# SPEC® CINT2006 Result

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## Hewlett-Packard Company

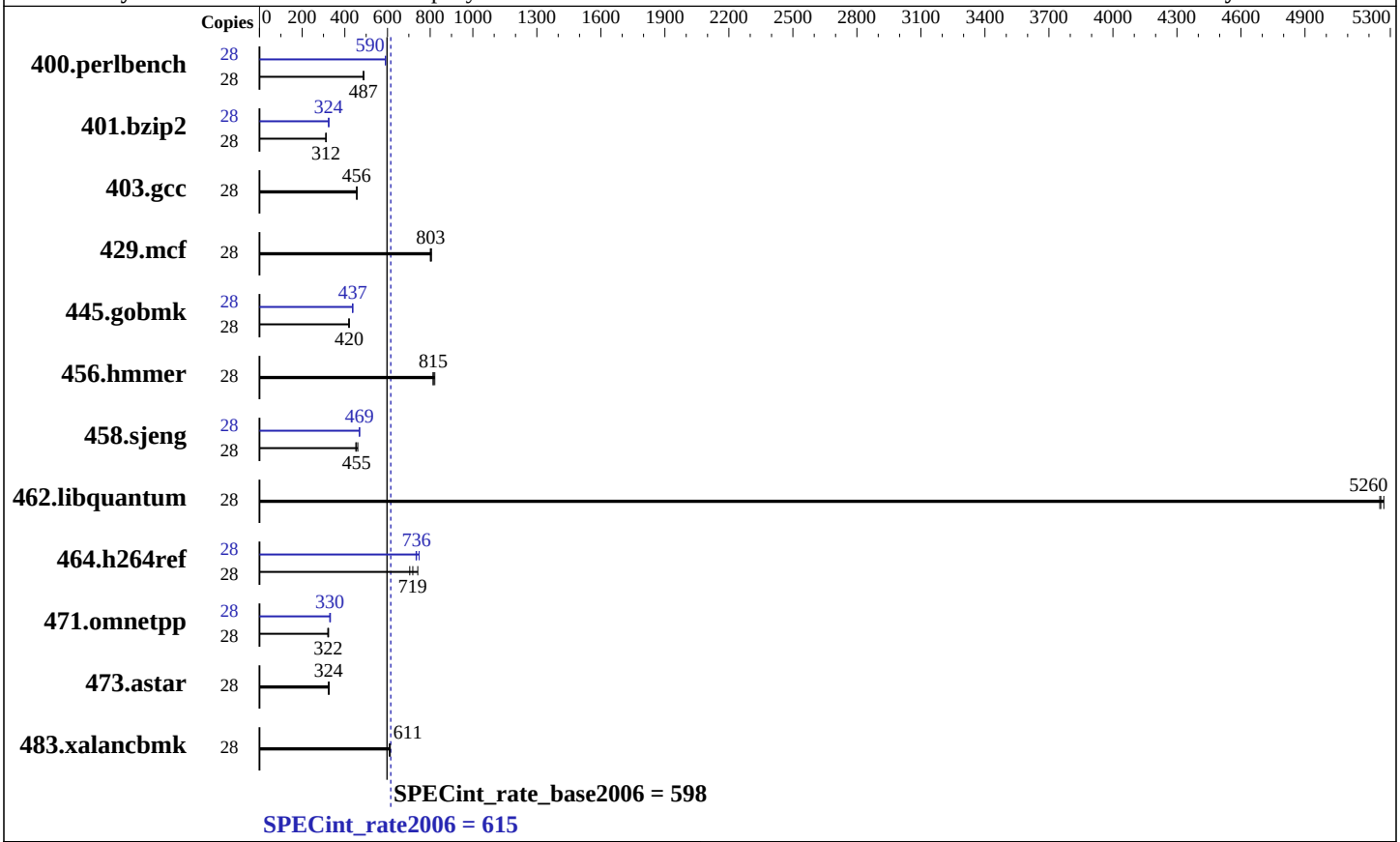
ProLiant DL360 Gen9
(2.60 GHz, Intel Xeon E5-2697 v3)

