SPEC® CINT2006 Result
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Hewlett-Packard Company

ProLiant DL560 Gen8
(3.30 GHz, Intel Xeon E5-4627 v2)

$SPECint®2006 =$ 60.2

$SPECint\_base2006 =$ 56.2
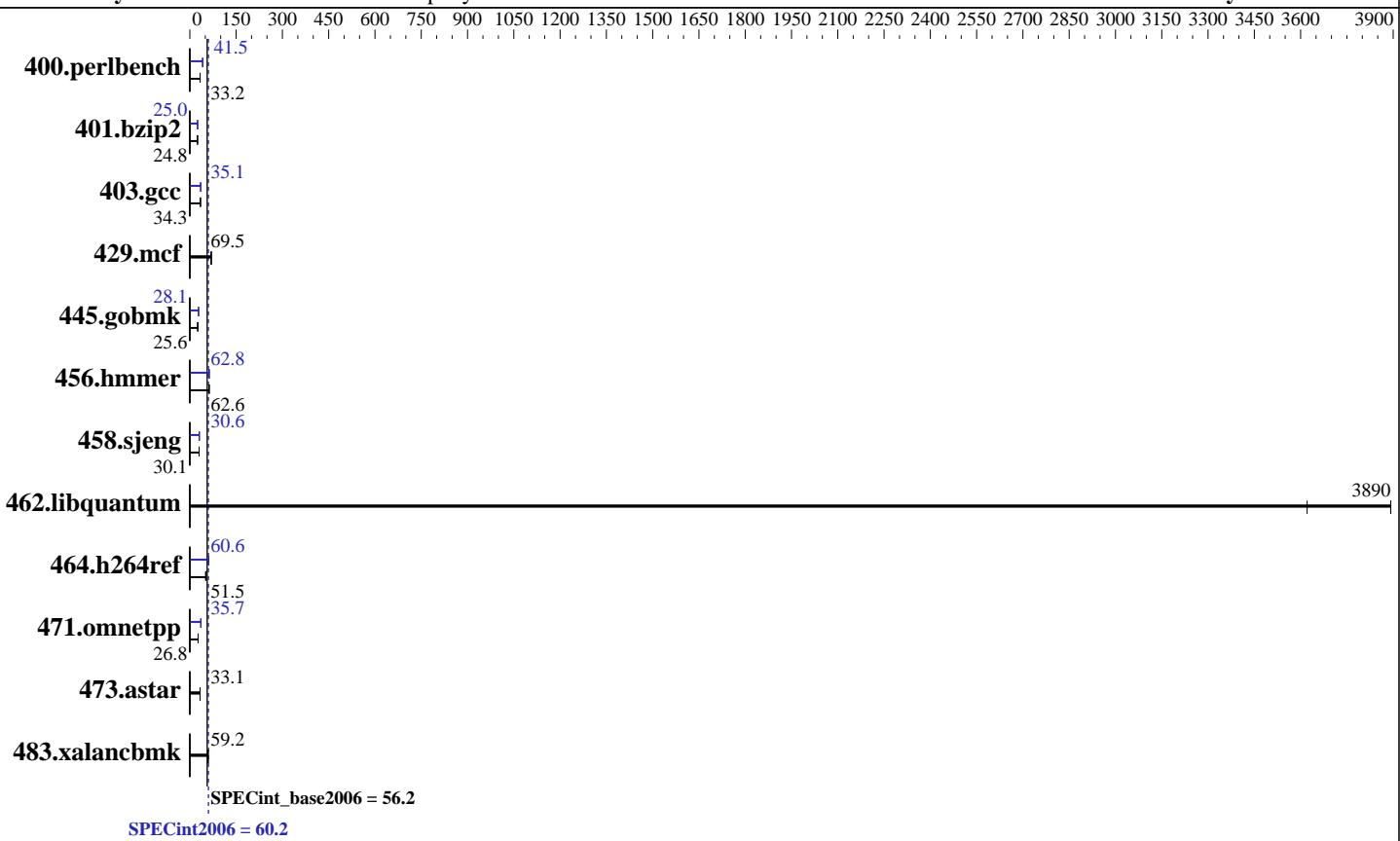
CPU2006 license: 3

