SPEC® CINT2006 Result

ACTION S.A.

ACTINA SOLAR 220 X6 (Intel Xeon E5-2670 v3, 2.30 GHz)

SPECint®2006 =   59.8

SPECint_base2006 =   57.1

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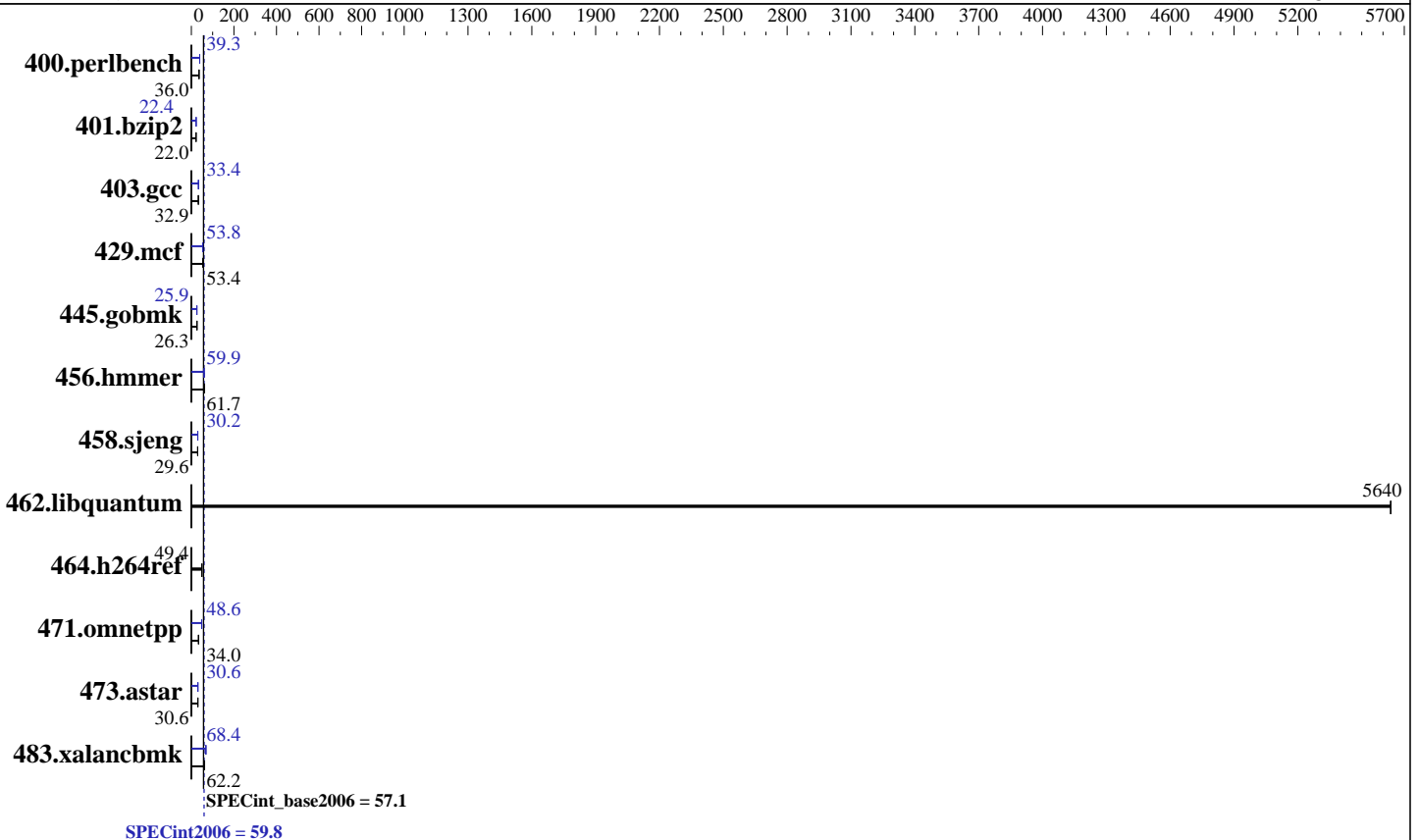**Test sponsor:** ACTION S.A.
Tested by: ACTION S.A.

