SPEC® CINT2006 Result

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Hewlett-Packard Company

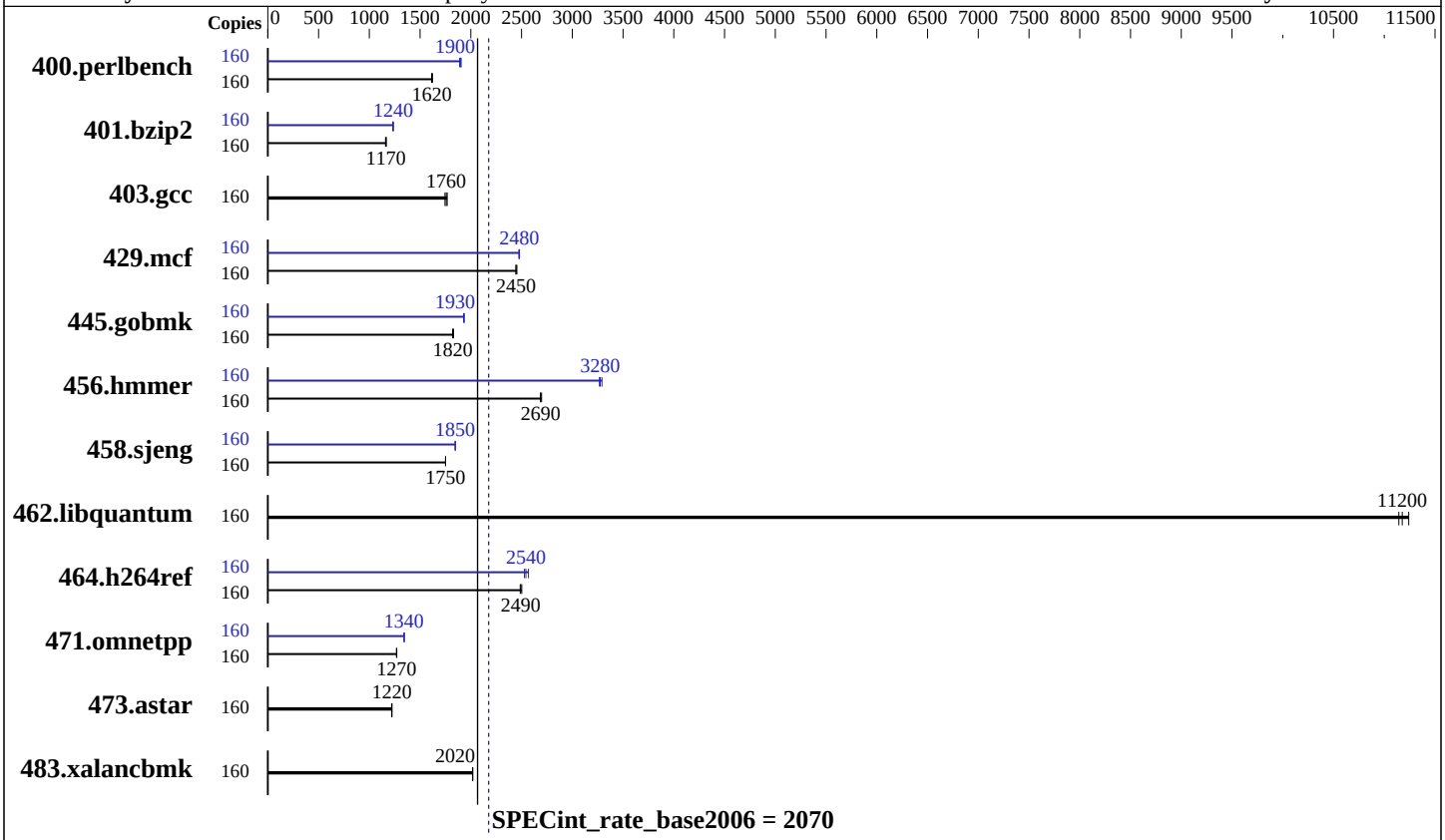
ProLiant DL980 G7 (2.4 GHz, Intel Xeon E7-4870)

SPECint®_rate2006 = 2180

SPECint_rate_base2006 = 2070

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

Test date: Sep-2011
Hardware Availability: Aug-2011
Software Availability: Jul-2011



