SPEC® CINT2006 Result
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Hewlett-Packard Company

SPECint®2006 = 54.6

ProLiant BL660c Gen8
(2.70 GHz, Intel Xeon E5-4650)
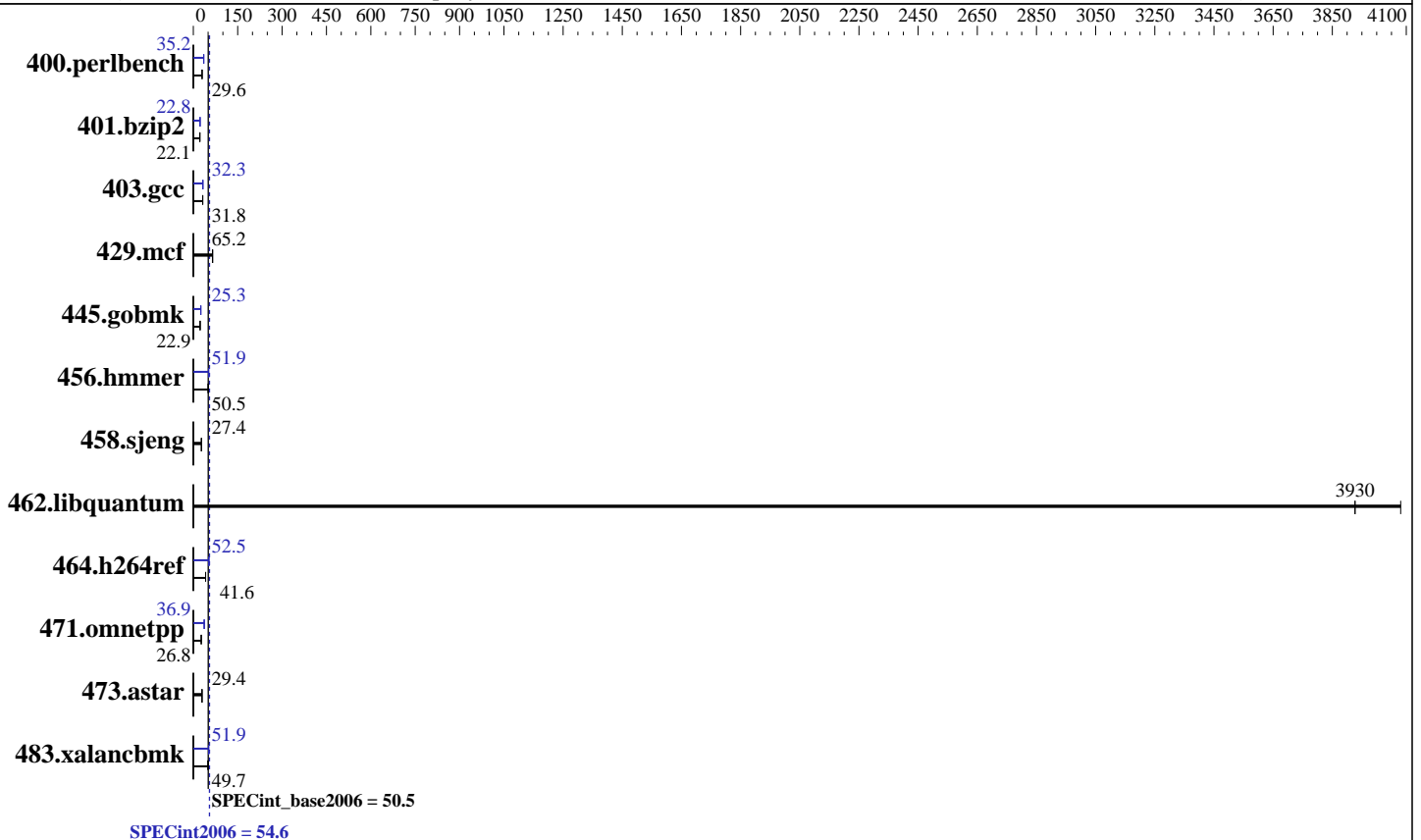
SPECint_base2006 = 50.5

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

Test date: Aug-2012
Hardware Availability: Oct-2012
Software Availability: Jun-2012

Benchmark results scale (0 to 4100):

Benchmark	Peak	Base
400.perlbench	35.2	29.6
401.bzip2	22.8	22.1
403.gcc	32.3	31.8
429.mcf	65.2	
445.gobmk	25.3	22.9
456.hmmer	51.9	50.5
458.sjeng	27.4	
462.libquantum	3930	
464.h264ref	52.5	41.6
471.omnetpp	36.9	26.8
473.astar	29.4	
483.xalancbmk	51.9	49.7

SPECint_base2006 = 50.5

SPECint2006 = 54.6

Hardware

CPU Name:	Intel Xeon E5-4650
CPU Characteristics:	Intel Turbo Boost Technology up to 3.30 GHz
CPU MHz:	2700
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:	20 MB I+D on chip per chip
Other Cache:	None
Memory:	256 GB (32 x 8 GB 2Rx4 PC3-12800R-11, ECC)
Disk Subsystem:	1 x 300 GB 10 K SAS
Other Hardware:	None

Software

Operating System:	Red Hat Enterprise Linux Server release 6.3 (Santiago) 2.6.32-279.el6.x86_64
Compiler:	C/C++: Version 12.1.0.225 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 V9.01

