# SPEC® CINT2006 Result

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## Dell Inc.

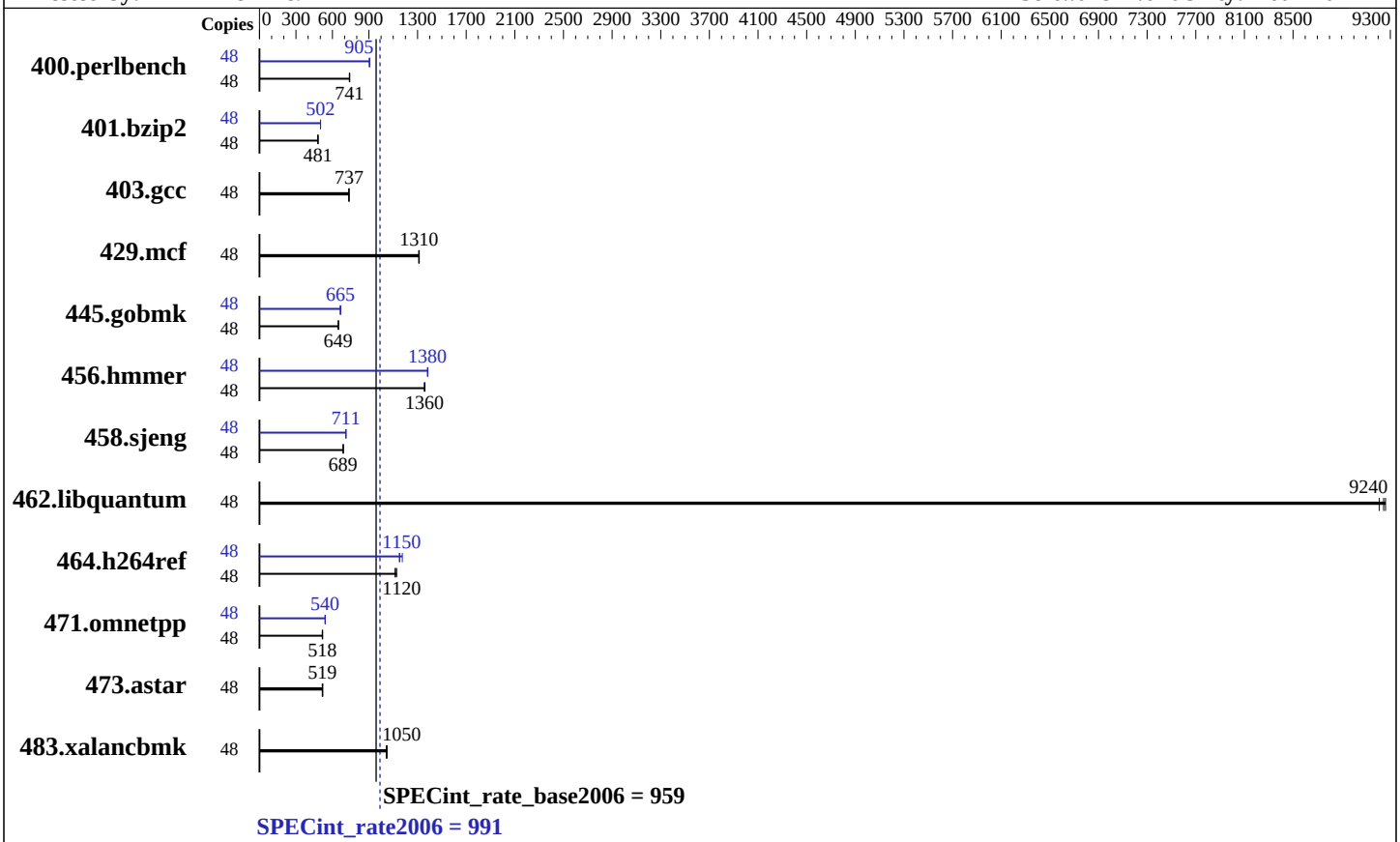
PowerEdge R530 (Intel Xeon E5-2670 v3, 2.30 GHz)

SPECint®_rate2006 = 991

SPECint_rate_base2006 = 959

**CPU2006 license:** 55
**Test sponsor:** Dell Inc.
**Tested by:** Dell Inc.

**Test date:** Oct-2014
**Hardware Availability:** Dec-2014
**Software Availability:** Jan-2014




## Hardware

| | |
|---|---|
| CPU Name: | Intel Xeon E5-2670 v3 |
| CPU Characteristics: | Intel Turbo Boost Technology up to 3.10 GHz |
| CPU MHz: | 2300 |
| FPU: | Integrated |
| CPU(s) enabled: | 24 cores, 2 chips, 12 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: | 30 MB I+D on chip per chip |
| Other Cache: | None |
| Memory: | 128 GB (8 x 16 GB 2Rx4 PC4-2133P-R) |
| Disk Subsystem: | 1 x 300 GB 10000 RPM SAS |
| Other Hardware: | None |

## Software

| | |
|---|---|
| Operating System: | Red Hat Enterprise Linux Server release 6.5 (Santiago)<br>2.6.32-431.el6.x86_64 |
| Compiler: | C/C++: Version 14.0.0.080 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 V10.0 |

