SPEC® CINT2006 Result
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ACTION S.A.

ACTINA SOLAR 210 X6 (Intel Xeon E5-2620 v4, 2.10 GHz)

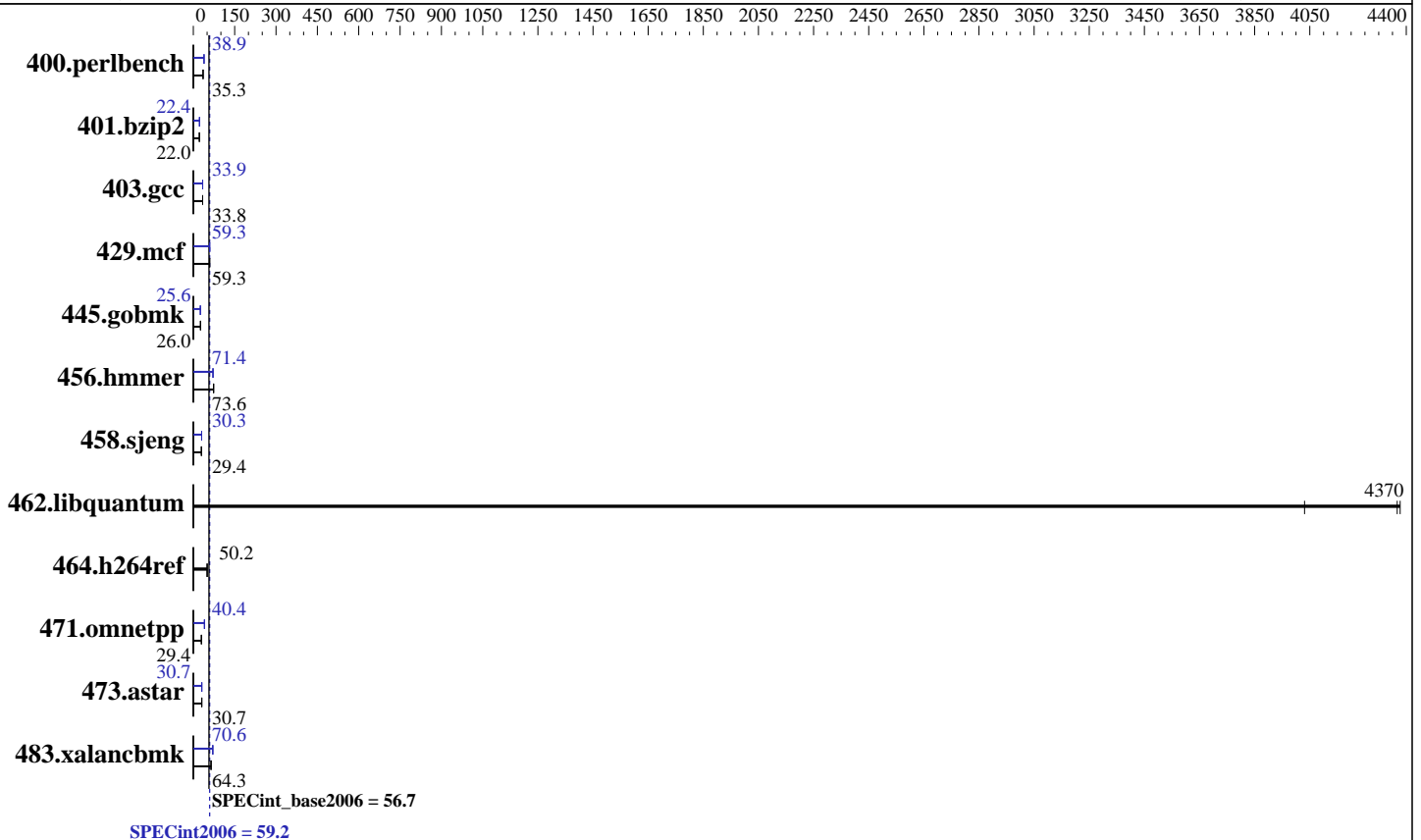SPECint®2006 = 59.2

SPECint_base2006 = 56.7

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

Test date: Jul-2016
Hardware Availability: Mar-2016
Software Availability: Mar-2016

	Result
400.perlbench	38.9 / 35.3
401.bzip2	22.4 / 22.0
403.gcc	33.9 / 33.8
429.mcf	59.3 / 59.3
445.gobmk	25.6 / 26.0
456.hmmer	71.4 / 73.6
458.sjeng	30.3 / 29.4
462.libquantum	4370
464.h264ref	50.2
471.omnetpp	40.4
473.astar	29.4 / 30.7
483.xalancbmk	30.7 / 64.3

