



# SPEC® CINT2006 Result

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## Hewlett-Packard Company

**SPECint®2006 = 54.4**

ProLiant DL560 Gen9  
(2.10 GHz, Intel Xeon E5-4669 v3)

**SPECint\_base2006 = 52.7**

**CPU2006 license:** 3

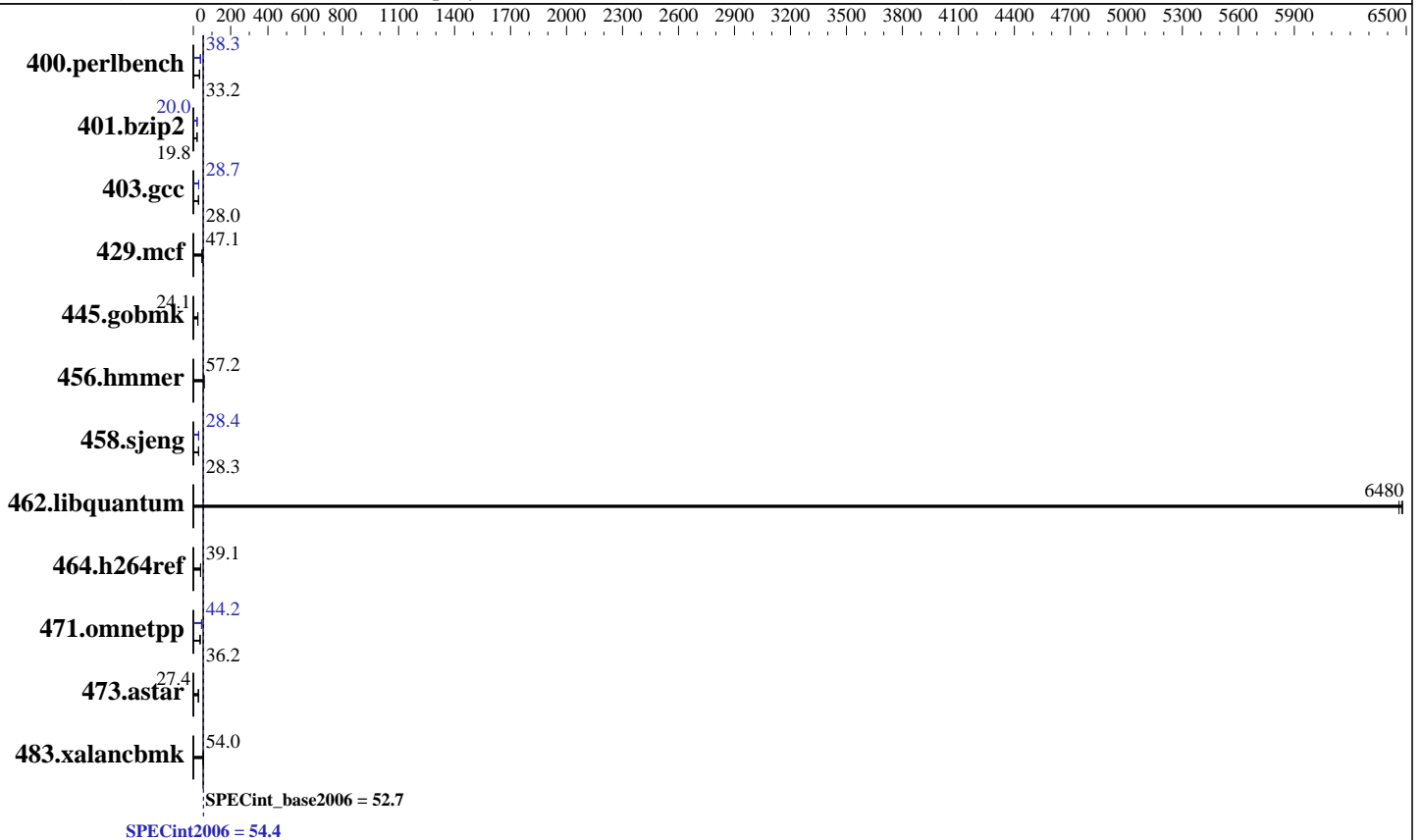
**Test date:** Apr-2015

**Test sponsor:** Hewlett-Packard Company

**Hardware Availability:** Jun-2015

**Tested by:** Hewlett-Packard Company

**Software Availability:** Oct-2014



### Hardware

CPU Name: Intel Xeon E5-4669 v3  
 CPU Characteristics: Intel Turbo Boost Technology up to 2.90 GHz  
 CPU MHz: 2100  
 FPU: Integrated  
 CPU(s) enabled: 36 cores, 2 chips, 18 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  
 L3 Cache: 45 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

### 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  
 Auto Parallel: Yes  
 File System: xfs  
 System State: Run level 3 (multi-user)  
 Base Pointers: 32/64-bit  
 Peak Pointers: 32/64-bit  
 Other Software: Microquill SmartHeap V10.0



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## Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
400.perlbench	293	33.3	294	33.2	<b><u>294</u></b>	<b><u>33.2</u></b>	256	38.2	<b><u>255</u></b>	<b><u>38.3</u></b>	254	38.4
401.bzip2	<b><u>487</u></b>	<b><u>19.8</u></b>	485	19.9	489	19.7	<b><u>482</u></b>	<b><u>20.0</u></b>	481	20.0	482	20.0
403.gcc	288	28.0	<b><u>288</u></b>	<b><u>28.0</u></b>	288	28.0	280	28.8	281	28.7	<b><u>280</u></b>	<b><u>28.7</u></b>
429.mcf	<b><u>194</u></b>	<b><u>47.1</u></b>	190	48.0	196	46.6	<b><u>194</u></b>	<b><u>47.1</u></b>	190	48.0	196	46.6
445.gobmk	436	24.1	434	24.2	<b><u>435</u></b>	<b><u>24.1</u></b>	436	24.1	434	24.2	<b><u>435</u></b>	<b><u>24.1</u></b>
456.hammer	163	57.1	163	57.3	<b><u>163</u></b>	<b><u>57.2</u></b>	163	57.1	163	57.3	<b><u>163</u></b>	<b><u>57.2</u></b>
458.sjeng	428	28.3	427	28.3	<b><u>428</u></b>	<b><u>28.3</u></b>	425	28.4	<b><u>426</u></b>	<b><u>28.4</u></b>	426	28.4
