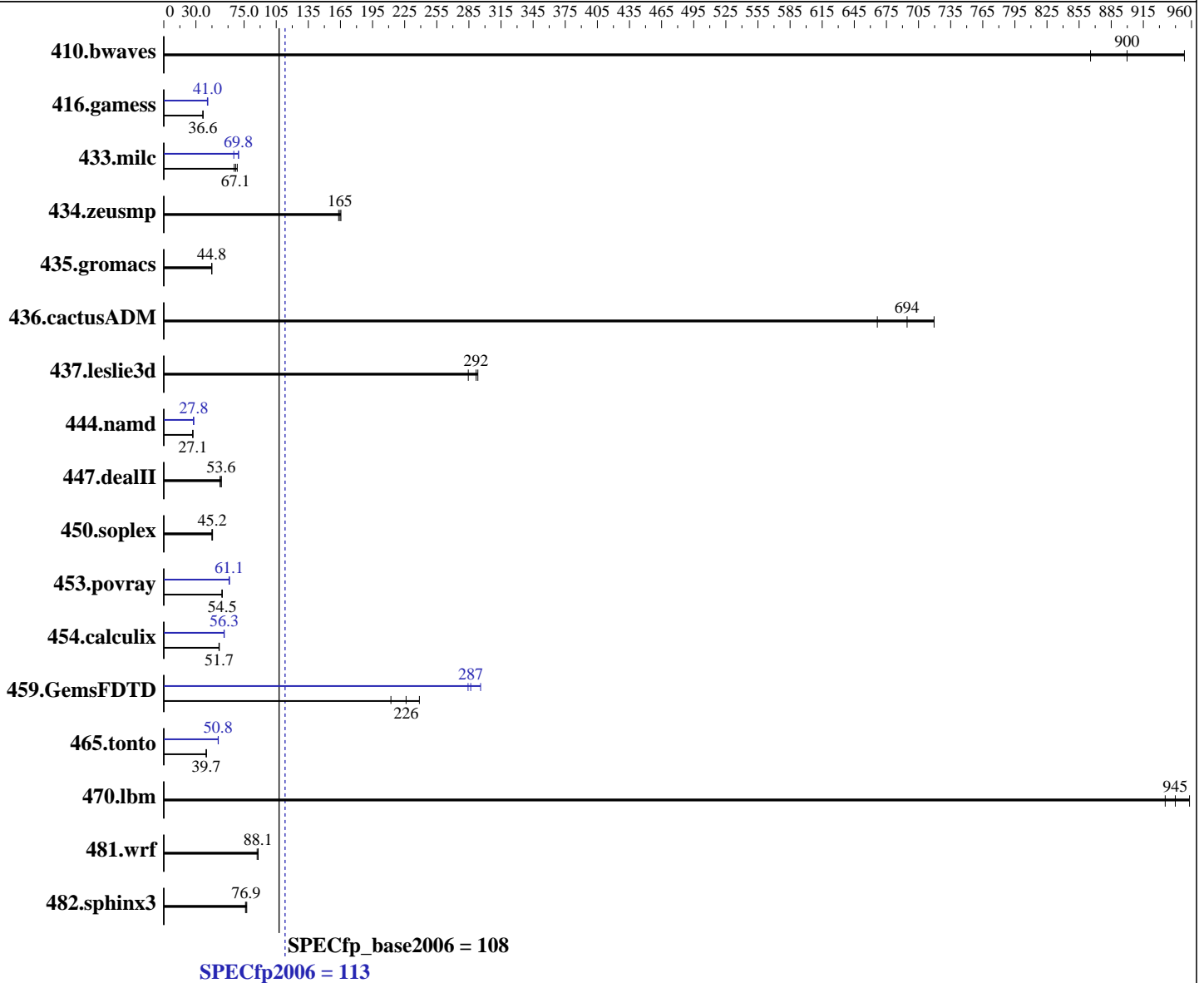
Test date: Apr-2015

Test sponsor: Hewlett-Packard Company

Hardware Availability: Jun-2015

Tested by: Hewlett-Packard Company

Software Availability: Oct-2014



Hardware	
CPU Name:	Intel Xeon E5-4655 v3
CPU Characteristics:	Intel Turbo Boost Technology up to 3.20 GHz
CPU MHz:	2900
FPU:	Integrated
CPU(s) enabled:	24 cores, 4 chips, 6 cores/chip
CPU(s) orderable:	2,4 chip
Primary Cache:	32 KB I + 32 KB D on chip per core
Secondary Cache:	256 KB I+D on chip per core

Software	
Operating System:	SUSE Linux Enterprise Server 12 (x86_64) Kernel 3.12.28-4-default
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
System State:	Run level 3 (multi-user)

Continued on next page

Continued on next page



# SPEC CFP2006 Result

Copyright 2006-2015 Standard Performance Evaluation Corporation

## Hewlett-Packard Company

SPECfp2006 = **113**

ProLiant DL560 Gen9  
(2.90 GHz, Intel Xeon E5-4655 v3)

