SPEC® CINT2006 Result

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Oracle Corporation

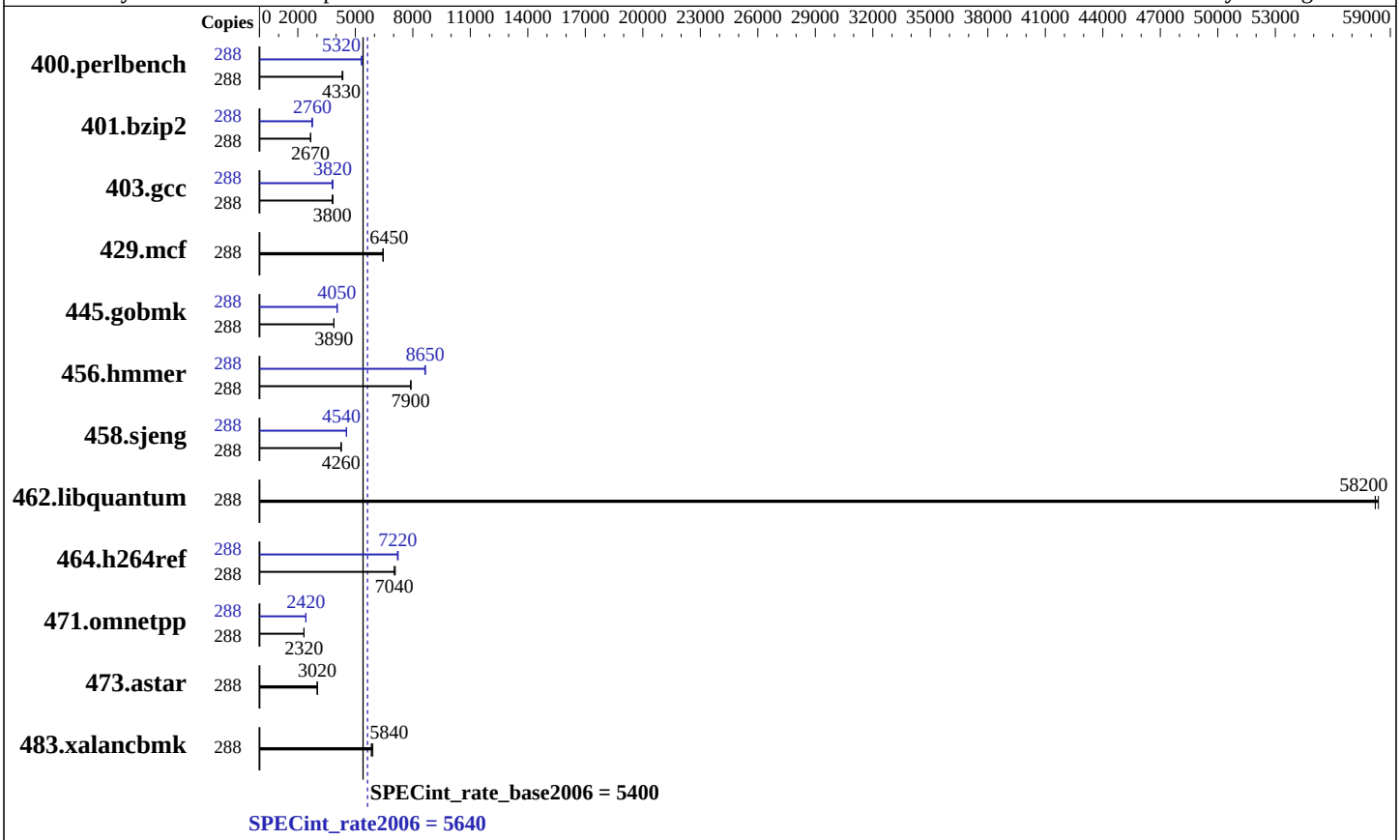
Oracle Server X5-8 (Intel Xeon E7-8895 v3 2.60 GHz)

SPECint®_rate2006 = 5640

SPECint_rate_base2006 = 5400

CPU2006 license: 6
Test sponsor: Oracle Corporation
Tested by: Oracle Corporation

Test date: Oct-2015
Hardware Availability: Jul-2015
Software Availability: Aug-2015



Hardware

CPU Name:	Intel Xeon E7-8895 v3
CPU Characteristics:	Intel Turbo Boost Technology up to 3.50 GHz
CPU MHz:	2600
FPU:	Integrated
CPU(s) enabled:	144 cores, 8 chips, 18 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:	45 MB I+D on chip per chip
Other Cache:	None
Memory:	2 TB (64 x 32 GB 4Rx4 PC3-12800R-11, ECC)
Disk Subsystem:	1 x 1600 GB NVMe
Other Hardware:	None

