SPEC® CFP2006 Result
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NEC Corporation

Express5800/GT110h (Intel Pentium G4400)

$SPECfp^®2006 =$ **72.3**

$SPECfp\_base2006 =$ **71.6**

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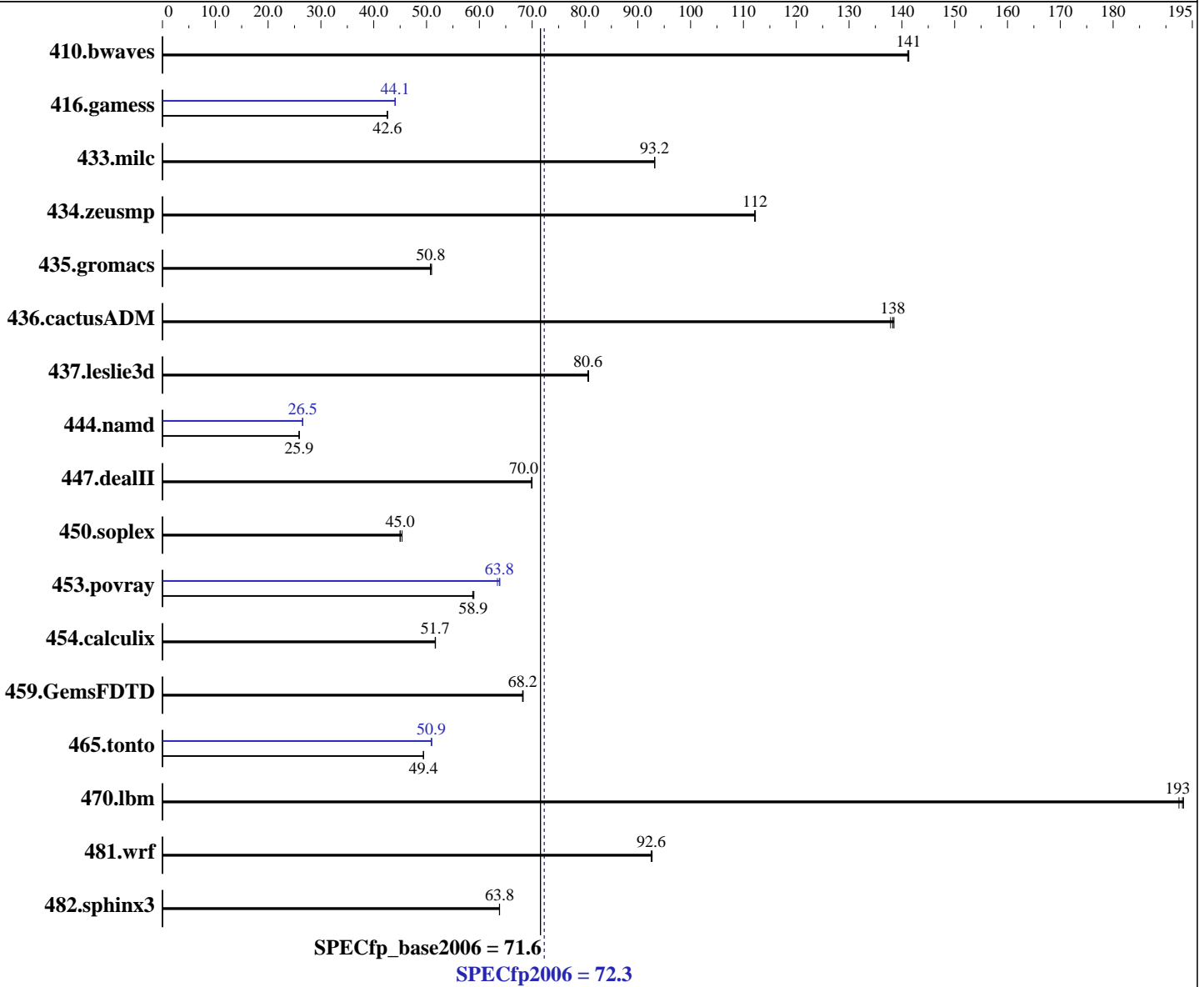**Test sponsor:** NEC Corporation
Tested by: NEC Corporation

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

Benchmark results:

Benchmark	Base	Peak
410.bwaves	141	
416.gamess	42.6	44.1
433.milc	93.2	
434.zeusmp	112	
435.gromacs	50.8	
436.cactusADM	138	
437.leslie3d	80.6	
444.namd	25.9	26.5
447.dealII	70.0	
450.soplex	45.0	
453.povray	58.9	63.8
454.calculix	51.7	
459.GemsFDTD	68.2	
465.tonto	49.4	50.9
470.lbm	193	
481.wrf	92.6	
482.sphinx3	63.8	

SPECfp_base2006 = 71.6
SPECfp2006 = 72.3

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
Continued on next page

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;
Fortran: Version 16.0.0.101 of Intel Fortran Studio XE for Linux
Auto Parallel: Yes
File System: ext4
Continued on next page

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L3 Cache:	3 MB I+D on chip per chip	System State:	Run level 3 (multi-user)
Other Cache:	None	Base Pointers:	64-bit
Memory:	16 GB (2 x 8 GB 2Rx8 PC4-2133P-E)	Peak Pointers:	32/64-bit
Disk Subsystem:	1 x 1 TB SATA, 7200 RPM	Other Software:	None
Other Hardware:	None		

Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	**96.2**	**141**	96.3	141	96.2	141	**96.2**	**141**	96.3	141	96.2	141
416.gamess	460	42.6	460	42.6	**460**	**42.6**	445	44.0	**444**	**44.1**	444	44.1
433.milc	**98.5**	**93.2**	98.5	93.2	98.5	93.2	**98.5**	**93.2**	98.5	93.2	98.5	93.2
434.zeusmp	**81.1**	**112**	81.1	112	81.2	112	**81.1**	**112**	81.1	112	81.2	112
435.gromacs	140	51.0	**141**	**50.8**	141	50.7	140	51.0	**141**	**50.8**	141	50.7
436.cactusADM	86.7	138	**86.4**	**138**	86.3	139	86.7	138	**86.4**	**138**	86.3	139
437.leslie3d	116	80.7	**117**	**80.6**	117	80.6	116	80.7	**117**	**80.6**	117	80.6
444.namd	310	25.9	310	25.9	**310**	**25.9**	**302**	**26.5**	302	26.6	302	26.5
447.dealII	163	70.0	**164**	**70.0**	164	69.9	163	70.0	**164**	**70.0**	164	69.9
450.soplex	184	45.4	185	45.0	**185**	**45.0**	184	45.4	185	45.0	**185**	**45.0**
453.povray	**90.4**	**58.9**	90.6	58.7	90.2	59.0	83.9	63.4	**83.4**	**63.8**	83.3	63.9
454.calculix	160	51.7	**160**	**51.7**	160	51.6	160	51.7	**160**	**51.7**	160	51.6
459.GemsFDTD	**156**	**68.2**	156	68.2	155	68.3	**156**	**68.2**	156	68.2	155	68.3
465.tonto	199	49.4	199	49.4	**199**	**49.4**	193	51.0	193	50.9	**193**	**50.9**
470.lbm	71.1	193	71.4	192	**71.1**	**193**	71.1	193	71.4	192	**71.1**	**193**
481.wrf	120	92.7	**121**	**92.6**	121	92.5	120	92.7	**121**	**92.6**	121	92.5
482.sphinx3	305	63.8	306	63.8	**305**	**63.8**	305	63.8	306	63.8	**305**	**63.8**

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

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:
    KMP_AFFINITY = "granularity=fine,compact,1,0"
    LD_LIBRARY_PATH = "/home/cpu2006/libs/32:/home/cpu2006/libs/64:/home/cpu2006/sh"

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General Notes (Continued)

```
OMP_NUM_THREADS = "2"

 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
```

Base Compiler Invocation

C benchmarks:
```
icc    -m64
```

C++ benchmarks:
```
icpc   -m64
```

Fortran benchmarks:
```
ifort -m64
```

Benchmarks using both Fortran and C:
```
icc    -m64 ifort -m64
```

Base Portability Flags

```
       410.bwaves: -DSPEC_CPU_LP64
       416.gamess: -DSPEC_CPU_LP64
         433.milc: -DSPEC_CPU_LP64
       434.zeusmp: -DSPEC_CPU_LP64
      435.gromacs: -DSPEC_CPU_LP64 -nofor_main
     436.cactusADM: -DSPEC_CPU_LP64 -nofor_main
      437.leslie3d: -DSPEC_CPU_LP64
         444.namd: -DSPEC_CPU_LP64
        447.dealII: -DSPEC_CPU_LP64
       450.soplex: -DSPEC_CPU_LP64
       453.povray: -DSPEC_CPU_LP64
      454.calculix: -DSPEC_CPU_LP64 -nofor_main
     459.GemsFDTD: -DSPEC_CPU_LP64
        465.tonto: -DSPEC_CPU_LP64
         470.lbm: -DSPEC_CPU_LP64
          481.wrf: -DSPEC_CPU_LP64 -DSPEC_CPU_CASE_FLAG -DSPEC_CPU_LINUX
      482.sphinx3: -DSPEC_CPU_LP64
```

Base Optimization Flags

C benchmarks:
```
     -xSSE4.2 -ipo -O3 -no-prec-div -parallel -opt-prefetch -ansi-alias
```

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Base Optimization Flags (Continued)

C++ benchmarks:

```
-xSSE4.2 -ipo -O3 -no-prec-div -opt-prefetch -ansi-alias
```

Fortran benchmarks:

```
-xSSE4.2 -ipo -O3 -no-prec-div -parallel -opt-prefetch
```

Benchmarks using both Fortran and C:

```
-xSSE4.2 -ipo -O3 -no-prec-div -parallel -opt-prefetch -ansi-alias
```

Peak Compiler Invocation

C benchmarks:

```
icc   -m64
```

C++ benchmarks:

```
icpc  -m64
```

Fortran benchmarks:

```
ifort -m64
```

Benchmarks using both Fortran and C:

```
icc   -m64 ifort -m64
```

Peak Portability Flags

```
Same as Base Portability Flags
```

Peak Optimization Flags

C benchmarks:

> 433.milc: basepeak = yes

> 470.lbm: basepeak = yes

> 482.sphinx3: basepeak = yes

C++ benchmarks:

> 444.namd: `-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) -fno-alias -auto-ilp32`

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Peak Optimization Flags (Continued)

447.dealII: basepeak = yes

450.soplex: basepeak = yes

453.povray: -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 -ansi-alias

Fortran benchmarks:

410.bwaves: basepeak = yes

416.gamess: -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 -inline-level=0 -scalar-rep-

434.zeusmp: basepeak = yes

437.leslie3d: basepeak = yes

459.GemsFDTD: basepeak = yes

465.tonto: -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) -inline-calloc -opt-malloc-options=3
-auto -unroll4

Benchmarks using both Fortran and C:

435.gromacs: basepeak = yes

436.cactusADM: basepeak = yes

454.calculix: basepeak = yes

481.wrf: basepeak = yes

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

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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

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For other inquiries, please contact webmaster@spec.org.

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