SPECfp\_base2006 = **108**

CPU2006 license: 3

Test date: Apr-2015

Test sponsor: Hewlett-Packard Company

Hardware Availability: Jun-2015

Tested by: Hewlett-Packard Company

Software Availability: Oct-2014

L3 Cache: 30 MB I+D on chip per chip  
Other Cache: None  
Memory: 512 GB (32 x 16 GB 2Rx4 PC4-2133P-R)  
Disk Subsystem: 1 x 400 GB SAS SSD, RAID 0  
Other Hardware: None

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	15.7	866	<b><u>15.1</u></b>	<b><u>900</u></b>	14.3	953	15.7	866	<b><u>15.1</u></b>	<b><u>900</u></b>	14.3	953
416.gamess	536	36.5	<b><u>535</u></b>	<b><u>36.6</u></b>	534	36.7	481	40.7	<b><u>478</u></b>	<b><u>41.0</u></b>	477	41.0
433.milc	134	68.6	<b><u>137</u></b>	<b><u>67.1</u></b>	140	65.7	140	65.4	<b><u>132</u></b>	<b><u>69.8</u></b>	131	69.8
434.zeusmp	55.0	165	<b><u>55.3</u></b>	<b><u>165</u></b>	55.7	163	55.0	165	<b><u>55.3</u></b>	<b><u>165</u></b>	55.7	163
435.gromacs	159	44.9	160	44.7	<b><u>159</u></b>	<b><u>44.8</u></b>	159	44.9	160	44.7	<b><u>159</u></b>	<b><u>44.8</u></b>
436.cactusADM	17.9	667	<b><u>17.2</u></b>	<b><u>694</u></b>	16.6	720	17.9	667	<b><u>17.2</u></b>	<b><u>694</u></b>	16.6	720
437.leslie3d	<b><u>32.2</u></b>	<b><u>292</u></b>	33.0	284	32.0	293	<b><u>32.2</u></b>	<b><u>292</u></b>	33.0	284	32.0	293
444.namd	296	27.1	<b><u>296</u></b>	<b><u>27.1</u></b>	296	27.1	<b><u>288</u></b>	<b><u>27.8</u></b>	288	27.9	288	27.8
447.dealII	<b><u>214</u></b>	<b><u>53.6</u></b>	213	53.7	218	52.5	<b><u>214</u></b>	<b><u>53.6</u></b>	213	53.7	218	52.5
450.soplex	183	45.6	186	44.9	<b><u>184</u></b>	<b><u>45.2</u></b>	183	45.6	186	44.9	<b><u>184</u></b>	<b><u>45.2</u></b>
453.povray	97.2	54.7	<b><u>97.6</u></b>	<b><u>54.5</u></b>	98.1	54.3	<b><u>87.1</u></b>	<b><u>61.1</u></b>	87.3	60.9	86.7	61.4
454.calculix	<b><u>159</u></b>	<b><u>51.7</u></b>	159	51.8	160	51.5	146	56.5	147	56.2	<b><u>146</u></b>	<b><u>56.3</u></b>
459.GemsFDTD	44.4	239	<b><u>46.9</u></b>	<b><u>226</u></b>	50.0	212	37.3	284	<b><u>37.0</u></b>	<b><u>287</u></b>	35.9	296
465.tonto	247	39.8	248	39.6	<b><u>248</u></b>	<b><u>39.7</u></b>	193	51.0	194	50.8	<b><u>194</u></b>	<b><u>50.8</u></b>
470.lbm	14.7	935	14.3	958	<b><u>14.5</u></b>	<b><u>945</u></b>	14.7	935	14.3	958	<b><u>14.5</u></b>	<b><u>945</u></b>
481.wrf	128	87.2	<b><u>127</u></b>	<b><u>88.1</u></b>	127	88.2	128	87.2	<b><u>127</u></b>	<b><u>88.1</u></b>	127	88.2
482.sphinx3	251	77.5	255	76.3	<b><u>254</u></b>	<b><u>76.9</u></b>	251	77.5	255	76.3	<b><u>254</u></b>	<b><u>76.9</u></b>

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:  
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 Package C6 (retention) State  
Energy/Performance Bias set to Maximum Performance  
Collaborative Power Control set to Disabled

Continued on next page



# SPEC CFP2006 Result

Copyright 2006-2015 Standard Performance Evaluation Corporation

## Hewlett-Packard Company

SPECfp2006 = 113

ProLiant DL560 Gen9  
(2.90 GHz, Intel Xeon E5-4655 v3)