SPECint_base2006 = 56.7
SPECint2006 = 59.2

Hardware

CPU Name:	Intel Xeon E5-2620 v4
CPU Characteristics:	Intel Turbo Boost Technology up to 3.00 GHz
CPU MHz:	2100
FPU:	Integrated
CPU(s) enabled:	16 cores, 2 chips, 8 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:	20 MB I+D on chip per chip
Other Cache:	None
Memory:	256 GB (16 x 16 GB 2Rx4 PC4-2400T-R, running at 2133 MHz)
Disk Subsystem:	1 x 240 GB SATA II SSD
Other Hardware:	None

Software

Operating System:	Red Hat Enterprise Linux Server release 7.2 (Maipo) 3.10.0-327.18.2.el7.x86_64
Compiler:	C/C++: Version 16.0.3.210 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	276	35.4	**276**	**35.3**	276	35.3	252	38.7	251	38.9	**251**	**38.9**
401.bzip2	**439**	**22.0**	439	22.0	440	22.0	430	22.4	**430**	**22.4**	430	22.4
403.gcc	**238**	**33.8**	238	33.9	238	33.8	238	33.9	237	33.9	**237**	**33.9**
429.mcf	153	59.6	155	59.0	**154**	**59.3**	**154**	**59.3**	154	59.3	153	59.5
445.gobmk	403	26.0	402	26.1	**403**	**26.0**	410	25.6	410	25.6	**410**	**25.6**
456.hmmer	127	73.5	**127**	**73.6**	127	73.7	**131**	**71.4**	131	71.3	130	71.6
458.sjeng	412	29.4	**412**	**29.4**	412	29.4	**400**	**30.3**	400	30.2	400	30.3
462.libquantum	**4.74**	**4370**	4.73	4380	5.14	4030	**4.74**	**4370**	4.73	4380	5.14	4030
464.h264ref	439	50.4	442	50.0	**441**	**50.2**	439	50.4	442	50.0	**441**	**50.2**
471.omnetpp	214	29.2	**213**	**29.4**	212	29.4	**155**	**40.4**	155	40.3	154	40.5
473.astar	228	30.8	230	30.5	**229**	**30.7**	228	30.8	**229**	**30.7**	229	30.7
483.xalancbmk	107	64.7	108	64.0	**107**	**64.3**	**97.7**	**70.6**	97.6	70.7	97.7	70.6

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
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 Tue Jul 26 15:17:14 2016

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
```

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Platform Notes (Continued)

```
From /proc/cpuinfo
   model name : Intel(R) Xeon(R) CPU E5-2620 v4 @ 2.10GHz
      2 "physical id"s (chips)
      16 "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
   cache size : 20480 KB

From /proc/meminfo
   MemTotal:       263860684 kB
   HugePages_Total:        1
   Hugepagesize:        2048 kB

From /etc/*release* /etc/*version*
   os-release:
      NAME="Red Hat Enterprise Linux Server"
      VERSION="7.2 (Maipo)"
      ID="rhel"
      ID_LIKE="fedora"
      VERSION_ID="7.2"
      PRETTY_NAME="Red Hat Enterprise Linux"
      ANSI_COLOR="0;31"
      CPE_NAME="cpe:/o:redhat:enterprise_linux:7.2:GA:server"
   os-release.rpmsave:
      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"
   redhat-release: Red Hat Enterprise Linux Server release 7.2 (Maipo)
   system-release: Red Hat Enterprise Linux Server release 7.2 (Maipo)
   system-release-cpe: cpe:/o:redhat:enterprise_linux:7.2:ga:server

uname -a:
   Linux SUT 3.10.0-327.18.2.el7.x86_64 #2 SMP Wed Jun 1 17:37:13 CEST 2016
   x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Jul 26 15:13

SPEC is set to: /cpu2006.1.2
   Filesystem      Type  Size  Used Avail Use% Mounted on
   /dev/sda1       ext4  212G  131G   70G  66% /

Additional information from dmidecode:
```

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Platform Notes (Continued)

```
     BIOS Intel Corporation SE5C610.86B.01.01.0016.033120161139 03/31/2016
     Memory:
      16x    16 GB
      16x Hynix HMA42GR7AFR4N-UH 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 = "16"

 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 v4 chips + 256 GB memory
 using RedHat EL 7.2
```

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
```

SPEC CINT2006 Result

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CPU2006 license: 9008		**Test date:**	Jul-2016
Test sponsor: ACTION S.A.		**Hardware Availability:**	Mar-2016
Tested by: ACTION S.A.		**Software Availability:**	Mar-2016

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/compilers_and_libraries_2016/linux/lib/ia32_lin`

445.gobmk: `icc -m32 -L/opt/intel/compilers_and_libraries_2016/linux/lib/ia32_lin`

C++ benchmarks:

471.omnetpp: `icpc -m32 -L/opt/intel/compilers_and_libraries_2016/linux/lib/ia32_lin`

473.astar: `icpc -m64`

483.xalancbmk: `icpc -m32 -L/opt/intel/lib/ia32`

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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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:

Continued on next page

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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

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