462.libquantum	3.20	6480	<b><u>3.20</u></b>	<b><u>6480</u></b>	3.21	6460	3.20	6480	<b><u>3.20</u></b>	<b><u>6480</u></b>	3.21	6460
464.h264ref	567	39.0	565	39.2	<b><u>566</u></b>	<b><u>39.1</u></b>	567	39.0	565	39.2	<b><u>566</u></b>	<b><u>39.1</u></b>
471.omnetpp	173	36.1	170	36.7	<b><u>173</u></b>	<b><u>36.2</u></b>	141	44.2	<b><u>141</u></b>	<b><u>44.2</u></b>	141	44.5
473.astar	<b><u>257</u></b>	<b><u>27.4</u></b>	255	27.6	258	27.3	<b><u>257</u></b>	<b><u>27.4</u></b>	255	27.6	258	27.3
483.xalancbmk	<b><u>128</u></b>	<b><u>54.0</u></b>	130	52.9	127	54.3	<b><u>128</u></b>	<b><u>54.0</u></b>	130	52.9	127	54.3

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

## Submit Notes

The config file option 'submit' was used.

## 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  
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 dl560gen9sles12cpu Sat Apr 25 23:33:49 2015

This section contains SUT (System Under Test) info as seen by some common utilities. To remove or add to this section, see:  
Continued on next page



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### Platform Notes (Continued)

<http://www.spec.org/cpu2006/Docs/config.html#sysinfo>

```

From /proc/cpuinfo
model name : Intel(R) Xeon(R) CPU E5-4669 v3 @ 2.10GHz
 2 "physical id"s (chips)
 36 "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 : 18
  siblings  : 18
  physical 0: cores 0 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27
  physical 1: cores 0 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27
cache size : 46080 KB

```

```

From /proc/meminfo
MemTotal:      264548428 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="/o:suse:sles:12"

```

```

uname -a:
Linux dl560gen9sles12cpu 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 Apr 25 23:28

```

SPEC is set to: /home/cpu2006
Filesystem      Type      Size      Used Avail Use% Mounted on
/dev/sda4        xfs       331G      6.0G  325G   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.