SPECfp\_base2006 = 108

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

**Test date:** Apr-2015  
**Hardware Availability:** Jun-2015  
**Software Availability:** Oct-2014

### Platform Notes (Continued)

Thermal Configuration set to Maximum Cooling  
Processor Power and Utilization Monitoring set to Disabled  
Memory Refresh Rate set to 1x Refresh  
Sysinfo program /home/cpu2006/config/sysinfo.rev6914  
\$Rev: 6914 \$ \$Date:: 2014-06-25 #\$ e3fbb8667b5a285932ceab81e28219e1  
running on dl560cgen9sles12 Wed Apr 29 16:14:55 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 E5-4655 v3 @ 2.90GHz
 4 "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    : 6
  siblings     : 6
  physical 0: cores 1 3 5 9 11 12
  physical 1: cores 1 3 5 9 11 12
  physical 2: cores 1 3 5 9 11 12
  physical 3: cores 1 3 5 9 11 12
cache size     : 30720 KB
```

```
From /proc/meminfo
MemTotal:      529314924 kB
HugePages_Total: 0
Hugepagesize:  2048 kB
```

```
From /etc/*release* /etc/*version*
SuSE-release:
SUSE Linux Enterprise Server 12 (x86_64)
VERSION = 12
PATCHLEVEL = 0
# This file is deprecated and will be removed in a future service pack or release.
# Please check /etc/os-release for details about this release.
os-release:
NAME="SLES"
VERSION="12"
VERSION_ID="12"
PRETTY_NAME="SUSE Linux Enterprise Server 12"
ID="sles"
ANSI_COLOR="0;32"
CPE_NAME="cpe:/o:suse:sles:12"
```

```
uname -a:
Linux dl560cgen9sles12 3.12.28-4-default #1 SMP Thu Sep 25 17:02:34 UTC 2014
(9879bd4) x86_64 x86_64 x86_64 GNU/Linux
```

Continued on next page



# SPEC CFP2006 Result

Copyright 2006-2015 Standard Performance Evaluation Corporation

## Hewlett-Packard Company

SPECfp2006 = 113

ProLiant DL560 Gen9  
(2.90 GHz, Intel Xeon E5-4655 v3)

SPECfp\_base2006 = 108

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

Test date: Apr-2015  
Hardware Availability: Jun-2015  
Software Availability: Oct-2014

### Platform Notes (Continued)

run-level 3 Apr 29 10:39

SPEC is set to: /home/cpu2006

Filesystem	Type	Size	Used	Avail	Use%	Mounted on
/dev/mapper/rhel-home	xfs	320G	3.9G	316G	2%	/home

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 P85 03/05/2015

Memory:

32x HP 752369-081 16 GB 2 rank 2133 MHz  
16x UNKNOWN NOT AVAILABLE

(End of data from sysinfo program)

Regarding the sysinfo display about the memory installed, the correct amount of memory is 512 GB and the dmidecode description should have one line reading as:  
32x HP 752369-081 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 = "/home/cpu2006/libs/32:/home/cpu2006/libs/64:/home/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



# SPEC CFP2006 Result

Copyright 2006-2015 Standard Performance Evaluation Corporation

**Hewlett-Packard Company**

**SPECfp2006 = 113**

ProLiant DL560 Gen9  
(2.90 GHz, Intel Xeon E5-4655 v3)

**SPECfp\_base2006 = 108**

**CPU2006 license:** 3

**Test date:** Apr-2015

**Test sponsor:** Hewlett-Packard Company

**Hardware Availability:** Jun-2015

**Tested by:** Hewlett-Packard Company

**Software Availability:** Oct-2014

## 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.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

```

Continued on next page



# SPEC CFP2006 Result

Copyright 2006-2015 Standard Performance Evaluation Corporation

**Hewlett-Packard Company**

**SPECfp2006 = 113**

ProLiant DL560 Gen9  
(2.90 GHz, Intel Xeon E5-4655 v3)

**SPECfp\_base2006 = 108**

**CPU2006 license:** 3

**Test date:** Apr-2015

**Test sponsor:** Hewlett-Packard Company

**Hardware Availability:** Jun-2015

**Tested by:** Hewlett-Packard Company

**Software Availability:** Oct-2014

## 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

Continued on next page



# SPEC CFP2006 Result

Copyright 2006-2015 Standard Performance Evaluation Corporation

## Hewlett-Packard Company

ProLiant DL560 Gen9  
(2.90 GHz, Intel Xeon E5-4655 v3)

SPECfp2006 = 113

SPECfp\_base2006 = 108

CPU2006 license: 3

Test sponsor: Hewlett-Packard Company

Tested by: Hewlett-Packard Company

Test date: Apr-2015

Hardware Availability: Jun-2015

Software Availability: Oct-2014

## 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>

SPEC and SPECfp are registered trademarks of the Standard Performance Evaluation Corporation. All other brand and product names appearing in this result are trademarks or registered trademarks of their respective holders.

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

Tested with SPEC CPU2006 v1.2.

Report generated on Tue Jun 2 13:49:21 2015 by SPEC CPU2006 PS/PDF formatter v6932.

Originally published on 2 June 2015.