Test date: Oct-2015
Hardware Availability: Sep-2014
Software Availability: Aug-2015

Benchmark	Peak	Base
400.perlbench	39.3	36.0
401.bzip2	22.4	22.0
403.gcc	33.4	32.9
429.mcf	53.8	53.4
445.gobmk	25.9	26.3
456.hmmer	59.9	61.7
458.sjeng	30.2	29.6
462.libquantum	5640	
464.h264ref	49.4	
471.omnetpp	48.6	34.0
473.astar	30.6	30.6
483.xalancbmk	68.4	62.2

SPECint_base2006 = 57.1
SPECint2006 = 59.8

Hardware

CPU Name:	Intel Xeon E5-2670 v3
CPU Characteristics:	Intel Turbo Boost Technology up to 3.10 GHz
CPU MHz:	2300
FPU:	Integrated
CPU(s) enabled:	24 cores, 2 chips, 12 cores/chip
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:	30 MB I+D on chip per chip
Other Cache:	None
Memory:	256 GB (16 x 16 GB 2Rx4 PC4-2133P-R)
Disk Subsystem:	1 x 240 GB SATA II SSD
Other Hardware:	None

Software

Operating System:	Red Hat Enterprise Linux Server release 7.1 (Maipo) 3.10.0-229.11.1.el7.x86_64
Compiler:	C/C++: Version 16.0.0.047 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	271	36.1	**271**	**36.0**	272	36.0	249	39.2	**249**	**39.3**	248	39.3
401.bzip2	**438**	**22.0**	439	22.0	437	22.1	431	22.4	**431**	**22.4**	430	22.4
403.gcc	243	33.1	**245**	**32.9**	245	32.9	242	33.3	240	33.5	**241**	**33.4**
429.mcf	170	53.5	171	53.4	**171**	**53.4**	170	53.5	**170**	**53.8**	170	53.8
445.gobmk	**398**	**26.3**	398	26.4	399	26.3	406	25.9	405	25.9	**405**	**25.9**
456.hmmer	151	61.7	151	61.7	**151**	**61.7**	155	60.0	156	59.9	**156**	**59.9**
458.sjeng	408	29.7	409	29.6	**409**	**29.6**	401	30.2	**401**	**30.2**	401	30.2
462.libquantum	3.68	5640	3.68	5640	**3.68**	**5640**	3.68	5640	3.68	5640	**3.68**	**5640**
464.h264ref	446	49.6	448	49.3	**448**	**49.4**	446	49.6	448	49.3	**448**	**49.4**
471.omnetpp	**184**	**34.0**	183	34.1	190	33.0	128	48.9	**129**	**48.6**	130	48.2
473.astar	230	30.5	229	30.7	**229**	**30.6**	230	30.6	**229**	**30.6**	229	30.7
483.xalancbmk	111	62.3	111	61.9	**111**	**62.2**	101	68.5	**101**	**68.4**	101	68.0

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

```
Bios Settings:
Intel(R) Hyper-Threading Tech = Disabled
Power & Performance = Performance
Enforce POR = Disabled
Memory Operating Speed Selection = 2133
Cluster-on-Die = Disabled
Set Fan Profile = Performance
Fan PWM Offset = 0

Sysinfo program /cpu2006.1.2/config/sysinfo.rev6818
$Rev: 6818 $ $Date:: 2012-07-17 #$ e86d102572650a6e4d596a3cee98f191
running on SUT Mon Oct 26 12:02:38 2015

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
```
Continued on next page

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Platform Notes (Continued)

```
From /proc/cpuinfo
   model name : Intel(R) Xeon(R) CPU E5-2670 v3 @ 2.30GHz
      2 "physical id"s (chips)
      24 "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 : 12
      siblings  : 12
      physical 0: cores 0 1 2 3 4 5 8 9 10 11 12 13
      physical 1: cores 0 1 2 3 4 5 8 9 10 11 12 13
   cache size : 30720 KB

From /proc/meminfo
   MemTotal:       263866880 kB
   HugePages_Total:        1
   Hugepagesize:        2048 kB

From /etc/*release* /etc/*version*
   os-release:
      NAME="Red Hat Enterprise Linux Server"
      VERSION="7.0 (Maipo)"
      ID="rhel"
      ID_LIKE="fedora"
      VERSION_ID="7.0"
      PRETTY_NAME="Red Hat Enterprise Linux"
      ANSI_COLOR="0;31"
      CPE_NAME="cpe:/o:redhat:enterprise_linux:7.0:GA:server"
   os-release.rpmnew:
      NAME="Red Hat Enterprise Linux Server"
      VERSION="7.1 (Maipo)"
      ID="rhel"
      ID_LIKE="fedora"
      VERSION_ID="7.1"
      PRETTY_NAME="Red Hat Enterprise Linux Server 7.1 (Maipo)"
      ANSI_COLOR="0;31"
      CPE_NAME="cpe:/o:redhat:enterprise_linux:7.1:GA:server"
   redhat-release: Red Hat Enterprise Linux Server release 7.1 (Maipo)
   system-release: Red Hat Enterprise Linux Server release 7.1 (Maipo)
   system-release-cpe: cpe:/o:redhat:enterprise_linux:7.1:ga:server

uname -a:
   Linux SUT 3.10.0-229.11.1.el7.x86_64 #5 SMP Mon Sep 14 17:11:19 CEST 2015
   x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Oct 26 12:01

SPEC is set to: /cpu2006.1.2
   Filesystem      Type  Size  Used Avail Use% Mounted on
   /dev/sda1       ext4  212G   37G  165G  19% /
```

