SPEC® CINT2006 Result
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NEC Corporation

Express5800/R120g-1E (Intel Xeon E5-2603 v4)

SPECint®_rate2006 = 168
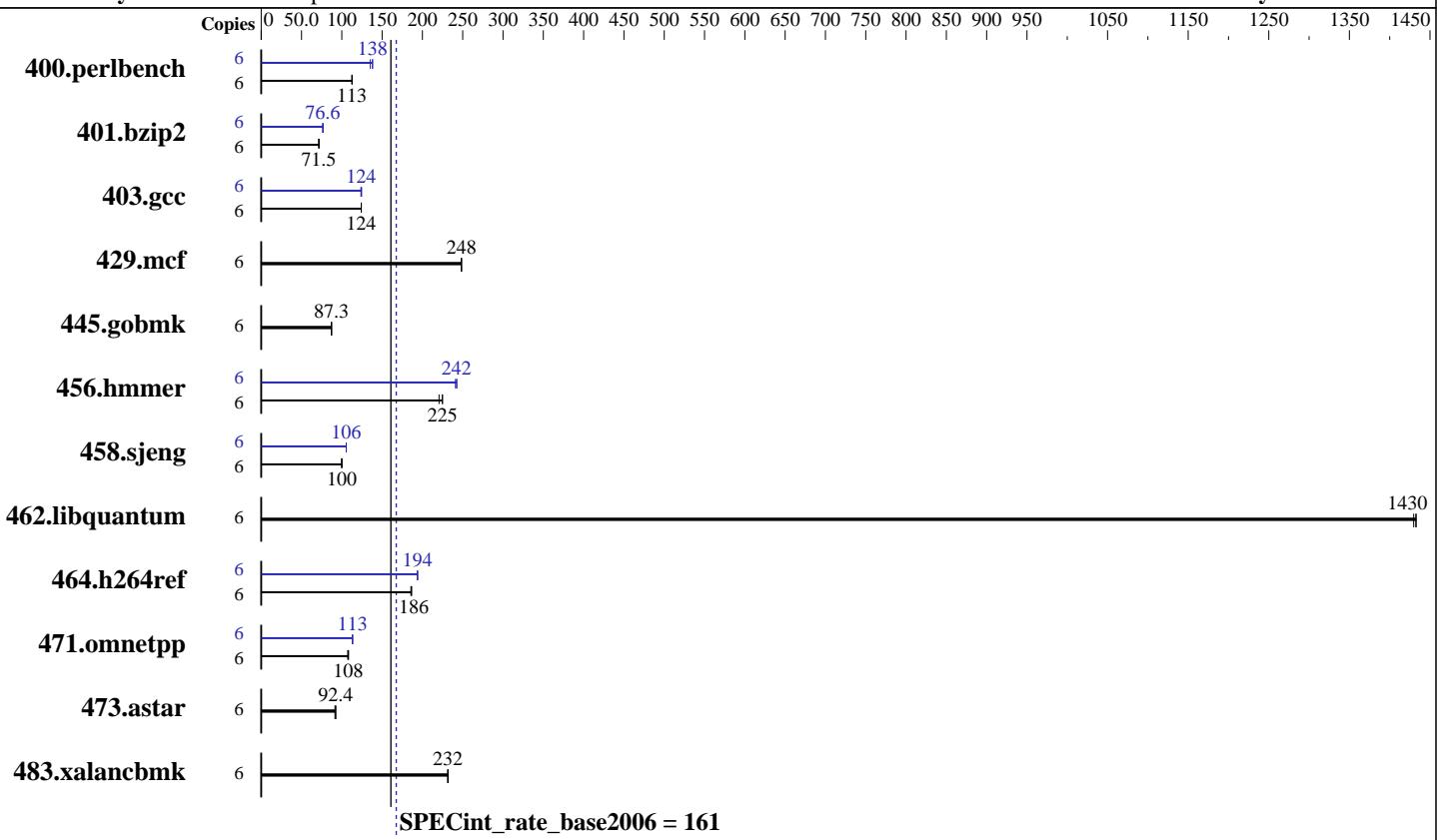
SPECint_rate_base2006 = 161