SPECint®_rate2006 = 615

SPECint_rate_base2006 = 598

**CPU2006 license:** 3
**Test sponsor:** Hewlett-Packard Company
**Tested by:** Hewlett-Packard Company

**Test date:** Aug-2014
**Hardware Availability:** Sep-2014
**Software Availability:** Jun-2014




### Hardware

| | |
|---|---|
| CPU Name: | Intel Xeon E5-2697 v3 |
| CPU Characteristics: | Intel Turbo Boost Technology up to 3.60 GHz |
| CPU MHz: | 2600 |
| FPU: | Integrated |
| CPU(s) enabled: | 14 cores, 1 chip, 14 cores/chip, 2 threads/core |
| CPU(s) orderable: | 1,2 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: | 35 MB I+D on chip per chip |
| Other Cache: | None |
| Memory: | 256 GB (16 x 16 GB 2Rx4 PC4-2133P-R) |
| Disk Subsystem: | 1 x 400 GB SAS SSD, RAID 0 |
| Other Hardware: | None |

### Software

| | |
|---|---|
| Operating System: | Red Hat Enterprise Linux Server release 7.0 (Maipo)<br>Kernel 3.10.0-123.el7.x86_64 |
| Compiler: | C/C++: Version 14.0.0.080 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 V10.0 |

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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 | 28 | **562** | **487** | 562 | 487 | 559 | 489 | 28 | 464 | 590 | 463 | 591 | **463** | **590** |
| 401.bzip2 | 28 | **867** | **312** | 866 | 312 | 868 | 311 | 28 | **833** | **324** | 834 | 324 | 831 | 325 |
| 403.gcc | 28 | 493 | 457 | **495** | **456** | 495 | 456 | 28 | 493 | 457 | **495** | **456** | 495 | 456 |
| 429.mcf | 28 | **318** | **803** | 317 | 806 | 319 | 801 | 28 | **318** | **803** | 317 | 806 | 319 | 801 |
| 445.gobmk | 28 | 702 | 418 | **699** | **420** | 698 | 421 | 28 | 673 | 436 | **673** | **437** | 672 | 437 |
| 456.hmmer | 28 | 321 | 814 | 318 | 822 | **321** | **815** | 28 | 321 | 814 | 318 | 822 | **321** | **815** |
| 458.sjeng | 28 | 751 | 451 | **745** | **455** | 735 | 461 | 28 | 723 | 469 | 723 | 469 | **723** | **469** |
| 462.libquantum | 28 | 110 | 5250 | **110** | **5260** | 110 | 5270 | 28 | 110 | 5250 | **110** | **5260** | 110 | 5270 |
| 464.h264ref | 28 | **862** | **719** | 835 | 742 | 880 | 704 | 28 | 828 | 748 | 844 | 734 | **842** | **736** |
| 471.omnetpp | 28 | 547 | 320 | **543** | **322** | 540 | 324 | 28 | 526 | 333 | **530** | **330** | 530 | 330 |
| 473.astar | 28 | 602 | 327 | 607 | 324 | **607** | **324** | 28 | 602 | 327 | 607 | 324 | **607** | **324** |
| 483.xalancbmk | 28 | **316** | **611** | 318 | 608 | 315 | 613 | 28 | **316** | **611** | 318 | 608 | 315 | 613 |

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"
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>
```

## Platform Notes

```
BIOS Configuration:
 HP Power Profile set to Maximum Performance
 Thermal Configuration set to Maximum Cooling
 Collaborative Power Control set to Disabled
 QPI Snoop Configuration set to Cluster on Die
 Processor Power and Utlization Monitoring set to Disabled
 Memory Patrol Scrubbing set to Disabled
 Memory Refresh Rate set to 1x Refresh
```

## 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 Core i7-860 CPU + 8GB
 memory using RedHat EL 6.4
```

## Base Compiler Invocation

C benchmarks:
```
icc  -m32
```

C++ benchmarks:
```
icpc -m32
```

## 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
```

Continued on next page

## Peak Compiler Invocation (Continued)

400.perlbench: icc -m64

401.bzip2: icc -m64

458.sjeng: icc -m64

C++ benchmarks:
icpc -m32

## Peak Portability Flags

400.perlbench: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX_X64
401.bzip2: -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: basepeak = yes

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: basepeak = yes

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

462.libquantum: basepeak = yes

464.h264ref: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
-O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)
-unroll2 -ansi-alias

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# Peak Optimization Flags (Continued)

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-ic14.0-official-linux64.20140128.html`
`http://www.spec.org/cpu2006/flags/HP-Platform-Flags-Intel-V1.2-HSW-revA.html`

You can also download the XML flags sources by saving the following links:
`http://www.spec.org/cpu2006/flags/Intel-ic14.0-official-linux64.20140128.xml`
`http://www.spec.org/cpu2006/flags/HP-Platform-Flags-Intel-V1.2-HSW-revA.xml`


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

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