Hardware

CPU Name:	Intel Xeon E7-4870
CPU Characteristics:	Intel Turbo Boost Technology up to 2.8 GHz
CPU MHz:	2400
FPU:	Integrated
CPU(s) enabled:	80 cores, 8 chips, 10 cores/chip, 2 threads/core
CPU(s) orderable:	4, 8 chips
Primary Cache:	32 KB I + 32 KB D on chip per core
Secondary Cache:	256 KB I+D on chip per core
L3 Cache:	30 MB I+D on chip per chip
Other Cache:	None
Memory:	1 TB (128 x 8 GB 2Rx4 PC3L-10600R-9, ECC, running at 1066 MHz)
Disk Subsystem:	1 x 120 GB SATA SDD
Other Hardware:	512 MB FBWC Module for P410i SmartArray

Software

Operating System:	SUSE Linux Enterprise Server 11 (x86_64) SP1, Kernel 2.6.32.12-0.7-default
Compiler:	C/C++: Version 12.0.5 of Intel C++ Composer XE 2011 for Linux Build 20110719
Auto Parallel:	No
File System:	tmpfs
System State:	Run level 3 (multi-user)
Base Pointers:	32-bit
Peak Pointers:	32/64-bit
Other Software:	Microquill SmartHeap V9.01

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Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
400.perlbench	160	964	1620	**967**	**1620**	968	1610	160	**823**	**1900**	827	1890	821	1900
401.bzip2	160	**1325**	**1170**	1324	1170	1332	1160	160	**1249**	**1240**	1255	1230	1249	1240
403.gcc	160	**733**	**1760**	729	1770	738	1750	160	**733**	**1760**	729	1770	738	1750
429.mcf	160	**597**	**2450**	595	2450	597	2450	160	**589**	**2480**	589	2480	590	2470
445.gobmk	160	917	1830	**920**	**1820**	922	1820	160	**868**	**1930**	868	1930	870	1930
456.hmmer	160	**555**	**2690**	556	2690	553	2700	160	457	3270	**456**	**3280**	453	3290
458.sjeng	160	1106	1750	1105	1750	**1106**	**1750**	160	1049	1850	**1048**	**1850**	1048	1850
462.libquantum	160	295	11200	298	11100	**297**	**11200**	160	295	11200	298	11100	**297**	**11200**
464.h264ref	160	1424	2490	1415	2500	**1421**	**2490**	160	**1392**	**2540**	1400	2530	1379	2570
471.omnetpp	160	789	1270	**787**	**1270**	787	1270	160	744	1340	745	1340	**745**	**1340**
473.astar	160	919	1220	**919**	**1220**	921	1220	160	919	1220	**919**	**1220**	921	1220
483.xalancbmk	160	547	2020	547	2020	**547**	**2020**	160	547	2020	547	2020	**547**	**2020**

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.
 numactl was used to bind copies to the cores
```

Operating System Notes

```
I/O scheduler for the device holding the filesystem set to "noop"
SPEC files placed in /dev/shm/cpu2006 with /dev/shm
mounted as tmpfs with mpol=interleave, size=500G
'ulimit -s unlimited' was used to set the stacksize to unlimited prior to run
'nodev   /mnt/hugetlbfs   hugetlbfs   defaults   0 0' added to /etc/fstab
echo 160000 > /proc/sys/vm/nr_hugepages
export HUGETLB_MORECORE=yes
export LD_PRELOAD=/usr/lib/libhugetlbfs.so
```

Platform Notes

```
BIOS Settings:
Power Regulator set to HP Static High Performance Mode
Sysinfo program /dev/shm/cpu2006/Docs/sysinfo
$Rev: 6775 $ $Date:: 2011-08-16 #$ 8787f7622badcf24e01c368b1db4377c
running on s9 Fri Sep  9 01:43:40 2011

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
```

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Platform Notes (Continued)

```
      model name : Intel(R) Xeon(R) CPU E7- 4870 @ 2.40GHz
         8 "physical id"s (chips)
         160 "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 3 4 5 6 7 8 9
         physical 1: cores 0 1 2 3 4 5 6 7 8 9
         physical 2: cores 0 1 2 3 4 5 6 7 8 9
         physical 3: cores 0 1 2 3 4 5 6 7 8 9
         physical 4: cores 0 1 2 3 4 5 6 7 8 9
         physical 5: cores 0 1 2 3 4 5 6 7 8 9
         physical 6: cores 0 1 2 3 4 5 6 7 8 9
         physical 7: cores 0 1 2 3 4 5 6 7 8 9
      cache size : 30720 KB