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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 | 48 | 632 | 742 | **633** | **741** | 635 | 739 | 48 | 518 | 905 | **518** | **905** | 519 | 904 |
| 401.bzip2 | 48 | **963** | **481** | 961 | 482 | 965 | 480 | 48 | 923 | 502 | **923** | **502** | 921 | 503 |
| 403.gcc | 48 | 526 | 734 | 524 | 737 | **525** | **737** | 48 | 526 | 734 | 524 | 737 | **525** | **737** |
| 429.mcf | 48 | **334** | **1310** | 334 | 1310 | 333 | 1310 | 48 | **334** | **1310** | 334 | 1310 | 333 | 1310 |
| 445.gobmk | 48 | 776 | 649 | 776 | 649 | **776** | **649** | 48 | **757** | **665** | 752 | 669 | 757 | 665 |
| 456.hmmer | 48 | 330 | 1360 | **330** | **1360** | 329 | 1360 | 48 | **324** | **1380** | 324 | 1380 | 323 | 1390 |
| 458.sjeng | 48 | 843 | 689 | 844 | 689 | **843** | **689** | 48 | **817** | **711** | 817 | 711 | 817 | 711 |
| 462.libquantum | 48 | 107 | 9260 | **108** | **9240** | 108 | 9210 | 48 | 107 | 9260 | **108** | **9240** | 108 | 9210 |
| 464.h264ref | 48 | 942 | 1130 | **950** | **1120** | 952 | 1120 | 48 | 923 | 1150 | 904 | 1170 | **921** | **1150** |
| 471.omnetpp | 48 | 581 | 516 | 577 | 520 | **580** | **518** | 48 | 556 | 540 | 554 | 542 | **555** | **540** |
| 473.astar | 48 | 647 | 521 | **650** | **519** | 653 | 516 | 48 | 647 | 521 | **650** | **519** | 653 | 516 |
| 483.xalancbmk | 48 | 316 | 1050 | 318 | 1040 | **316** | **1050** | 48 | 316 | 1050 | 318 | 1040 | **316** | **1050** |

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:
Snoop Mode set to Cluster on Die
Virtualization Technology disabled
Execute Disable disabled
System Profile set to Custom
Memory Patrol Scrub set to Disabled
Sysinfo program /root/cpu2006-1.2/config/sysinfo.rev6818
$Rev: 6818 $ $Date:: 2012-07-17 #$ e86d102572650a6e4d596a3cee98f191
running on localhost.localdomain Sat Oct 18 14:28:57 2014

This section contains SUT (System Under Test) info as seen by
some common utilities.  To remove or add to this section, see:
  http://www.spec.org/cpu2006/Docs/config.html#sysinfo

From /proc/cpuinfo
   model name : Intel(R) Xeon(R) CPU E5-2670 v3 @ 2.30GHz
      2 "physical id"s (chips)
```

Continued on next page

## Platform Notes (Continued)

```
      48 "processors"
   cores, siblings (Caution: counting these is hw and system dependent.  The
   following excerpts from /proc/cpuinfo might not be reliable.  Use with
   caution.)
      cpu cores : 12
      siblings  : 24
      physical 0: cores 0 1 2 3 4 5 8 9 10 11 12 13
      physical 1: cores 0 1 2 3 4 5 8 9 10 11 12 13
   cache size : 15360 KB

From /proc/meminfo
   MemTotal:       132054288 kB
   HugePages_Total:       0
   Hugepagesize:       2048 kB

/usr/bin/lsb_release -d
   Red Hat Enterprise Linux Server release 6.5 (Santiago)

From /etc/*release* /etc/*version*
   redhat-release: Red Hat Enterprise Linux Server release 6.5 (Santiago)
   system-release: Red Hat Enterprise Linux Server release 6.5 (Santiago)
   system-release-cpe: cpe:/o:redhat:enterprise_linux:6server:ga:server

uname -a:
   Linux localhost.localdomain 2.6.32-431.el6.x86_64 #1 SMP Sun Nov 10 22:19:54
   EST 2013 x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Oct 18 14:28

SPEC is set to: /root/cpu2006-1.2
   Filesystem     Type  Size  Used Avail Use% Mounted on
   /dev/sda2      ext4  292G   43G  235G  16% /

Additional information from dmidecode:
  BIOS Dell Inc. 1.0.0 10/15/2014
  Memory:
   4x 000000000000 Not Specified   2133 MHz 1 rank
   8x 002C00B3002C 36ASF2G72PZ-2G1A2 16 GB 2133 MHz 2 rank

(End of data from sysinfo program)
```

## General Notes

```
Environment variables set by runspec before the start of the run:
LD_LIBRARY_PATH = "/root/cpu2006-1.2/libs/32:/root/cpu2006-1.2/libs/64:/root/cpu2006-1.2/sh"

 Binaries compiled on a system with 1x Core i7-860 CPU + 8GB
 memory using RedHat EL 6.4
 Transparent Huge Pages enabled with:
 echo always > /sys/kernel/mm/redhat_transparent_hugepage/enabled
 Filesystem page cache cleared with:
```

Continued on next page

## General Notes (Continued)

```
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`

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`

400.perlbench: `icc -m64`

Continued on next page

## Peak Compiler Invocation (Continued)

401.bzip2: icc -m64

456.hmmer: 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
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: 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: -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

462.libquantum: basepeak = yes

Continued on next page

## Peak Optimization Flags (Continued)

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`

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-revC.html`
`http://www.spec.org/cpu2006/flags/Dell-Platform-Settings-V1.2-revE.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-revC.xml`
`http://www.spec.org/cpu2006/flags/Dell-Platform-Settings-V1.2-revE.xml`


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

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