Software

Operating System:	Oracle Linux 7.1 3.10.0-229.el7.x86_64
Compiler:	C/C++: Version 16.0.0.101 of Intel C++ Studio XE for Linux
Auto Parallel:	No
File System:	xfs
System State:	Run level 3 (multi-user)
Base Pointers:	32-bit
Peak Pointers:	32/64-bit
Other Software:	Microquill SmartHeap V10.2

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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	288	**650**	**4330**	647	4350	652	4320	288	528	5330	529	5320	**528**	**5320**
401.bzip2	288	**1042**	**2670**	1043	2670	1038	2680	288	1006	2760	**1009**	**2760**	1018	2730
403.gcc	288	610	3800	605	3830	**610**	**3800**	288	606	3830	611	3790	**607**	**3820**
429.mcf	288	408	6440	407	6460	**407**	**6450**	288	408	6440	407	6460	**407**	**6450**
445.gobmk	288	779	3880	**778**	**3890**	777	3890	288	744	4060	**746**	**4050**	747	4050
456.hmmer	288	**340**	**7900**	341	7890	340	7900	288	**311**	**8650**	312	8620	310	8660
458.sjeng	288	818	4260	**818**	**4260**	819	4260	288	769	4530	767	4540	**768**	**4540**
462.libquantum	288	102	58400	**102**	**58200**	103	58200	288	102	58400	**102**	**58200**	103	58200
464.h264ref	288	906	7040	**906**	**7040**	899	7090	288	881	7230	**883**	**7220**	886	7200
471.omnetpp	288	775	2320	**775**	**2320**	776	2320	288	743	2420	744	2420	**743**	**2420**
473.astar	288	670	3020	669	3020	**670**	**3020**	288	670	3020	669	3020	**670**	**3020**
483.xalancbmk	288	**340**	**5840**	336	5910	340	5840	288	**340**	**5840**	336	5910	340	5840

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

```
Default BIOS settings were used
Sysinfo program /nvmdata1/cpu2006v.12-ic16/config/sysinfo.rev6914
$Rev: 6914 $ $Date:: 2014-06-25 #$ e3fbb8667b5a285932ceab81e28219e1
running on sca05-0a81e7a0.us.oracle.com Sun Oct 18 15:50:52 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

From /proc/cpuinfo
   model name : Intel(R) Xeon(R) CPU E7-8895 v3 @ 2.60GHz
      8 "physical id"s (chips)
      288 "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 : 18
```

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Platform Notes (Continued)

```
        siblings  : 36
        physical 0: cores 0 1 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27
        physical 1: cores 0 1 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27
        physical 2: cores 0 1 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27
        physical 3: cores 0 1 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27
        physical 4: cores 0 1 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27
        physical 5: cores 0 1 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27
        physical 6: cores 0 1 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27
        physical 7: cores 0 1 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27
     cache size : 46080 KB

  From /proc/meminfo
     MemTotal:       2113379672 kB
     HugePages_Total:       0
     Hugepagesize:       2048 kB

  From /etc/*release* /etc/*version*
     oracle-release: Oracle Linux Server release 7.1
     os-release:
        NAME="Oracle Linux Server"
        VERSION="7.1"
        ID="ol"
        VERSION_ID="7.1"
        PRETTY_NAME="Oracle Linux Server 7.1"
        ANSI_COLOR="0;31"
        CPE_NAME="cpe:/o:oracle:linux:7:1"
        HOME_URL="https://linux.oracle.com/"
     redhat-release: Red Hat Enterprise Linux Server release 7.1 (Maipo)
     system-release: Oracle Linux Server release 7.1
     system-release-cpe: cpe:/o:oracle:linux:7:1

  uname -a:
     Linux sca05-0a81e7a0.us.oracle.com 3.10.0-229.el7.x86_64 #1 SMP Fri Mar 6
     04:05:24 PST 2015 x86_64 x86_64 x86_64 GNU/Linux

  run-level 3 Oct 6 05:52

  SPEC is set to: /nvmdata1/cpu2006v.12-ic16
     Filesystem     Type  Size  Used Avail Use% Mounted on
     /dev/nvme0n1p1 xfs  1000G  510G  491G  51% /nvmdata1
  Additional information from dmidecode:

     Warning: Use caution when you interpret this section. The 'dmidecode' program
     reads system data which is "intended to allow hardware to be accurately
     determined", but the intent may not be met, as there are frequent changes to
     hardware, firmware, and the "DMTF SMBIOS" standard.

    BIOS American Megatrends Inc. 37020301 09/17/2015
    Memory:
     128x NO DIMM NO DIMM
     64x Samsung M386B4G70DM0-YK04 32 GB 4 rank 1600 MHz
```