   From /proc/meminfo
      MemTotal:       1040205340 kB
      HugePages_Total:   160000
      Hugepagesize:       2048 kB

   /usr/bin/lsb_release -d
      SUSE Linux Enterprise Server 11 (x86_64)

   From /etc/*release* /etc/*version*
      SuSE-release:
         SUSE Linux Enterprise Server 11 (x86_64)
         VERSION = 11
         PATCHLEVEL = 1

   uname -a:
      Linux s9 2.6.32.12-0.7-default #1 SMP 2010-05-20 11:14:20 +0200 x86_64 x86_64
      x86_64 GNU/Linux

   run-level 3 Sep 9 00:49 last=S

   SPEC is set to: /dev/shm/cpu2006
      Filesystem     Type    Size  Used Avail Use% Mounted on
      tmpfs          tmpfs   497G  2.7G  494G   1% /dev/shm

   (End of data from sysinfo program)
```

Base Compiler Invocation

C benchmarks:

```
icc  -m32
```

Continued on next page

Base Compiler Invocation (Continued)

C++ benchmarks:
icpc -m32

Base Portability Flags

400.perlbench: -DSPEC_CPU_LINUX_IA32
462.libquantum: -DSPEC_CPU_LINUX
483.xalancbmk: -DSPEC_CPU_LINUX

Base Optimization Flags

C benchmarks:
-xSSE4.2 -ipo -O3 -no-prec-div -opt-prefetch
-B /usr/share/libhugetlbfs/ -Wl,-hugetlbfs-link=BDT

C++ benchmarks:
-xSSE4.2 -ipo -O3 -no-prec-div -opt-prefetch -Wl,-z,muldefs
-L/smartheap -lsmartheap
-B /usr/share/libhugetlbfs/ -Wl,-hugetlbfs-link=BDT

Base Other Flags

C benchmarks:

403.gcc: -Dalloca=_alloca

Peak Compiler Invocation

C benchmarks (except as noted below):
icc -m32

400.perlbench: icc -m64

401.bzip2: icc -m64

456.hmmer: icc -m64

458.sjeng: icc -m64

C++ benchmarks:
icpc -m32

Peak Portability Flags

400.perlbench: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX_X64
401.bzip2: -DSPEC_CPU_LP64
456.hmmer: -DSPEC_CPU_LP64
458.sjeng: -DSPEC_CPU_LP64
462.libquantum: -DSPEC_CPU_LINUX
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)
-B /usr/share/libhugetlbfs/ -Wl,-melf_x86_64 -Wl,-hugetlbfs-link=BDT

401.bzip2: -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 -auto-ilp32 -ansi-alias
-B /usr/share/libhugetlbfs/ -Wl,-melf_x86_64 -Wl,-hugetlbfs-link=BDT

403.gcc: basepeak = yes

429.mcf: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
-O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)
-ansi-alias -auto-ilp32

445.gobmk: -xSSE4.2(pass 2) -prof-gen(pass 1) -prof-use(pass 2)
-ansi-alias -auto-ilp32

456.hmmer: -xSSE4.2 -ipo -O3 -no-prec-div -unroll2 -auto-ilp32
-B /usr/share/libhugetlbfs/ -Wl,-melf_x86_64 -Wl,-hugetlbfs-link=BDT

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 -auto-ilp32
-B /usr/share/libhugetlbfs/ -Wl,-melf_x86_64 -Wl,-hugetlbfs-link=BDT

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)
-ansi-alias -opt-ra-region-strategy=block -Wl,-z,muldefs
-L/smartheap -lsmartheap

Continued on next page

Peak Optimization Flags (Continued)

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-ic12.0-linux64-revB.20111012.html`
`http://www.spec.org/cpu2006/flags/HP-Intel-Linux-Settings-compiler-flags.html`
`http://www.spec.org/cpu2006/flags/HP-Intel-Linux-Settings-platform-flags.html`

You can also download the XML flags sources by saving the following links:
`http://www.spec.org/cpu2006/flags/Intel-ic12.0-linux64-revB.20111012.xml`
`http://www.spec.org/cpu2006/flags/HP-Intel-Linux-Settings-compiler-flags.xml`
`http://www.spec.org/cpu2006/flags/HP-Intel-Linux-Settings-platform-flags.xml`

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

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