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Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
400.perlbench	330	29.6	**330**	**29.6**	330	29.6	277	35.3	**277**	**35.2**	278	35.2
401.bzip2	439	22.0	438	22.1	**438**	**22.1**	425	22.7	424	22.8	**424**	**22.8**
403.gcc	253	31.8	254	31.7	**253**	**31.8**	249	32.3	**249**	**32.3**	250	32.2
429.mcf	141	64.6	**140**	**65.2**	140	65.4	141	64.6	**140**	**65.2**	140	65.4
445.gobmk	458	22.9	457	23.0	**458**	**22.9**	**414**	**25.3**	414	25.3	414	25.3
456.hmmer	**185**	**50.5**	185	50.5	185	50.4	**180**	**51.9**	180	51.9	181	51.6
458.sjeng	442	27.4	**442**	**27.4**	442	27.4	442	27.4	**442**	**27.4**	442	27.4
462.libquantum	**5.28**	**3930**	5.08	4080	5.28	3930	**5.28**	**3930**	5.08	4080	5.28	3930
464.h264ref	534	41.5	532	41.6	**533**	**41.6**	421	52.5	**421**	**52.5**	421	52.5
471.omnetpp	234	26.7	233	26.8	**233**	**26.8**	169	36.9	170	36.7	**169**	**36.9**
473.astar	**239**	**29.4**	237	29.6	242	29.0	**239**	**29.4**	237	29.6	242	29.0
483.xalancbmk	**139**	**49.7**	139	49.7	139	49.6	133	51.9	**133**	**51.9**	133	51.9

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
Filesystem page cache cleared with:
echo 1 >        /proc/sys/vm/drop_caches
Zone reclaim mode enabled with:
echo 1 >        /proc/sys/vm/zone_reclaim_mode
runspec command invoked through numactl i.e.:
numactl --localalloc runspec <etc>
```

Platform Notes

```
BIOS Configuration:
 Intel Hyperthreading Options set to Disabled
 HP Power Profile set to Maximum Performance
 Minimum Processor Idle Power Core State set to C6
 Minimum Processor Idle Power Package State set to C6 (non-retention)
 Energy/Performance Bias is set to Maximum Performance
 Memory Power Savings Mode set to Maximum Performance
 Thermal Configuration set to Maximum Cooling
 Collaborative Power Control set to Disabled
 Processor Power and Utilization Monitoring set to Disabled
Sysinfo program /cpu2006/config/sysinfo.rev6800
$Rev: 6800 $ $Date:: 2011-10-11 #$ 6f2ebdff5032aaa42e583f96b07f99d3
running on BL660c Sun Aug 26 00:37:10 2012

This section contains SUT (System Under Test) info as seen by
```

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Platform Notes (Continued)

```
   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 E5-4650 0 @ 2.70GHz
         4 "physical id"s (chips)
         32 "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 : 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 : 20480 KB

   From /proc/meminfo
      MemTotal:        264485280 kB
      HugePages_Total:         0
      Hugepagesize:         2048 kB

   /usr/bin/lsb_release -d
      Red Hat Enterprise Linux Server release 6.3 (Santiago)

   From /etc/*release* /etc/*version*
      redhat-release: Red Hat Enterprise Linux Server release 6.3 (Santiago)
      system-release: Red Hat Enterprise Linux Server release 6.3 (Santiago)
      system-release-cpe: cpe:/o:redhat:enterprise_linux:6server:ga:server

   uname -a:
      Linux BL660c 2.6.32-279.el6.x86_64 #1 SMP Wed Jun 13 18:24:36 EDT 2012 x86_64
      x86_64 x86_64 GNU/Linux

   run-level 3 Aug 26 00:33

   SPEC is set to: /cpu2006
      Filesystem     Type    Size   Used Avail Use% Mounted on
      /dev/sda3      ext4    273G   14G  246G   6% /

   Additional information from dmidecode:
     BIOS HP I32 08/12/2012
     Memory:
      32x HP Not Specified 8 GB 1600 MHz 2 rank

   (End of data from sysinfo program)
```

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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"
OMP_NUM_THREADS = "32"

 Binaries compiled on a system with 1x Core i7-860 CPU + 8GB
 memory using RHEL5.5
```

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/smartheap -lsmartheap64
```

Base Other Flags

C benchmarks:

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Base Other Flags (Continued)

    403.gcc: -Dalloca=_alloca

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 -m32

    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
    473.astar: -DSPEC_CPU_LP64
    483.xalancbmk: -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

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Peak Optimization Flags (Continued)

429.mcf: basepeak = yes

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

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

458.sjeng: basepeak = yes

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/smartheap -lsmartheap

473.astar: basepeak = yes

483.xalancbmk: -xSSE4.2 -ipo -O3 -no-prec-div -opt-prefetch -ansi-alias
-Wl,-z,muldefs -L/smartheap -lsmartheap

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-ic12.1-official-linux64.20120425.html
http://www.spec.org/cpu2006/flags/HP-Platform-Flags-Intel-V1.2-A.20120829.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic12.1-official-linux64.20120425.xml
http://www.spec.org/cpu2006/flags/HP-Platform-Flags-Intel-V1.2-A.20120829.xml

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