SPEC® CINT2006 Result
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Quanta Computer Inc.

SPECint®_rate2006 = 2890

QuantaGrid Q71L-4U (Intel Xeon E7-8890 v3)

SPECint_rate_base2006 = 2770

CPU2006 license: 9050
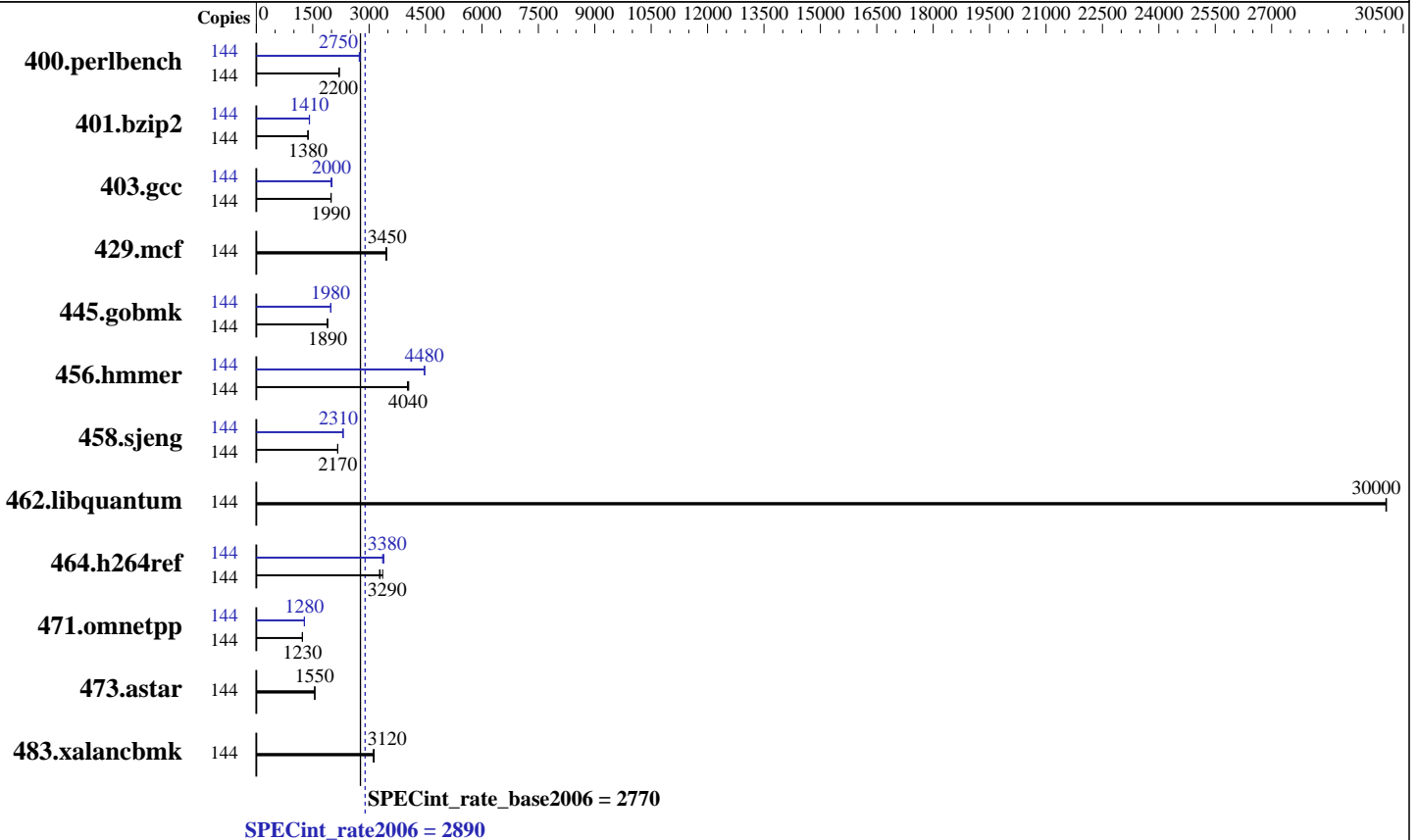
Test sponsor: Quanta Computer Inc.

Tested by: Quanta Computer Inc.

