



# SPEC® CINT2006 Result

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## Hewlett-Packard Company

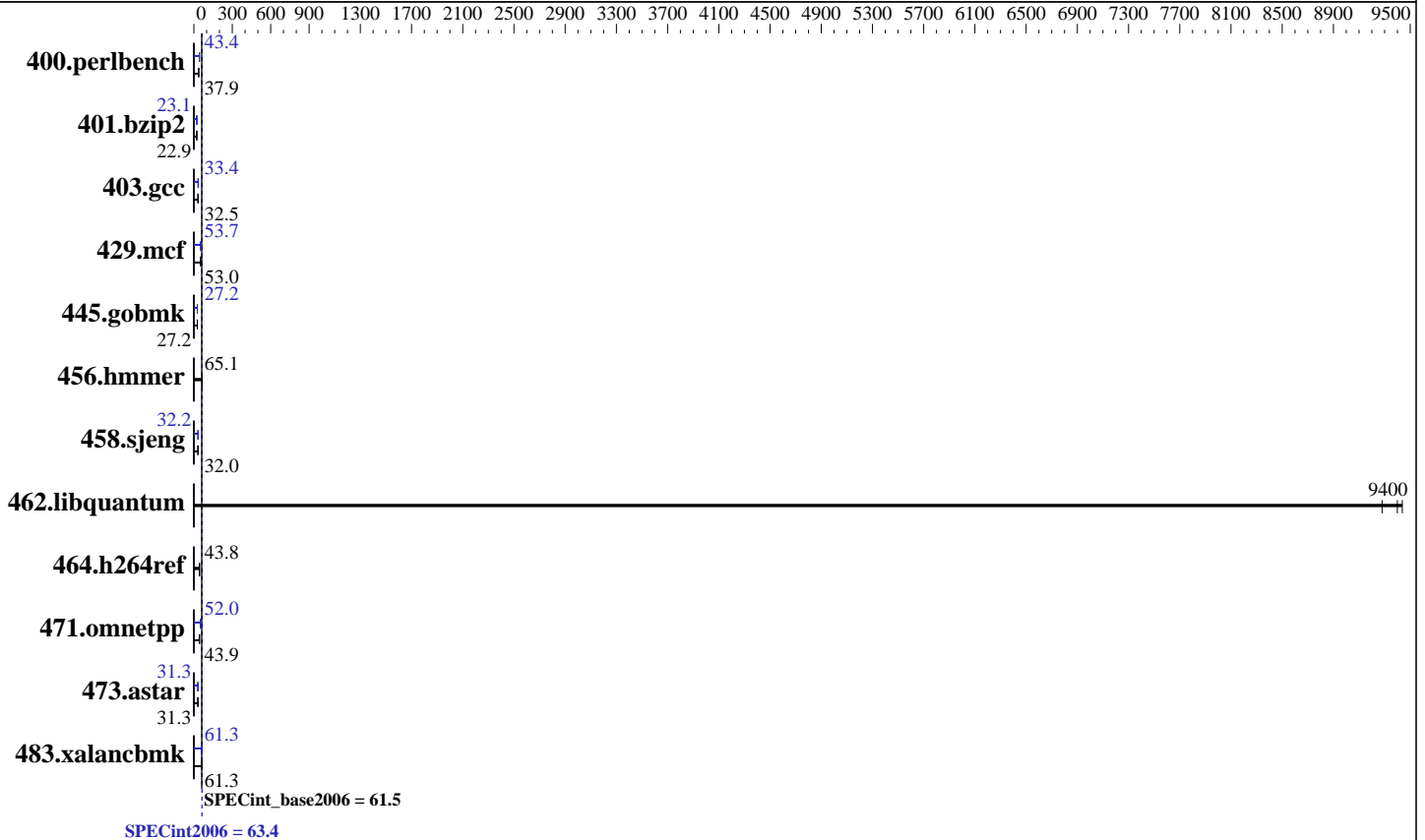
**SPECint®2006 = 63.4**

ProLiant DL580 Gen9  
(2.50 GHz, Intel Xeon E7-8867 v3)

**SPECint\_base2006 = 61.5**

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

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



### Hardware

**CPU Name:** Intel Xeon E7-8867 v3  
**CPU Characteristics:** Intel Turbo Boost Technology up to 3.30 GHz  
**CPU MHz:** 2500  
**FPU:** Integrated  
**CPU(s) enabled:** 64 cores, 4 chips, 16 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:** 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