CPU2006 license: 9006
Test sponsor: NEC Corporation
Tested by: NEC Corporation

Test date: May-2016
Hardware Availability: Jun-2016
Software Availability: Jan-2016

Copies 0 50.0 100 150 200 250 300 350 400 450 500 550 600 650 700 750 800 850 900 950 1050 1150 1250 1350 1450

Benchmark	Copies	Peak	Base
400.perlbench	6 / 6	138	113
401.bzip2	6 / 6	76.6	71.5
403.gcc	6 / 6	124	124
429.mcf	6	248	
445.gobmk	6	87.3	
456.hmmer	6 / 6	242	225
458.sjeng	6 / 6	106	100
462.libquantum	6	1430	
464.h264ref	6 / 6	194	186
471.omnetpp	6 / 6	113	108
473.astar	6	92.4	
483.xalancbmk	6	232	

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Hardware

CPU Name: Intel Xeon E5-2603 v4
CPU Characteristics:
CPU MHz: 1700
FPU: Integrated
CPU(s) enabled: 6 cores, 1 chip, 6 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: 15 MB I+D on chip per chip
Other Cache: None
Memory: 128 GB (8 x 16 GB 2Rx4 PC4-2400T-R, running at 1866 MHz)
Disk Subsystem: 1 x 1 TB SATA, 7200 RPM
Other Hardware: None

Software

Operating System: Red Hat Enterprise Linux Server release 7.2 (Maipo)
Kernel 3.10.0-327.4.5.el7.x86_64
Compiler: C/C++: Version 16.0.0.101 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 V10.2

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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	6	**520**	**113**	521	113	520	113	6	**425**	**138**	424	138	434	135
401.bzip2	6	808	71.7	**809**	**71.5**	810	71.5	6	**756**	**76.6**	756	76.6	757	76.5
403.gcc	6	389	124	**389**	**124**	389	124	6	**389**	**124**	388	125	390	124
429.mcf	6	**220**	**248**	220	249	220	248	6	**220**	**248**	220	249	220	248
445.gobmk	6	**721**	**87.3**	721	87.3	723	87.1	6	**721**	**87.3**	721	87.3	723	87.1
456.hmmer	6	249	225	254	221	**249**	**225**	6	232	241	**231**	**242**	231	243
458.sjeng	6	726	100	726	100	**726**	**100**	6	**688**	**106**	687	106	688	105
462.libquantum	6	87.0	1430	86.8	1430	**86.8**	**1430**	6	87.0	1430	86.8	1430	**86.8**	**1430**
464.h264ref	6	**713**	**186**	715	186	712	187	6	**685**	**194**	685	194	685	194
471.omnetpp	6	346	108	**347**	**108**	349	107	6	331	113	331	113	**331**	**113**
473.astar	6	460	91.5	456	92.4	**456**	**92.4**	6	460	91.5	456	92.4	**456**	**92.4**
483.xalancbmk	6	179	231	179	232	**179**	**232**	6	179	231	179	232	**179**	**232**

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

Submit Notes

The taskset mechanism was used to bind copies to processors. The config file option 'submit' was used to generate taskset 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:
      Power Management Policy: Custom
      Energy Performance: Performance
      Patrol Scrub: Disabled

General Notes

    Environment variables set by runspec before the start of the run:
    LD_LIBRARY_PATH = "/home/cpu2006/libs/32:/home/cpu2006/libs/64:/home/cpu2006/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

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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
```

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
```

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Peak Compiler Invocation (Continued)

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: basepeak = yes
```

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Peak Optimization Flags (Continued)

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 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/NEC-Platform-Settings-V1.2-120g-RevC.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/NEC-Platform-Settings-V1.2-120g-RevC.xml

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