Continued on next page

SPEC CINT2006 Result

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Platform Notes (Continued)

```
  Additional information from dmidecode:
    BIOS Intel Corporation SE5C610.86B.01.01.0009.060120151350 06/01/2015
    Memory:
     16x   16 GB
     16x Micron 36ASF2G72PZ-2G1A2 16 GB 2134 MHz 2 rank
      8x NO DIMM NO DIMM

  (End of data from sysinfo program)
  dmidecode does not properly detect memory modules
  16 modules of 16 GB were used to run the test (256 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"
OMP_NUM_THREADS = "24"

Transparent Huge Pages enabled with:
echo always > /sys/kernel/mm/redhat_transparent_hugepage/enabled
runspec command invoked through numactl i.e.:
numactl --interleave=all runspec <etc>
Binaries compiled on a system with 2x Xeon E5-2650 v3 chips + 256 GB memory
using RedHat EL 7.1
```

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
```

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Base Optimization Flags

C benchmarks:
```
-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -opt-prefetch -auto-p32
```

C++ benchmarks:
```
-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch -auto-p32
-Wl,-z,muldefs -L/cpu2006.1.2/sh -lsmartheap64
```

Base Other Flags

C benchmarks:

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

Peak Compiler Invocation

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

```
400.perlbench: icc -m32 -L/opt/intel/lib/ia32
```

```
445.gobmk: icc -m32 -L/opt/intel/lib/ia32
```

C++ benchmarks (except as noted below):
```
icpc -m32 -L/opt/intel/lib/ia32
```

```
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
  464.h264ref: -DSPEC_CPU_LP64
    473.astar: -DSPEC_CPU_LP64
483.xalancbmk: -DSPEC_CPU_LINUX
```

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Hardware Availability: Sep-2014
Software Availability: Aug-2015

Peak Optimization Flags

C benchmarks:

> 400.perlbench: `-xCORE-AVX2`(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: `-xCORE-AVX2`(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: `-xCORE-AVX2 -ipo -O3 -no-prec-div -inline-calloc`
> `-opt-malloc-options=3 -auto-ilp32`

> 429.mcf: `-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel`
> `-opt-prefetch -auto-p32`

> 445.gobmk: `-xCORE-AVX2`(pass 2) `-prof-gen`(pass 1) `-prof-use`(pass 2)
> `-ansi-alias`

> 456.hmmer: `-xCORE-AVX2 -ipo -O3 -no-prec-div -unroll2 -auto-ilp32`
> `-ansi-alias`

> 458.sjeng: `-xCORE-AVX2`(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: `basepeak = yes`

C++ benchmarks:

> 471.omnetpp: `-xCORE-AVX2`(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/cpu2006.1.2/sh -lsmartheap`

> 473.astar: `-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch`
> `-auto-p32 -Wl,-z,muldefs -L/cpu2006.1.2/sh -lsmartheap64`

> 483.xalancbmk: `-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch`
> `-ansi-alias -Wl,-z,muldefs -L/cpu2006.1.2/sh -lsmartheap`

Peak Other Flags

C benchmarks:

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Peak Other Flags (Continued)

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-ic16.0-official-linux64.html
http://www.spec.org/cpu2006/flags/ACTION.SA-Platform-Flags-RevB-aug-2015-For-Intel-Platform.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic16.0-official-linux64.xml
http://www.spec.org/cpu2006/flags/ACTION.SA-Platform-Flags-RevB-aug-2015-For-Intel-Platform.xml

For questions about this result, please contact the tester.
For other inquiries, please contact webmaster@spec.org.

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