# SPEC® CINT2006 Result

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## NEC Corporation

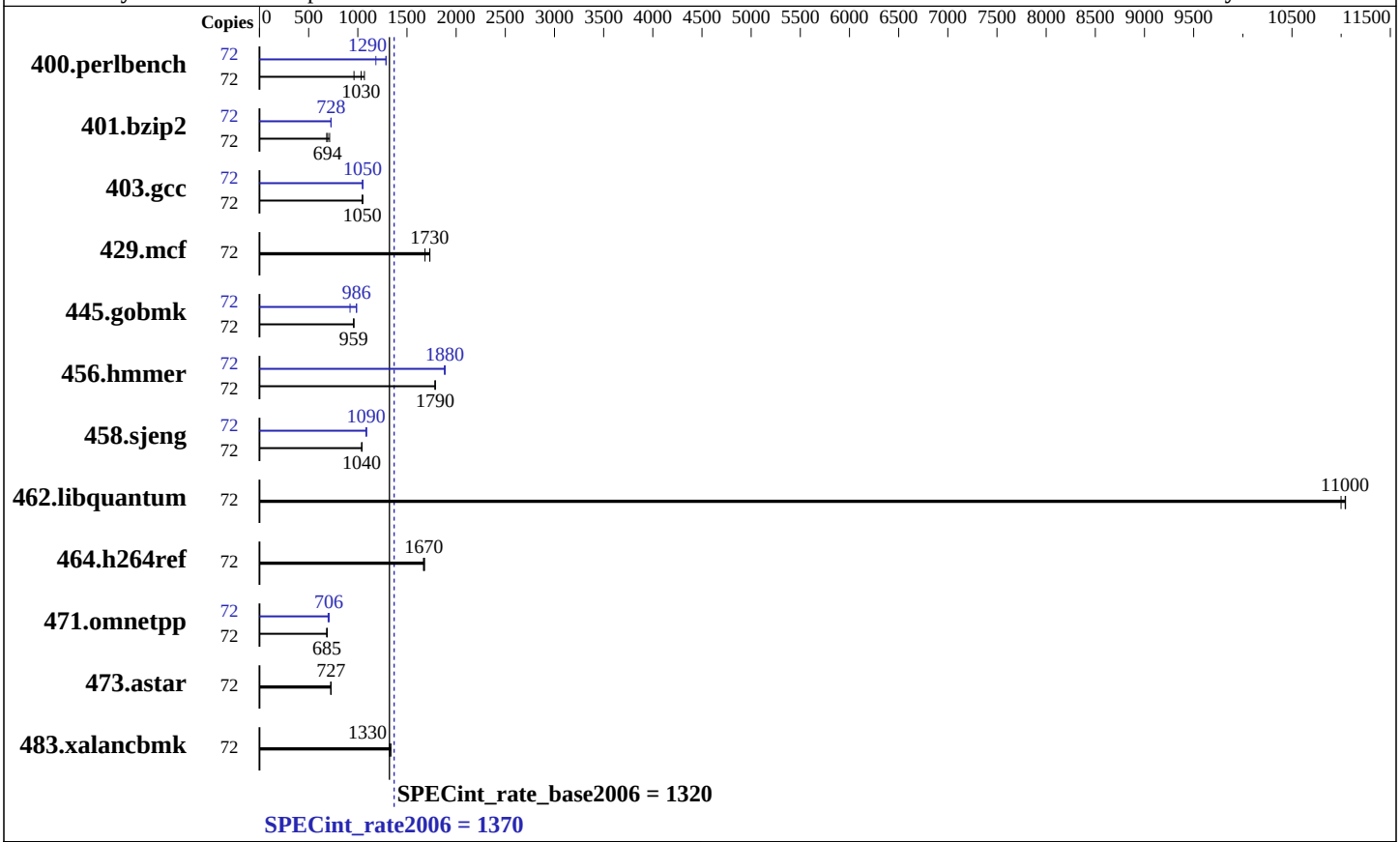
## Express5800/B120f-h (Intel Xeon E5-2699 v3)

SPECint®_rate2006 = 1370

SPECint_rate_base2006 = 1320

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

**Test date:** Jul-2015
**Hardware Availability:** Jun-2015
**Software Availability:** Oct-2014




### Hardware

| | |
|---|---|
| CPU Name: | Intel Xeon E5-2699 v3 |
| CPU Characteristics: | Intel Turbo Boost Technology up to 3.60 GHz |
| CPU MHz: | 2300 |
| FPU: | Integrated |
| CPU(s) enabled: | 36 cores, 2 chips, 18 cores/chip, 2 threads/core |
| 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: | 45 MB I+D on chip per chip |
| Other Cache: | None |
| Memory: | 128 GB (8 x 16 GB 2Rx4 PC4-2133P-R) |
| Disk Subsystem: | NEC Storage M100 via Fibre Channel (See additional details below) |
| Other Hardware: | None |

