



# SPEC<sup>®</sup> CFP2006 Result

Copyright 2006-2015 Standard Performance Evaluation Corporation

## Hewlett-Packard Company

SPECfp<sup>®</sup>\_rate2006 = 1600

ProLiant DL580 Gen9  
(2.80 GHz, Intel Xeon E7-8891 v3)

SPECfp\_rate\_base2006 = 1540

CPU2006 license: 3

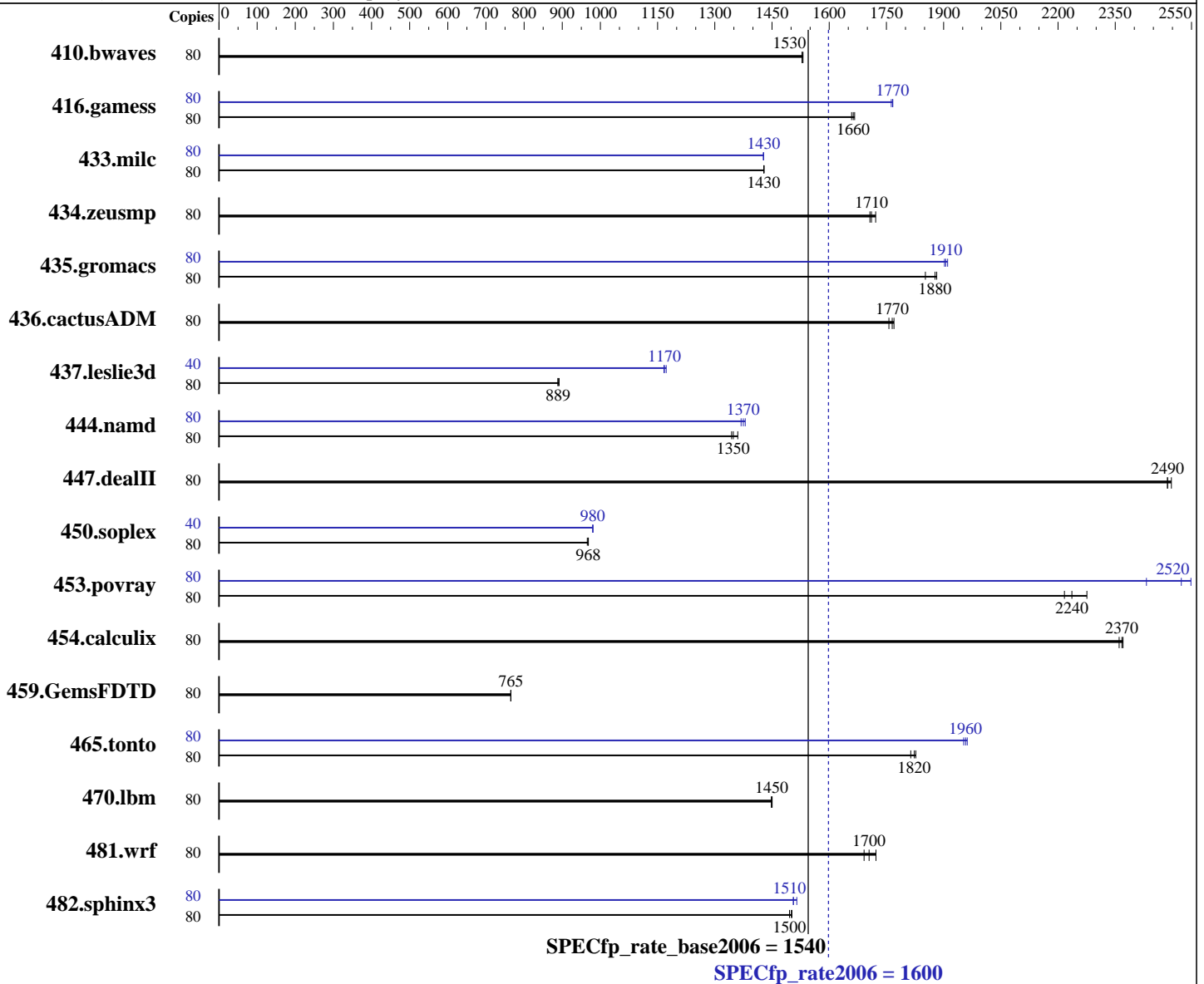
Test sponsor: Hewlett-Packard Company

Tested by: Hewlett-Packard Company

Test date: May-2015

Hardware Availability: May-2015

Software Availability: Oct-2014



### Hardware

CPU Name: Intel Xeon E7-8891 v3  
 CPU Characteristics: Intel Turbo Boost Technology up to 3.50 GHz  
 CPU MHz: 2800  
 FPU: Integrated  
 CPU(s) enabled: 40 cores, 4 chips, 10 cores/chip, 2 threads/core  
 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

