SPEC® CINT2006 Result
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NEC Corporation

Express5800/T110h-S (Intel Pentium G4400)

SPECint®_rate2006 = 100

SPECint_rate_base2006 = 97.1

CPU2006 license: 9006	**Test date:** Dec-2015
Test sponsor: NEC Corporation	**Hardware Availability:** Mar-2016
Tested by: NEC Corporation	**Software Availability:** Nov-2015

Copies

400.perlbench 2 / 2 — 90.7 / 80.3
401.bzip2 2 / 2 — 44.9 / 43.3
403.gcc 2 — 78.9
429.mcf 2 — 139
445.gobmk 2 — 56.9
456.hmmer 2 / 2 — 154 / 132
458.sjeng 2 / 2 — 68.5 / 66.4
462.libquantum 2 — 691
464.h264ref 2 / 2 — 127 / 127
471.omnetpp 2 / 2 — 58.8 / 55.3
473.astar 2 — 55.0
483.xalancbmk 2 — 140

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Hardware

CPU Name:	Intel Pentium G4400
CPU Characteristics:	
CPU MHz:	3300
FPU:	Integrated
CPU(s) enabled:	2 cores, 1 chip, 2 cores/chip
CPU(s) orderable:	1 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:	3 MB I+D on chip per chip
Other Cache:	None
Memory:	16 GB (2 x 8 GB 2Rx8 PC4-2133P-E)
Disk Subsystem:	1 x 500 GB SATA, 7200 RPM
Other Hardware:	None

Software

Operating System:	Red Hat Enterprise Linux Server release 7.2 (Maipo)
	Kernel 3.10.0-327.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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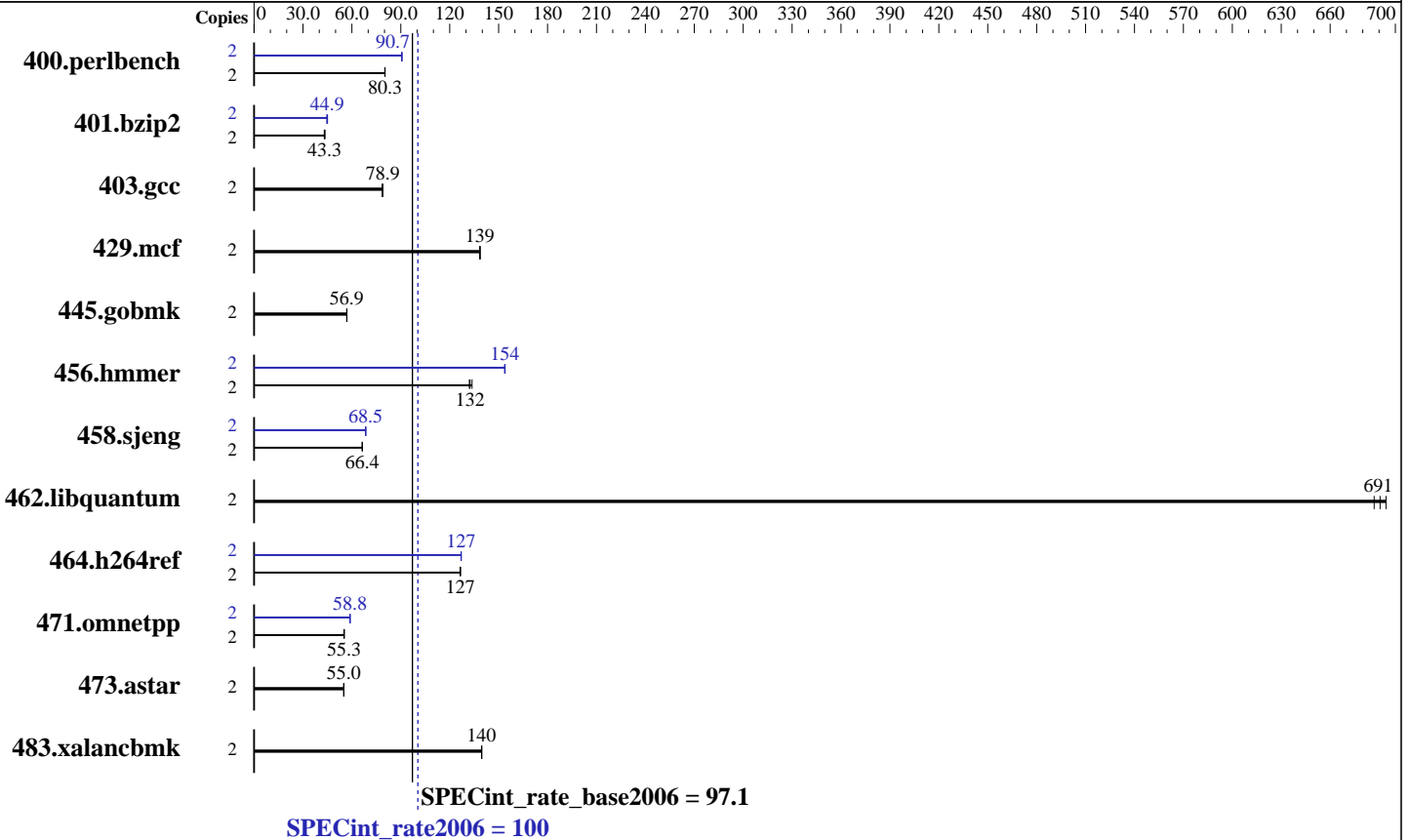
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Results Table