### Software

| | |
|---|---|
| Operating System: | Red Hat Enterprise Linux Server release 6.6 (Santiago)<br>Kernel 2.6.32-504.el6.x86_64 |
| Compiler: | C/C++: Version 15.0.0.090 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 V8.1 |

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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 | 72 | 659 | 1070 | **680** | **1030** | 732 | 961 | 72 | **547** | **1290** | 594 | 1180 | 546 | 1290 |
| 401.bzip2 | 72 | 974 | 713 | 1016 | 684 | **1001** | **694** | 72 | **954** | **728** | 953 | 729 | 957 | 726 |
| 403.gcc | 72 | **554** | **1050** | 551 | 1050 | 555 | 1040 | 72 | 553 | 1050 | **552** | **1050** | 552 | 1050 |
| 429.mcf | 72 | 390 | 1680 | **379** | **1730** | 379 | 1730 | 72 | 390 | 1680 | **379** | **1730** | 379 | 1730 |
| 445.gobmk | 72 | 788 | 959 | **788** | **959** | 788 | 958 | 72 | **766** | **986** | 765 | 988 | 820 | 921 |
| 456.hmmer | 72 | 376 | 1790 | **376** | **1790** | 376 | 1790 | 72 | 357 | 1880 | 356 | 1890 | **357** | **1880** |
| 458.sjeng | 72 | 838 | 1040 | **837** | **1040** | 836 | 1040 | 72 | 800 | 1090 | **801** | **1090** | 805 | 1080 |
| 462.libquantum | 72 | **135** | **11000** | 135 | 11000 | 136 | 11000 | 72 | **135** | **11000** | 135 | 11000 | 136 | 11000 |
| 464.h264ref | 72 | 949 | 1680 | **952** | **1670** | 955 | 1670 | 72 | 949 | 1680 | **952** | **1670** | 955 | 1670 |
| 471.omnetpp | 72 | **657** | **685** | 657 | 685 | 653 | 690 | 72 | 645 | 698 | **637** | **706** | 637 | 707 |
| 473.astar | 72 | 697 | 725 | **695** | **727** | 695 | 727 | 72 | 697 | 725 | **695** | **727** | 695 | 727 |
| 483.xalancbmk | 72 | **373** | **1330** | 377 | 1320 | 372 | 1340 | 72 | **373** | **1330** | 377 | 1320 | 372 | 1340 |

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

```
BIOS Settings:
 Energy Performance: Performance
 Patrol Scrub: Disabled
 Cluster on Die: Enabled

Storage Configuration for Disk Subsystem:
 NEC Storage M100 has 4 x 600 GB 10000 RPM SAS disks under RAID-10 configuration
 mounted over 8Gbps Fibre Channel interface with these options
 "defaults" in the /etc/fstab.
```

## 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"

 Transparent Huge Pages enabled with:
```

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## General Notes (Continued)

```
echo always > /sys/kernel/mm/redhat_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/composer_xe_2015/lib/ia32
```

C++ benchmarks:
```
icpc -m32 -L/opt/intel/composer_xe_2015/lib/ia32
```

## Base Portability Flags

400.perlbench: `-DSPEC_CPU_LINUX_IA32`
462.libquantum: `-DSPEC_CPU_LINUX`
483.xalancbmk: `-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/composer_xe_2015/lib/ia32
```

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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/composer_xe_2015/lib/ia32

## Peak Portability Flags

400.perlbench: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX_X64
401.bzip2: -DSPEC_CPU_LP64
456.hmmer: -DSPEC_CPU_LP64
458.sjeng: -DSPEC_CPU_LP64
462.libquantum: -DSPEC_CPU_LINUX
483.xalancbmk: -DSPEC_CPU_LINUX

## Peak Optimization Flags

C benchmarks:

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

401.bzip2: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
-O3(pass 2) -no-prec-div(pass 2) -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(pass 1) -prof-use(pass 2)
-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(pass 1) -ipo(pass 2)
-O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)
-unroll4 -auto-ilp32

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## Peak Optimization Flags (Continued)

462.libquantum: basepeak = yes

464.h264ref: basepeak = yes

C++ benchmarks:

471.omnetpp: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2) -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-ic15.0-official-linux64.html
http://www.spec.org/cpu2006/flags/NEC-Platform-Settings-V1.2-B120f-RevB.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic15.0-official-linux64.xml
http://www.spec.org/cpu2006/flags/NEC-Platform-Settings-V1.2-B120f-RevB.xml


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

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