Test sponsor: Hewlett-Packard Company

Tested by: Hewlett-Packard Company

Test date: Feb-2014

Hardware Availability: Mar-2014

Software Availability: Nov-2013

```
             0  150  300  450  600  750  900 1050 1200 1350 1500 1650 1800 1950 2100 2250 2400 2550 2700 2850 3000 3150 3300 3450 3600   3900

400.perlbench      41.5
                   33.2
  401.bzip2   25.0
              24.8
   403.gcc    35.1
              34.3
   429.mcf    69.5
  445.gobmk   28.1
              25.6
  456.hmmer   62.8
              62.6
  458.sjeng   30.6
              30.1
462.libquantum                                                                                                              3890
 464.h264ref  60.6
              51.5
 471.omnetpp  35.7
              26.8
   473.astar  33.1
483.xalancbmk 59.2
```

SPECint_base2006 = 56.2

SPECint2006 = 60.2

Hardware

CPU Name: Intel Xeon E5-4627 v2

CPU Characteristics: Intel Turbo Boost Technology up to 3.60 GHz

CPU MHz: 3300

FPU: Integrated

CPU(s) enabled: 32 cores, 4 chips, 8 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: 16 MB I+D on chip per chip

Other Cache: None

Memory: 512 GB (32 x 16 GB 2Rx4 PC3-14900R-13, ECC)

Disk Subsystem: 1 x 400 GB SAS SSD, RAID 0

Other Hardware: None

Software

Operating System: Red Hat Enterprise Linux Server release 6.5 (Santiago)
Kernel 2.6.32-431.el6.x86_64

Compiler: C/C++: Version 14.0.0.080 of Intel C++ Studio XE for Linux

Auto Parallel: Yes

File System: ext4

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	**294**	**33.2**	294	33.3	294	33.2	236	41.4	**236**	**41.5**	235	41.5
401.bzip2	**390**	**24.8**	389	24.8	390	24.8	386	25.0	386	25.0	**386**	**25.0**
403.gcc	**234**	**34.3**	234	34.4	235	34.3	229	35.1	**229**	**35.1**	229	35.1
429.mcf	131	69.6	132	69.0	**131**	**69.5**	131	69.6	132	69.0	**131**	**69.5**
445.gobmk	**409**	**25.6**	409	25.7	410	25.6	373	28.1	373	28.1	**373**	**28.1**
456.hmmer	**149**	**62.6**	149	62.6	150	62.4	149	62.8	**149**	**62.8**	149	62.4
458.sjeng	403	30.1	**402**	**30.1**	402	30.1	395	30.6	**395**	**30.6**	395	30.7
462.libquantum	5.32	3890	**5.32**	**3890**	5.72	3620	5.32	3890	**5.32**	**3890**	5.72	3620
464.h264ref	430	51.5	**429**	**51.5**	428	51.7	**365**	**60.6**	365	60.6	365	60.6
471.omnetpp	234	26.8	233	26.8	**234**	**26.8**	175	35.7	**175**	**35.7**	176	35.6
473.astar	211	33.2	**212**	**33.1**	213	33.0	211	33.2	**212**	**33.1**	213	33.0
483.xalancbmk	117	59.2	**117**	**59.2**	116	59.3	117	59.2	**117**	**59.2**	116	59.3

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/transparent_hugepage/enabled
```

Platform Notes

```
BIOS Configuration:
 HP Power Profile was set to Maximum Performance
 HP Power Regulator was set to HP Static High Performance Mode
 Minimum Processor Idle Power Core State set to C6 State
 Collaborative Power Control was set to Disabled
 Dynamic Power Capping Functionality was set to Disabled
 Thermal Configuration was set to Maximum Cooling
 Processor Power and Utilization Monitoring set to Disabled
 Memory Refresh Rate set to 1x Refresh
Sysinfo program /cpu2006/config/sysinfo.rev6818
$Rev: 6818 $ $Date:: 2012-07-17 #$ e86d102572650a6e4d596a3cee98f191
running on DL560-Gen8-IVB-EP4S.1JL Mon Feb 10 17:05:31 2014