### Software

**Operating System:** SUSE Linux Enterprise Server 12  
**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	259	37.8	257	38.0	<u>258</u>	<u>37.9</u>	225	43.4	<u>225</u>	<u>43.4</u>	225	43.4
401.bzip2	421	22.9	422	22.8	<u>422</u>	<u>22.9</u>	<u>418</u>	<u>23.1</u>	418	23.1	418	23.1
403.gcc	<u>248</u>	<u>32.5</u>	247	32.6	248	32.5	<u>241</u>	<u>33.4</u>	239	33.7	241	33.3
429.mcf	170	53.7	<u>172</u>	<u>53.0</u>	172	52.9	170	53.7	169	54.0	<u>170</u>	<u>53.7</u>
445.gobmk	385	27.2	<u>385</u>	<u>27.2</u>	385	27.3	386	27.2	<u>386</u>	<u>27.2</u>	387	27.1
456.hammer	143	65.1	144	65.0	<u>143</u>	<u>65.1</u>	143	65.1	144	65.0	<u>143</u>	<u>65.1</u>
458.sjeng	378	32.0	378	32.0	<u>378</u>	<u>32.0</u>	375	32.2	<u>376</u>	<u>32.2</u>	376	32.2
462.libquantum	<u>2.20</u>	<u>9400</u>	2.20	9440	2.23	9280	<u>2.20</u>	<u>9400</u>	2.20	9440	2.23	9280
464.h264ref	<u>505</u>	<u>43.8</u>	505	43.8	506	43.7	<u>505</u>	<u>43.8</u>	505	43.8	506	43.7
471.omnetpp	145	43.3	142	43.9	<u>142</u>	<u>43.9</u>	122	51.3	<u>120</u>	<u>52.0</u>	120	52.3
473.astar	222	31.6	224	31.3	<u>224</u>	<u>31.3</u>	223	31.4	225	31.2	<u>224</u>	<u>31.3</u>
483.xalancbmk	<u>113</u>	<u>61.3</u>	112	61.4	113	61.0	<u>113</u>	<u>61.3</u>	113	60.8	113	61.3

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  
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  
Intel Hyperthreading Options set to Disabled  
Sysinfo program /cpu2006/config/sysinfo.rev6914  
\$Rev: 6914 \$ \$Date:: 2014-06-25 #\$ e3fbb8667b5a285932ceab81e28219e1  
running on dl580gen9-4-sles12 Wed Apr 29 20:07:39 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 E7-8867 v3 @ 2.50GHz
 4 "physical id"s (chips)
 64 "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 : 16
  siblings  : 16
  physical 0: cores 0 2 3 4 8 9 10 11 16 17 18 20 24 25 27
  physical 1: cores 0 2 3 4 8 9 10 11 16 17 18 20 24 25 27
  physical 2: cores 0 2 3 4 8 9 10 11 16 17 18 20 24 25 27
  physical 3: cores 0 2 3 4 8 9 10 11 16 17 18 20 24 25 27
cache size : 46080 KB

```

```

From /proc/meminfo
MemTotal:      529165304 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"
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 dl580gen9-4-sles12 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 29 19:55

```

SPEC is set to: /cpu2006
Filesystem      Type  Size  Used Avail Use% Mounted on
/dev/sda3       xfs   371G  367G  3.8G  99% /

```

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 U17 03/13/2015

Memory:

32x HP 752369-081 16 GB 2 rank 2133 MHz, configured at 1600 MHz  
64x 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, configured at 1600 MHz

## General Notes

Environment variables set by runspec before the start of the run:  
KMP\_AFFINITY = "granularity=fine,scatter"  
LD\_LIBRARY\_PATH = "/cpu2006/libs/32:/cpu2006/libs/64:/cpu2006/sh"  
OMP\_NUM\_THREADS = "64"

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

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## Base Portability Flags (Continued)

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

## 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

445.gobmk: icc -m32 -L/opt/intel/composer\_xe\_2015/lib/ia32

C++ benchmarks (except as noted below):

icpc -m32 -L/opt/intel/composer\_xe\_2015/lib/ia32

473.astar: icpc -m64

## Peak Portability Flags

400.perlbench: -DSPEC\_CPU\_LINUX\_IA32  
401.bzip2: -DSPEC\_CPU\_LP64  
403.gcc: -DSPEC\_CPU\_LP64  
429.mcf: -DSPEC\_CPU\_LP64  
456.hmmer: -DSPEC\_CPU\_LP64  
458.sjeng: -DSPEC\_CPU\_LP64  
462.libquantum: -DSPEC\_CPU\_LP64 -DSPEC\_CPU\_LINUX

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## Peak Portability Flags (Continued)

464.h264ref: -DSPEC\_CPU\_LP64  
473.astar: -DSPEC\_CPU\_LP64  
483.xalancbmk: -DSPEC\_CPU\_LINUX

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

445.gobmk: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -prof-use(pass 2)  
-ansi-alias

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

483.xalancbmk: -xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch  
-ansi-alias -Wl,-z,muldefs -L/sh -lsmartheap



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## 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>

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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