SPEC® CINT2006 Result

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ACTION S.A.

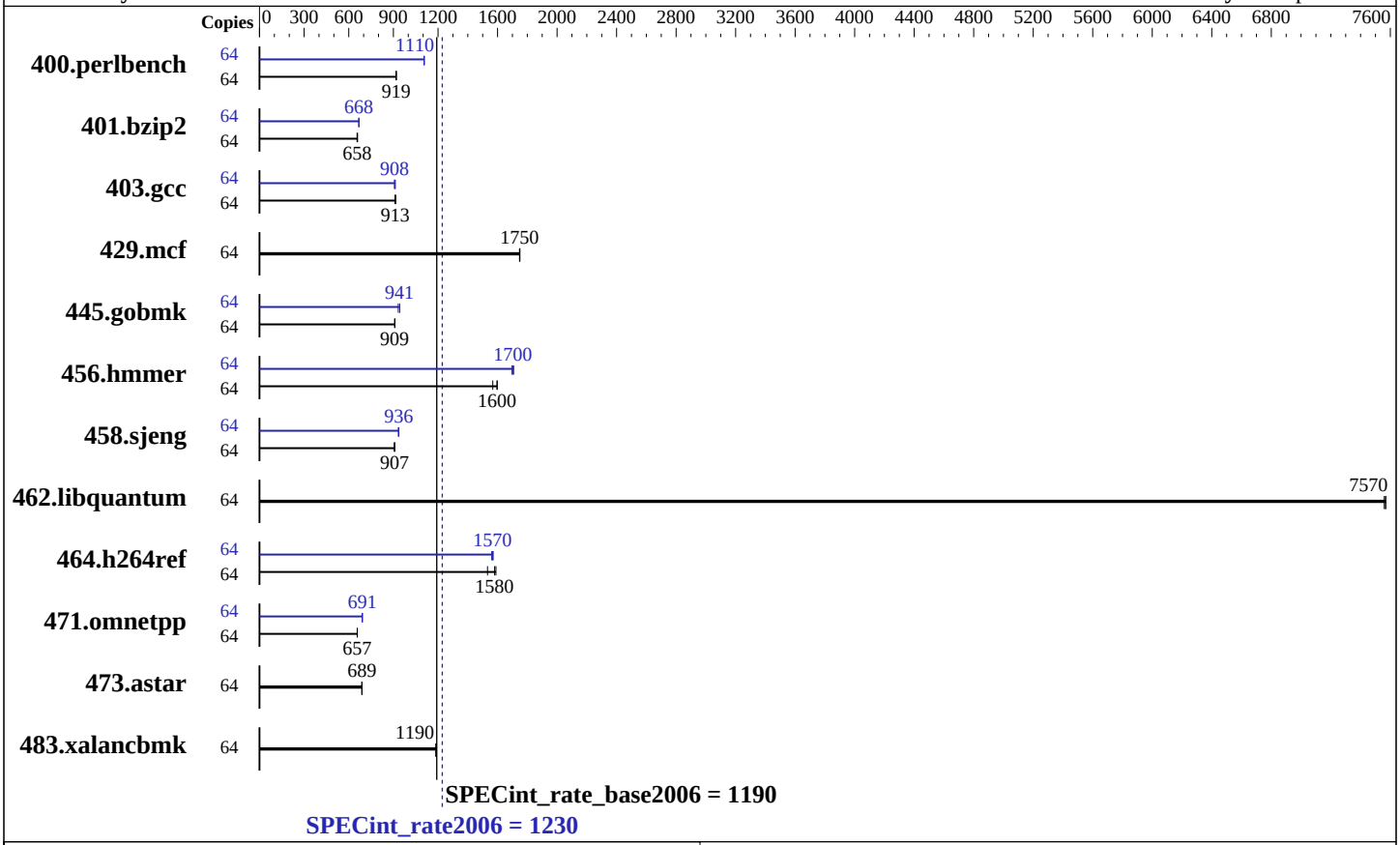
ACTINA SOLAR 440 Q5 (Intel Xeon E5-4650, 2.70 GHz)

SPECint®_rate2006 = 1230

SPECint_rate_base2006 = 1190

CPU2006 license: 9008
Test sponsor: ACTION S.A.
Tested by: ACTION S.A.

Test date: Dec-2013
Hardware Availability: Jul-2012
Software Availability: Sep-2013



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, 2 threads/core
CPU(s) orderable:	1,2 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:	20 MB I+D on chip per chip
Other Cache:	None
Memory:	512 GB (32 x 16 GB 2Rx4 PC3-14900R-13, ECC, running at 1600 MHz and CL11)
Disk Subsystem:	1 x 240 GB SATA II SSD
Other Hardware:	None