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 E5-4627 v2 @ 3.30GHz
      4 "physical id"s (chips)
      32 "processors"
```

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Platform Notes (Continued)

```
    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 : 8
       siblings  : 8
       physical 0: cores 0 1 2 3 4 5 6 7
       physical 1: cores 0 1 2 3 4 5 6 7
       physical 2: cores 0 1 2 3 4 5 6 7
       physical 3: cores 0 1 2 3 4 5 6 7
    cache size : 16384 KB

  From /proc/meminfo
    MemTotal:       529233796 kB
    HugePages_Total:       0
    Hugepagesize:       2048 kB

  /usr/bin/lsb_release -d
    Red Hat Enterprise Linux Server release 6.5 (Santiago)

  From /etc/*release* /etc/*version*
    redhat-release: Red Hat Enterprise Linux Server release 6.5 (Santiago)
    system-release: Red Hat Enterprise Linux Server release 6.5 (Santiago)
    system-release-cpe: cpe:/o:redhat:enterprise_linux:6server:ga:server

  uname -a:
    Linux DL560-Gen8-IVB-EP4S.1JL 2.6.32-431.el6.x86_64 #1 SMP Sun Nov 10
    22:19:54 EST 2013 x86_64 x86_64 x86_64 GNU/Linux

  run-level 3 Feb 10 16:57

  SPEC is set to: /cpu2006
    Filesystem      Type  Size  Used Avail Use% Mounted on
    /dev/sda3       ext4  365G   13G  334G   4% /

  Additional information from dmidecode:
    BIOS HP P77 02/02/2014
    Memory:
    32x HP 712383-081 16 GB 1866 MHz 2 rank
    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 712383-081 16 GB 1866 MHz 2 rank
```

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 = "32"
```

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General Notes (Continued)

```
Binaries compiled on a system with 1x Core i7-860 CPU + 8GB
memory using RedHat EL 6.4
```

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
```

Base Optimization Flags

C benchmarks:
```
-xSSE4.2 -ipo -O3 -no-prec-div -parallel -opt-prefetch -auto-p32
```

C++ benchmarks:
```
-xSSE4.2 -ipo -O3 -no-prec-div -opt-prefetch -auto-p32
-Wl,-z,muldefs -L/sh -lsmartheap64
```

Base Other Flags

C benchmarks:

```
    403.gcc: -Dalloca=_alloca
```

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Peak Compiler Invocation

C benchmarks (except as noted below):
     `icc  -m64`

   400.perlbench: `icc -m32`

    445.gobmk: `icc -m32`

   464.h264ref: `icc -m32`

C++ benchmarks (except as noted below):
     `icpc -m64`

   471.omnetpp: `icpc -m32`

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`
           473.astar: `-DSPEC_CPU_LP64`
      483.xalancbmk: `-DSPEC_CPU_LP64 -DSPEC_CPU_LINUX`

Peak Optimization Flags

C benchmarks:

   400.perlbench: `-xSSE4.2(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: `-xSSE4.2(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: `-xSSE4.2 -ipo -O3 -no-prec-div -inline-calloc`
               `-opt-malloc-options=3 -auto-ilp32`

       429.mcf: `basepeak = yes`

      445.gobmk: `-xSSE4.2(pass 2) -prof-gen(pass 1) -prof-use(pass 2)`
               `-ansi-alias`

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Peak Optimization Flags (Continued)

456.hmmer: `-xSSE4.2 -ipo -O3 -no-prec-div -unroll2 -auto-ilp32 -ansi-alias`

458.sjeng: `-xSSE4.2(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: `-xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2) -unroll2 -ansi-alias`

C++ benchmarks:

471.omnetpp: `-xSSE4.2(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-ic14.0-official-linux64.20140128.html
http://www.spec.org/cpu2006/flags/HP-Platform-Flags-Intel-V1.2-revB.20131009.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic14.0-official-linux64.20140128.xml
http://www.spec.org/cpu2006/flags/HP-Platform-Flags-Intel-V1.2-revB.20131009.xml

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For other inquiries, please contact webmaster@spec.org.

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