Test date: Mar-2016

Hardware Availability: Mar-2016

Software Availability: Mar-2016

Benchmark	Copies	Base	Peak
400.perlbench	144 / 144	2200	2750
401.bzip2	144 / 144	1380	1410
403.gcc	144 / 144	1990	2000
429.mcf	144	3450	
445.gobmk	144 / 144	1890	1980
456.hmmer	144 / 144	4040	4480
458.sjeng	144 / 144	2170	2310
462.libquantum	144	30000	
464.h264ref	144 / 144	3290	3380
471.omnetpp	144 / 144	1230	1280
473.astar	144	1550	
483.xalancbmk	144	3120	

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Hardware

CPU Name:	Intel Xeon E7-8890 v3
CPU Characteristics:	Intel Turbo Boost Technology up to 3.30 GHz
CPU MHz:	2500
FPU:	Integrated
CPU(s) enabled:	72 cores, 4 chips, 18 cores/chip, 2 threads/core
CPU(s) orderable:	1,2,3,4 chip
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:	512 GB (32 x 16 GB 2Rx4 PC4-2133P-R, running at 1600 MHz)
Disk Subsystem:	1 x 480 GB SSD
Other Hardware:	None

Software

Operating System:	Red Hat Enterprise Linux Server release 7.1 (Maipo) 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	144	637	2210	640	2200	**639**	**2200**	144	511	2750	514	2740	**512**	**2750**
401.bzip2	144	1009	1380	1013	1370	**1010**	**1380**	144	987	1410	983	1410	**984**	**1410**
403.gcc	144	582	1990	584	1980	**583**	**1990**	144	**579**	**2000**	583	1990	576	2010
429.mcf	144	**380**	**3450**	381	3450	379	3470	144	**380**	**3450**	381	3450	379	3470
445.gobmk	144	799	1890	**798**	**1890**	797	1900	144	762	1980	763	1980	**763**	**1980**
456.hmmer	144	331	4050	334	4020	**333**	**4040**	144	301	4470	300	4480	**300**	**4480**
458.sjeng	144	**805**	**2170**	805	2160	805	2170	144	756	2310	755	2310	**755**	**2310**
462.libquantum	144	99.3	30000	**99.3**	**30000**	99.3	30100	144	99.3	30000	**99.3**	**30000**	99.3	30100
464.h264ref	144	973	3280	948	3360	**968**	**3290**	144	949	3360	**944**	**3380**	939	3390
471.omnetpp	144	**734**	**1230**	734	1230	735	1230	144	703	1280	705	1280	**704**	**1280**
473.astar	144	**650**	**1550**	650	1560	651	1550	144	**650**	**1550**	650	1560	651	1550
483.xalancbmk	144	319	3110	**318**	**3120**	317	3130	144	319	3110	**318**	**3120**	317	3130

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 /home/speccpu-auto-install/config/sysinfo.rev6914
$Rev: 6914 $ $Date:: 2014-06-25 #$ e3fbb8667b5a285932ceab81e28219e1
running on localhost.localdomain Tue Mar  1 10:50:22 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

From /proc/cpuinfo
   model name : Intel(R) Xeon(R) CPU E7-8890 v3 @ 2.50GHz
      4 "physical id"s (chips)
      144 "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
      siblings  : 36
```

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Platform Notes (Continued)

```
    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
  cache size : 46080 KB

From /proc/meminfo
   MemTotal:       528058100 kB
   HugePages_Total:        0
   Hugepagesize:        2048 kB

From /etc/*release* /etc/*version*
   os-release:
      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 localhost.localdomain 3.10.0-229.el7.x86_64 #1 SMP Thu Jan 29 18:37:38
   EST 2015 x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Mar 1 10:31 last=5

SPEC is set to: /home/speccpu-auto-install
   Filesystem     Type  Size  Used Avail Use% Mounted on
   /dev/sda5      xfs   393G  6.1G  387G   2% /home
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. S4L_3B08 10/15/2015
  Memory:
   64x NO DIMM NO DIMM
   32x Samsung M393A2G40DB0-CPB 16 GB 2 rank 2133 MHz, configured at 1600 MHz

(End of data from sysinfo program)
```

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General Notes

Environment variables set by runspec before the start of the run:
LD_LIBRARY_PATH = "/home/speccpu-auto-install/libs/32:/home/speccpu-auto-install/libs/64:/home/speccpu-auto-install/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

C++ benchmarks:
    -xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch
    -opt-mem-layout-trans=3 -Wl,-z,muldefs -L/sh -lsmartheap

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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`

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Peak Optimization Flags (Continued)

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`

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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/Quanta-Computer-Inc-Platform-Settings-V1.0.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/Quanta-Computer-Inc-Platform-Settings-V1.0.xml

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

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