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## Platform Notes (Continued)

BIOS HP P85 03/05/2015

Memory:

16x HP 752369-081 16 GB 2 rank 2133 MHz

32x 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 one line reading as:

16x 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,scatter"

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

OMP\_NUM\_THREADS = "36"

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

## Base Portability Flags

400.perlbench: -DSPEC\_CPU\_LP64 -DSPEC\_CPU\_LINUX\_X64

401.bzip2: -DSPEC\_CPU\_LP64

403.gcc: -DSPEC\_CPU\_LP64

429.mcf: -DSPEC\_CPU\_LP64

445.gobmk: -DSPEC\_CPU\_LP64

456.hmmer: -DSPEC\_CPU\_LP64

458.sjeng: -DSPEC\_CPU\_LP64

462.libquantum: -DSPEC\_CPU\_LP64 -DSPEC\_CPU\_LINUX

464.h264ref: -DSPEC\_CPU\_LP64

471.omnetpp: -DSPEC\_CPU\_LP64

473.astar: -DSPEC\_CPU\_LP64

483.xalancbmk: -DSPEC\_CPU\_LP64 -DSPEC\_CPU\_LINUX



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## Base Optimization Flags

C benchmarks:

`-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -opt-prefetch -auto-p32`

C++ benchmarks:

`-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch -auto-p32  
-Wl,-z,muldefs -L/sh -lsmartheap64`

## Base Other Flags

C benchmarks:

`403.gcc: -Dalloca=_alloca`

## Peak Compiler Invocation

C benchmarks (except as noted below):

`icc -m64`

`400.perlbench: icc -m32 -L/opt/intel/composer_xe_2015/lib/ia32`

C++ benchmarks (except as noted below):

`icpc -m64`

`471.omnetpp: icpc -m32 -L/opt/intel/composer_xe_2015/lib/ia32`

## Peak Portability Flags

`400.perlbench: -DSPEC_CPU_LINUX_IA32  
401.bzip2: -DSPEC_CPU_LP64  
403.gcc: -DSPEC_CPU_LP64  
429.mcf: -DSPEC_CPU_LP64  
445.gobmk: -DSPEC_CPU_LP64  
456.hmmer: -DSPEC_CPU_LP64  
458.sjeng: -DSPEC_CPU_LP64  
462.libquantum: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX  
464.h264ref: -DSPEC_CPU_LP64  
473.astar: -DSPEC_CPU_LP64  
483.xalancbmk: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX`



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## Peak Optimization Flags

C benchmarks:

400.perlbench: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)  
-O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)  
-opt-prefetch -ansi-alias

401.bzip2: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)  
-O3(pass 2) -no-prec-div -prof-use(pass 2) -auto-ilp32  
-opt-prefetch -ansi-alias

403.gcc: -xCORE-AVX2 -ipo -O3 -no-prec-div -inline-calloc  
-opt-malloc-options=3 -auto-ilp32

429.mcf: basepeak = yes

445.gobmk: basepeak = yes

456.hmmer: basepeak = yes

458.sjeng: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)  
-O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)  
-unroll4

462.libquantum: basepeak = yes

464.h264ref: basepeak = yes

C++ benchmarks:

471.omnetpp: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)  
-O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)  
-opt-ra-region-strategy=block -ansi-alias  
-Wl,-z,muldefs -L/sh -lsmartheap

473.astar: basepeak = yes

483.xalancbmk: basepeak = yes

## Peak Other Flags

C benchmarks:

403.gcc: -Dalloca=\_alloca

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>



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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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For other inquiries, please contact [webmaster@spec.org](mailto:webmaster@spec.org).

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