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Platform Notes (Continued)

```
(End of data from sysinfo program)
```

General Notes

```
Environment variables set by runspec before the start of the run:
LD_LIBRARY_PATH = "/nvmdata1/cpu2006v.12-ic16/libs/32:/nvmdata1/cpu2006v.12-ic16/libs/64:/nvmdata1/cpu2006v.12-ic16/sh"

 Binaries compiled on a system with 1x Intel Core i5-4670K CPU + 32GB
 memory using RedHat EL 7.1
 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>
```

Base Compiler Invocation

C benchmarks:

```
icc -m32 -L/opt/intel/compilers_and_libraries_2016/linux/compiler/lib/ia32_lin
```

C++ benchmarks:

```
icpc -m32 -L/opt/intel/compilers_and_libraries_2016/linux/compiler/lib/ia32_lin
```

Base Portability Flags

400.perlbench: `-D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LINUX_IA32`
401.bzip2: `-D_FILE_OFFSET_BITS=64`
403.gcc: `-D_FILE_OFFSET_BITS=64`
429.mcf: `-D_FILE_OFFSET_BITS=64`
445.gobmk: `-D_FILE_OFFSET_BITS=64`
456.hmmer: `-D_FILE_OFFSET_BITS=64`
458.sjeng: `-D_FILE_OFFSET_BITS=64`
462.libquantum: `-D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LINUX`
464.h264ref: `-D_FILE_OFFSET_BITS=64`
471.omnetpp: `-D_FILE_OFFSET_BITS=64`
473.astar: `-D_FILE_OFFSET_BITS=64`
483.xalancbmk: `-D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LINUX`

Base Optimization Flags

C benchmarks:

```
-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch
-opt-mem-layout-trans=3
```

Continued on next page

Base Optimization Flags (Continued)

C++ benchmarks:
-xCORE-AVX2 -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 -L/opt/intel/compilers_and_libraries_2016/linux/compiler/lib/ia32_lin

400.perlbench: icc -m64

401.bzip2: icc -m64

456.hmmer: icc -m64

458.sjeng: icc -m64

C++ benchmarks:
icpc -m32 -L/opt/intel/compilers_and_libraries_2016/linux/compiler/lib/ia32_lin

Peak Portability Flags

400.perlbench: -D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX_X64
401.bzip2: -D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LP64
403.gcc: -D_FILE_OFFSET_BITS=64
429.mcf: -D_FILE_OFFSET_BITS=64
445.gobmk: -D_FILE_OFFSET_BITS=64
456.hmmer: -D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LP64
458.sjeng: -D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LP64
462.libquantum: -D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LINUX
464.h264ref: -D_FILE_OFFSET_BITS=64
471.omnetpp: -D_FILE_OFFSET_BITS=64
473.astar: -D_FILE_OFFSET_BITS=64
483.xalancbmk: -D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LINUX

Peak Optimization Flags

C benchmarks:

400.perlbench: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1) -ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2) -par-num-threads=1(pass 1) -prof-use(pass 2) -auto-ilp32

401.bzip2: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1) -ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2) -par-num-threads=1(pass 1) -prof-use(pass 2) -opt-prefetch -auto-ilp32 -ansi-alias

403.gcc: -xCORE-AVX2 -ipo -O3 -no-prec-div

429.mcf: basepeak = yes

445.gobmk: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1) -prof-use(pass 2) -par-num-threads=1(pass 1) -ansi-alias -opt-mem-layout-trans=3

456.hmmer: -xCORE-AVX2 -ipo -O3 -no-prec-div -unroll2 -auto-ilp32

458.sjeng: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1) -ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2) -par-num-threads=1(pass 1) -prof-use(pass 2) -unroll4 -auto-ilp32

462.libquantum: basepeak = yes

464.h264ref: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1) -ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2) -par-num-threads=1(pass 1) -prof-use(pass 2) -unroll2 -ansi-alias

C++ benchmarks:

471.omnetpp: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1) -ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2) -par-num-threads=1(pass 1) -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 file that was used to format this result can be browsed at
`http://www.spec.org/cpu2006/flags/Intel-ic16.0-official-linux64.html`

You can also download the XML flags source by saving the following link:
`http://www.spec.org/cpu2006/flags/Intel-ic16.0-official-linux64.xml`

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