Benchmark	Copies	Base Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Peak Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
400.perlbench	2	**243**	**80.3**	243	80.3	244	80.2	2	**215**	**90.7**	215	90.7	216	90.5
401.bzip2	2	444	43.5	**446**	**43.3**	448	43.0	2	433	44.6	428	45.1	**430**	**44.9**
403.gcc	2	204	78.9	**204**	**78.9**	205	78.6	2	204	78.9	**204**	**78.9**	205	78.6
429.mcf	2	**132**	**139**	132	139	132	138	2	**132**	**139**	132	139	132	138
445.gobmk	2	368	57.0	369	56.8	**369**	**56.9**	2	368	57.0	369	56.8	**369**	**56.9**
456.hmmer	2	140	134	141	132	**141**	**132**	2	**121**	**154**	121	154	121	154
458.sjeng	2	**365**	**66.4**	365	66.4	364	66.4	2	**353**	**68.5**	353	68.5	354	68.4
462.libquantum	2	59.7	694	60.3	687	**60.0**	**691**	2	59.7	694	60.3	687	**60.0**	**691**
464.h264ref	2	**350**	**127**	350	127	350	126	2	**348**	**127**	349	127	348	127
471.omnetpp	2	227	55.1	226	55.3	**226**	**55.3**	2	212	59.0	213	58.8	**213**	**58.8**
473.astar	2	255	55.0	255	55.1	**255**	**55.0**	2	255	55.0	255	55.1	**255**	**55.0**
483.xalancbmk	2	**98.9**	**140**	98.8	140	98.9	140	2	**98.9**	**140**	98.8	140	98.9	140

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

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:
```
-xSSE4.2 -ipo -O3 -no-prec-div -opt-prefetch -opt-mem-layout-trans=3
```

C++ benchmarks:
```
-xSSE4.2 -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: -xSSE4.2(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: -xSSE4.2(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: basepeak = yes

     429.mcf: basepeak = yes

   445.gobmk: basepeak = yes

   456.hmmer: -xSSE4.2 -ipo -O3 -no-prec-div -unroll2 -auto-ilp32
```

Continued on next page

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Peak Optimization Flags (Continued)

```
  458.sjeng: -xSSE4.2(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: -xSSE4.2(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: -xSSE4.2(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-V1.2-110h-RevA.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-V1.2-110h-RevA.xml

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

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