Continued on next page

### 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: No  
 File System: xfs  
 System State: Run level 3 (multi-user)

Continued on next page



# SPEC CFP2006 Result

Copyright 2006-2015 Standard Performance Evaluation Corporation

## Hewlett-Packard Company

SPECfp\_rate2006 = 1600

ProLiant DL580 Gen9  
(2.80 GHz, Intel Xeon E7-8891 v3)

SPECfp\_rate\_base2006 = 1540

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

Test date: May-2015  
Hardware Availability: May-2015  
Software Availability: Oct-2014

L3 Cache: 45 MB I+D on chip per chip  
Other Cache: None  
Memory: 512 GB (32 x 16 GB 2Rx4 PC4-2133P-R, running at 1600 MHz)  
Disk Subsystem: 1 x 400 GB SAS SSD, RAID 0  
Other Hardware: None

Base Pointers: 32/64-bit  
Peak Pointers: 32/64-bit  
Other Software: None

## Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	80	710	1530	711	1530	<b><u>711</u></b>	<b><u>1530</u></b>	80	710	1530	711	1530	<b><u>711</u></b>	<b><u>1530</u></b>
416.gamess	80	944	1660	<b><u>942</u></b>	<b><u>1660</u></b>	940	1670	80	887	1770	<b><u>887</u></b>	<b><u>1770</u></b>	889	1760
433.milc	80	514	1430	<b><u>514</u></b>	<b><u>1430</u></b>	514	1430	80	<b><u>514</u></b>	<b><u>1430</u></b>	515	1430	514	1430
434.zeusmp	80	423	1720	427	1710	<b><u>426</u></b>	<b><u>1710</u></b>	80	423	1720	427	1710	<b><u>426</u></b>	<b><u>1710</u></b>
435.gromacs	80	308	1850	304	1880	<b><u>304</u></b>	<b><u>1880</u></b>	80	<b><u>300</u></b>	<b><u>1910</u></b>	300	1900	299	1910
436.cactusADM	80	540	1770	544	1760	<b><u>542</u></b>	<b><u>1770</u></b>	80	540	1770	544	1760	<b><u>542</u></b>	<b><u>1770</u></b>
437.leslie3d	80	846	889	843	892	<b><u>846</u></b>	<b><u>889</u></b>	40	321	1170	322	1170	<b><u>322</u></b>	<b><u>1170</u></b>
444.namd	80	472	1360	<b><u>476</u></b>	<b><u>1350</u></b>	477	1340	80	<b><u>467</u></b>	<b><u>1370</u></b>	465	1380	469	1370
447.dealII	80	368	2490	366	2500	<b><u>368</u></b>	<b><u>2490</u></b>	80	368	2490	366	2500	<b><u>368</u></b>	<b><u>2490</u></b>
450.soplex	80	689	969	<b><u>689</u></b>	<b><u>968</u></b>	691	966	40	<b><u>340</u></b>	<b><u>980</u></b>	340	980	340	980
453.povray	80	187	2280	<b><u>190</u></b>	<b><u>2240</u></b>	192	2220	80	<b><u>169</u></b>	<b><u>2520</u></b>	175	2430	167	2550
454.calculix	80	278	2370	280	2360	<b><u>279</u></b>	<b><u>2370</u></b>	80	278	2370	280	2360	<b><u>279</u></b>	<b><u>2370</u></b>
459.GemsFDTD	80	1109	765	<b><u>1109</u></b>	<b><u>765</u></b>	1109	765	80	1109	765	<b><u>1109</u></b>	<b><u>765</u></b>	1109	765
465.tonto	80	434	1810	431	1830	<b><u>432</u></b>	<b><u>1820</u></b>	80	403	1950	401	1960	<b><u>402</u></b>	<b><u>1960</u></b>
470.lbm	80	<b><u>759</u></b>	<b><u>1450</u></b>	758	1450	759	1450	80	<b><u>759</u></b>	<b><u>1450</u></b>	758	1450	759	1450
481.wrf	80	528	1690	519	1720	<b><u>524</u></b>	<b><u>1700</u></b>	80	528	1690	519	1720	<b><u>524</u></b>	<b><u>1700</u></b>
482.sphinx3	80	<b><u>1039</u></b>	<b><u>1500</u></b>	1042	1500	1038	1500	80	1029	1520	<b><u>1035</u></b>	<b><u>1510</u></b>	1036	1510

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

## Submit Notes

The numactl mechanism was used to bind copies to processors. The config file option 'submit' was used to generate numactl commands to bind each copy to a specific processor. For details, please see the config file.