Software

Operating System:	Red Hat Enterprise Linux Server release 6.4 (Santiago) 2.6.32-358.11.1.el6.x86_64
Compiler:	C/C++: Version 14.0.0.080 of Intel C++ Studio XE for Linux
Auto Parallel:	No
File System:	ext4
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	64	680	920	681	918	**680**	**919**	64	**565**	**1110**	565	1110	565	1110
401.bzip2	64	**939**	**658**	942	656	938	659	64	923	669	**924**	**668**	925	668
403.gcc	64	566	911	563	915	**564**	**913**	64	564	913	568	908	**567**	**908**
429.mcf	64	**334**	**1750**	333	1750	334	1750	64	**334**	**1750**	333	1750	334	1750
445.gobmk	64	738	910	739	909	**738**	**909**	64	720	932	712	943	**713**	**941**
456.hmmer	64	381	1570	**374**	**1600**	374	1600	64	**351**	**1700**	349	1710	352	1700
458.sjeng	64	853	908	**853**	**907**	853	907	64	**827**	**936**	827	937	830	933
462.libquantum	64	**175**	**7570**	175	7570	175	7560	64	**175**	**7570**	175	7570	175	7560
464.h264ref	64	**896**	**1580**	924	1530	891	1590	64	**904**	**1570**	907	1560	902	1570
471.omnetpp	64	**608**	**657**	609	657	608	658	64	**579**	**691**	579	691	580	690
473.astar	64	654	687	**652**	**689**	652	690	64	654	687	**652**	**689**	652	690
483.xalancbmk	64	372	1190	**372**	**1190**	372	1190	64	372	1190	**372**	**1190**	372	1190

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"
```

Platform Notes

```
Sysinfo program /cpu2006.1.2/config/sysinfo.rev6818
$Rev: 6818 $ $Date:: 2012-07-17 #$ e86d102572650a6e4d596a3cee98f191
running on localhost.localdomain Wed Dec  4 14:58:10 2013

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 E5-4650 0 @ 2.70GHz
      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 : 8
      siblings  : 16
```

Continued on next page

Platform Notes (Continued)

```
        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:       529243052 kB
     HugePages_Total:       0
     Hugepagesize:       2048 kB

  /usr/bin/lsb_release -d
     Red Hat Enterprise Linux Server release 6.4 (Santiago)

  From /etc/*release* /etc/*version*
     redhat-release: Red Hat Enterprise Linux Server release 6.4 (Santiago)
     system-release: Red Hat Enterprise Linux Server release 6.4 (Santiago)
     system-release-cpe: cpe:/o:redhat:enterprise_linux:6server:ga:server

  uname -a:
     Linux localhost.localdomain 2.6.32-358.11.1.el6.x86_64 #1 SMP Tue Nov 19
     17:43:04 CET 2013 x86_64 x86_64 x86_64 GNU/Linux

  run-level 3 Dec 3 23:39

  SPEC is set to: /cpu2006.1.2
     Filesystem     Type    Size  Used Avail Use% Mounted on
     /dev/sda1      ext4    193G   65G  118G  36% /

  Additional information from dmidecode:
    BIOS American Megatrends Inc. S4E_3A10 09/20/2012
    Memory:
     1x ChannelA_Dimm2_Manufacturer ChannelA_Dimm2_PartNum
     1x ChannelB_Dimm2_Manufacturer ChannelB_Dimm2_PartNum
     1x ChannelC_Dimm2_Manufacturer ChannelC_Dimm2_PartNum
     1x ChannelD_Dimm2_Manufacturer ChannelD_Dimm2_PartNum
     1x ChannelE_Dimm2_Manufacturer ChannelE_Dimm2_PartNum
     1x ChannelF_Dimm2_Manufacturer ChannelF_Dimm2_PartNum
     1x ChannelG_Dimm2_Manufacturer ChannelG_Dimm2_PartNum
     1x ChannelH_Dimm2_Manufacturer ChannelH_Dimm2_PartNum
     1x ChannelJ_Dimm2_Manufacturer ChannelJ_Dimm2_PartNum
     1x ChannelK_Dimm2_Manufacturer ChannelK_Dimm2_PartNum
     1x ChannelL_Dimm2_Manufacturer ChannelL_Dimm2_PartNum
     1x ChannelM_Dimm2_Manufacturer ChannelM_Dimm2_PartNum
     1x ChannelN_Dimm2_Manufacturer ChannelN_Dimm2_PartNum
     1x ChannelP_Dimm2_Manufacturer ChannelP_Dimm2_PartNum
     1x ChannelR_Dimm2_Manufacturer ChannelR_Dimm2_PartNum
     1x ChannelT_Dimm2_Manufacturer ChannelT_Dimm2_PartNum
     16x Hynix Semiconductor HMT42GR7AFR4C-RD 16 GB 1600 MHz 1 rank
     16x Samsung M393B2G70BH0-CMA 16 GB 1600 MHz 1 rank

  (End of data from sysinfo program)
```

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Platform Notes (Continued)

```
dmidecode does not properly display memory modules,
32 modules of 16 GB 2 rank were used to run the test (512 GB total)
```

General Notes

```
Environment variables set by runspec before the start of the run:
LD_LIBRARY_PATH = "/cpu2006.1.2/libs/32:/cpu2006.1.2/libs/64:/cpu2006.1.2/sh"

 Transparent Huge Pages enabled with:
 echo always > /sys/kernel/mm/redhat_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>
 Binaries compiled on a system with 2x Xeon E5-2650 v2 chips
 + 256 GB 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
```

C++ benchmarks:

```
-xSSE4.2 -ipo -O3 -no-prec-div -opt-prefetch -opt-mem-layout-trans=3
-Wl,-z,muldefs -L/cpu2006.1.2/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`

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: `-xSSE4.2 -ipo -O3 -no-prec-div`

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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 -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/cpu2006.1.2/sh -lsmartheap

473.astar: basepeak = yes

483.xalancbmk: basepeak = yes

Peak Other Flags

C benchmarks:

403.gcc: -Dalloca=_alloca

The flags file that was used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/Intel-ic14.0-official-linux64.20140128.html

You can also download the XML flags source by saving the following link:
http://www.spec.org/cpu2006/flags/Intel-ic14.0-official-linux64.20140128.xml

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