



SPEC® CINT2006 Result

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Hewlett-Packard Company

SPECint®_rate2006 = 9400

HP Integrity Superdome X
(240 core, 2.80 GHz, Intel Xeon E7-2890 v2)

SPECint_rate_base2006 = 9130

CPU2006 license: 3

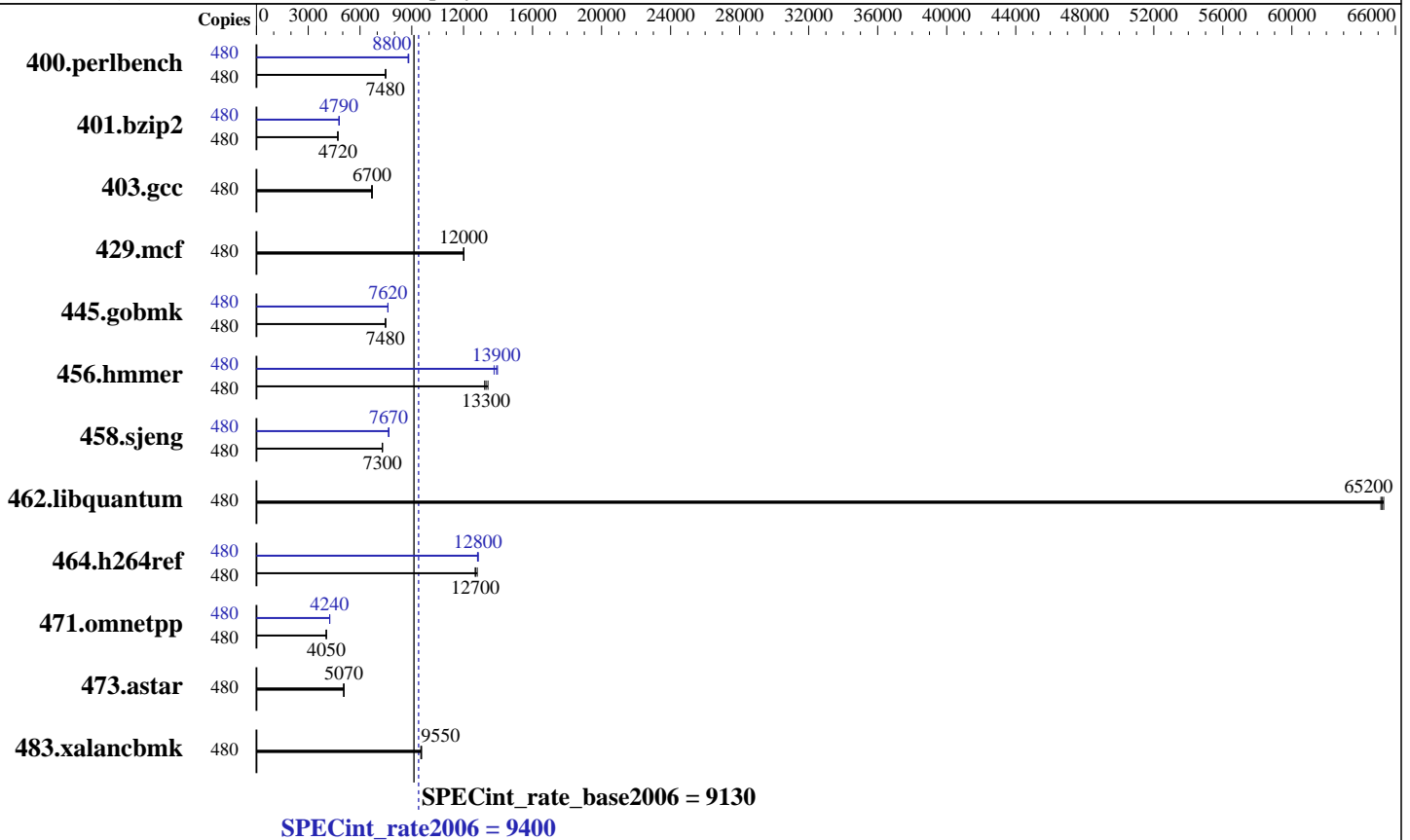
Test date: Sep-2014

Test sponsor: Hewlett-Packard Company

Hardware Availability: Dec-2014

Tested by: Hewlett-Packard Company

Software Availability: Jul-2014



Hardware

CPU Name: Intel Xeon E7-2890 v2
 CPU Characteristics: Intel Turbo Boost Technology up to 3.40 GHz
 CPU MHz: 2800
 FPU: Integrated
 CPU(s) enabled: 240 cores, 16 chips, 15 cores/chip, 2 threads/core
 CPU(s) orderable: 8,16 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: 37.5 MB I+D on chip per chip
 Other Cache: None
 Memory: 4 TB (128 x 32 GB 4Rx4 PC3-14900L-13, ECC, running at 1333 MHz)
 Disk Subsystem: 8 x C8S59A, 900 GB 10K RPM SAS
 Other Hardware: None

Software

Operating System: SUSE Linux Enterprise Server 11 (x86_64) SP3
 Kernel 3.0.101-0.30-bigsmpt
 Compiler: C/C++; Version 14.0.0.080 of Intel C++ Studio XE for Linux
 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 V10.0