## 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  
Filesystem page cache cleared with:  
echo 1 > /proc/sys/vm/drop\_caches  
runspec command invoked through numactl i.e.:  
numactl --interleave=all runspec <etc>



# SPEC CFP2006 Result

Copyright 2006-2015 Standard Performance Evaluation Corporation

## Hewlett-Packard Company

SPECfp\_rate2006 = 1600

ProLiant DL580 Gen9  
(2.80 GHz, Intel Xeon E7-8891 v3)

SPECfp\_rate\_base2006 = 1540

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

**Test date:** May-2015  
**Hardware Availability:** May-2015  
**Software Availability:** Oct-2014

### Platform Notes

#### BIOS Configuration

Power Profile set to Custom  
Power Regulator set to Static High Performance Mode  
Minimum Processor Idle Power Core C-State set to C6 State  
Minimum Processor Idle Power Package C-State set to No Package State  
Energy/Performance Bias set to Maximum Performance  
Collaborative Power Control set to Enabled  
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 linux-yu57 Sat May 16 09:34:54 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 E7-8891 v3 @ 2.80GHz
 4 "physical id"s (chips)
 80 "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 : 10
  siblings  : 20
  physical 0: cores 0 1 2 4 6 8 17 19 20 23
  physical 1: cores 0 1 2 4 6 8 17 19 20 23
  physical 2: cores 0 1 2 4 6 8 17 19 20 23
  physical 3: cores 0 1 2 4 6 8 17 19 20 23
cache size : 46080 KB
```

#### From /proc/meminfo

```
MemTotal:      529164112 kB
HugePages_Total:    0
Hugepagesize:    2048 kB
```

#### /usr/bin/lsb\_release -d

```
SUSE Linux Enterprise Server 12
```

#### 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"
```

Continued on next page



# SPEC CFP2006 Result

Copyright 2006-2015 Standard Performance Evaluation Corporation

## Hewlett-Packard Company

SPECfp\_rate2006 = 1600

ProLiant DL580 Gen9  
(2.80 GHz, Intel Xeon E7-8891 v3)

SPECfp\_rate\_base2006 = 1540

CPU2006 license: 3

Test date: May-2015

Test sponsor: Hewlett-Packard Company

Hardware Availability: May-2015

Tested by: Hewlett-Packard Company

Software Availability: Oct-2014

### Platform Notes (Continued)

```

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 linux-yu57 3.12.28-4-default #1 SMP Thu Sep 25 17:02:34 UTC 2014
(9879bd4) x86_64 x86_64 x86_64 GNU/Linux

```

run-level 3 May 15 23:31

```

SPEC is set to: /home/cpu2006
Filesystem      Type  Size  Used Avail Use% Mounted on
/dev/sda4       xfs   331G  113G  218G  35% /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 U17 03/13/2015

Memory:

```

11x HP 752369-081 16 GB 2 rank 2133 MHz, configured at 1600 MHz
64x UNKNOWN NOT AVAILABLE
21x UNKNOWN NOT AVAILABLE 16 GB 2 rank 2133 MHz, configured at 1600 MHz

```

(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 two lines reading as:

```

11x HP 752369-081 16 GB 2 rank 2133 MHz, configured at 1600 MHz
21x UNKNOWN NOT AVAILABLE 16 GB 2 rank 2133 MHz, configured at 1600 MHz

```

### General Notes

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

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

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

Continued on next page



# SPEC CFP2006 Result

Copyright 2006-2015 Standard Performance Evaluation Corporation

**Hewlett-Packard Company**

**SPECfp\_rate2006 = 1600**

ProLiant DL580 Gen9  
(2.80 GHz, Intel Xeon E7-8891 v3)

**SPECfp\_rate\_base2006 = 1540**

**CPU2006 license:** 3

**Test date:** May-2015

**Test sponsor:** Hewlett-Packard Company

**Hardware Availability:** May-2015

**Tested by:** Hewlett-Packard Company

**Software Availability:** Oct-2014

## Base Compiler Invocation (Continued)

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  
 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 -opt-prefetch -auto-p32  
-ansi-alias -opt-mem-layout-trans=3

C++ benchmarks:

-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch -auto-p32  
-ansi-alias -opt-mem-layout-trans=3

Fortran benchmarks:

-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch

Benchmarks using both Fortran and C:

-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch -auto-p32  
-ansi-alias -opt-mem-layout-trans=3



# SPEC CFP2006 Result

Copyright 2006-2015 Standard Performance Evaluation Corporation

**Hewlett-Packard Company**

**SPECfp\_rate2006 = 1600**

ProLiant DL580 Gen9  
(2.80 GHz, Intel Xeon E7-8891 v3)

**SPECfp\_rate\_base2006 = 1540**

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

**Test date:** May-2015  
**Hardware Availability:** May-2015  
**Software Availability:** Oct-2014

## Peak Compiler Invocation

C benchmarks:

icc -m64

C++ benchmarks (except as noted below):

icpc -m64

450.soplex: icpc -m32 -L/opt/intel/composer\_xe\_2015/lib/ia32

Fortran benchmarks:

ifort -m64

Benchmarks using both Fortran and C:

icc -m64 ifort -m64

## Peak 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  
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

## 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)  
-opt-mem-layout-trans=3(pass 2) -prof-use(pass 2)  
-auto-ilp32

470.lbm: basepeak = yes

482.sphinx3: -xCORE-AVX2 -ipo -O3 -no-prec-div -opt-mem-layout-trans=3  
-unroll2

Continued on next page



# SPEC CFP2006 Result

Copyright 2006-2015 Standard Performance Evaluation Corporation

**Hewlett-Packard Company**

**SPECfp\_rate2006 = 1600**

ProLiant DL580 Gen9  
(2.80 GHz, Intel Xeon E7-8891 v3)

**SPECfp\_rate\_base2006 = 1540**

**CPU2006 license:** 3

**Test date:** May-2015

**Test sponsor:** Hewlett-Packard Company

**Hardware Availability:** May-2015

**Tested by:** Hewlett-Packard Company

**Software Availability:** Oct-2014

## Peak Optimization Flags (Continued)

C++ benchmarks:

444.namd: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)  
-O3(pass 2) -no-prec-div(pass 2)  
-opt-mem-layout-trans=3(pass 2) -prof-use(pass 2) -fno-alias  
-auto-ilp32

447.dealIII: basepeak = yes

450.soplex: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)  
-O3(pass 2) -no-prec-div(pass 2)  
-opt-mem-layout-trans=3(pass 2) -prof-use(pass 2)  
-opt-malloc-options=3

453.povray: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)  
-O3(pass 2) -no-prec-div(pass 2)  
-opt-mem-layout-trans=3(pass 2) -prof-use(pass 2) -unroll14  
-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) -unroll12  
-inline-level=0 -scalar-rep-

434.zeusmp: basepeak = yes

437.leslie3d: -xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch

459.GemsFDTD: basepeak = yes

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) -unroll14  
-auto -inline-calloc -opt-malloc-options=3

Benchmarks using both Fortran and C:

435.gromacs: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)  
-O3(pass 2) -no-prec-div(pass 2)  
-opt-mem-layout-trans=3(pass 2) -prof-use(pass 2)  
-opt-prefetch -auto-ilp32

436.cactusADM: basepeak = yes

454.calculix: basepeak = yes

481.wrf: basepeak = yes



# SPEC CFP2006 Result

Copyright 2006-2015 Standard Performance Evaluation Corporation

**Hewlett-Packard Company**

**SPECfp\_rate2006 = 1600**

ProLiant DL580 Gen9  
(2.80 GHz, Intel Xeon E7-8891 v3)

**SPECfp\_rate\_base2006 = 1540**

**CPU2006 license:** 3

**Test date:** May-2015

**Test sponsor:** Hewlett-Packard Company

**Hardware Availability:** May-2015

**Tested by:** Hewlett-Packard Company

**Software Availability:** Oct-2014

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 13:49:24 2015 by SPEC CPU2006 PS/PDF formatter v6932.  
Originally published on 2 June 2015.