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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	480	627	7480	627	7480	626	7490	480	533	8800	533	8790	531	8830
401.bzip2	480	981	4720	984	4710	981	4720	480	968	4790	966	4790	968	4790
403.gcc	480	576	6710	579	6670	577	6700	480	576	6710	579	6670	577	6700
429.mcf	480	364	12000	365	12000	365	12000	480	364	12000	365	12000	365	12000
445.gobmk	480	673	7480	673	7480	673	7480	480	661	7620	661	7620	661	7610
456.hammer	480	339	13200	334	13400	337	13300	480	321	14000	325	13800	322	13900
458.sjeng	480	797	7290	795	7300	796	7300	480	756	7680	758	7670	760	7650
462.libquantum	480	153	65200	152	65300	152	65200	480	153	65200	152	65300	152	65200
464.h264ref	480	838	12700	830	12800	837	12700	480	829	12800	828	12800	826	12900
471.omnetpp	480	742	4040	741	4050	741	4050	480	707	4240	707	4240	707	4240
473.astar	480	665	5070	665	5070	667	5050	480	665	5070	665	5070	667	5050
483.xalancbmk	480	347	9550	348	9530	346	9570	480	347	9550	348	9530	346	9570

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

Submit Notes

The numactl mechanism was used to bind copies to processors. The config file option 'submit' was used to generate numactl commands to bind each copy to a specific processor. For details, please see the config file.

Operating System Notes

```
Stack size set to unlimited using "ulimit -s unlimited"
intel_idle.max_cstate=1 appended in kernel command line
Power profile set with:
cpupower -c all frequency-set -g performance
Benchmark installed under /dev/shm/cpu2006 and mount with:
mount -o bind /dev/shm/cpu2006 /cpu2006
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
runspec command invoked through numactl i.e.:
numactl --interleave=all runspec <etc>
```

Platform Notes

```
Firmware settings:
Memory RAS Configuration set to Maximum Performance
Sysinfo program /cpu2006/config/sysinfo.rev6818
$Rev: 6818 $ $Date:: 2012-07-17 #$ e86d102572650a6e4d596a3cee98f191
running on hawk036os1 Mon Sep 22 18:36:42 2014
```

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Platform Notes (Continued)

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 E7-2890 v2 @ 2.80GHz
 16 "physical id"s (chips)
 480 "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      : 15
siblings       : 30
physical 0:    : cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
physical 1:    : cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
physical 2:    : cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
physical 3:    : cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
physical 4:    : cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
physical 5:    : cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
physical 6:    : cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
physical 7:    : cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
physical 8:    : cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
physical 9:    : cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
physical 10:   : cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
physical 11:   : cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
physical 12:   : cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
physical 13:   : cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
physical 14:   : cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
physical 15:   : cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
```

cache size : 38400 KB

From /proc/meminfo

```
MemTotal:      4235862504 kB
HugePages_Total: 0
Hugepagesize:  2048 kB
```

/usr/bin/lsc_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 = 3
```

uname -a:

```
Linux hawk036os1 3.0.101-0.30-bigsmpt #1 SMP Fri May 23 16:16:00 UTC 2014
(bdlclf5) x86_64 x86_64 x86_64 GNU/Linux
```

run-level 3 Sep 22 16:36 last=S

SPEC is set to: /cpu2006

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Platform Notes (Continued)

Filesystem	Type	Size	Used	Avail	Use%	Mounted on
tmpfs	tmpfs	2.0T	4.1G	2.0T	1%	/dev/shm

Additional information from dmidecode:
BIOS HP Bundle: 005.050.012 SFW: 014.010.000 05/07/2014
Memory:
128x HP HMT84GL7AMR4C-RD 32 GB 1867 MHz
256x not defined not defined

(End of data from sysinfo program)
Regarding the sysinfo display about the memory installed, the correct amount of memory is 4 TB. Also, sysinfo gathered the wrong information from dmidecode about speed of the DIMMs. The reported 1867 MHz value is the maximum DIMM speed, but the configured speed is really 1333 MHz. The dmidecode description should have one line reading as:
128x HP HMT84GL7AMR4C-RD 32 GB 1333 MHz

General Notes

Environment variables set by runspec before the start of the run:
LD_LIBRARY_PATH = "/cpu2006/libs/32:/cpu2006/libs/64:/cpu2006/sh"

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

Base Compiler Invocation

C benchmarks:
icc -m32

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 -opt-mem-layout-trans=3

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Base Optimization Flags (Continued)

C++ benchmarks:
-xSSE4.2 -ipo -O3 -no-prec-div -opt-prefetch -opt-mem-layout-trans=3
-Wl,-z,muldefs -L/sh -lsmartheap

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)
-auto-ilp32

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Peak Optimization Flags (Continued)

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

403.gcc: basepeak = yes

429.mcf: basepeak = yes

445.gobmk: -xSSE4.2(pass 2) -prof-gen(pass 1) -prof-use(pass 2)
-ansi-alias -opt-mem-layout-trans=3

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

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

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/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-revC.html>

<http://www.spec.org/cpu2006/flags/HP-Platform-Flags-Intel-V1.2-Integrity-revA.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-revC.xml>

<http://www.spec.org/cpu2006/flags/HP-Platform-Flags-Intel-V1.2-Integrity-revA.xml>



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