



# SPEC® CINT2006 Result

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## IBM Corporation

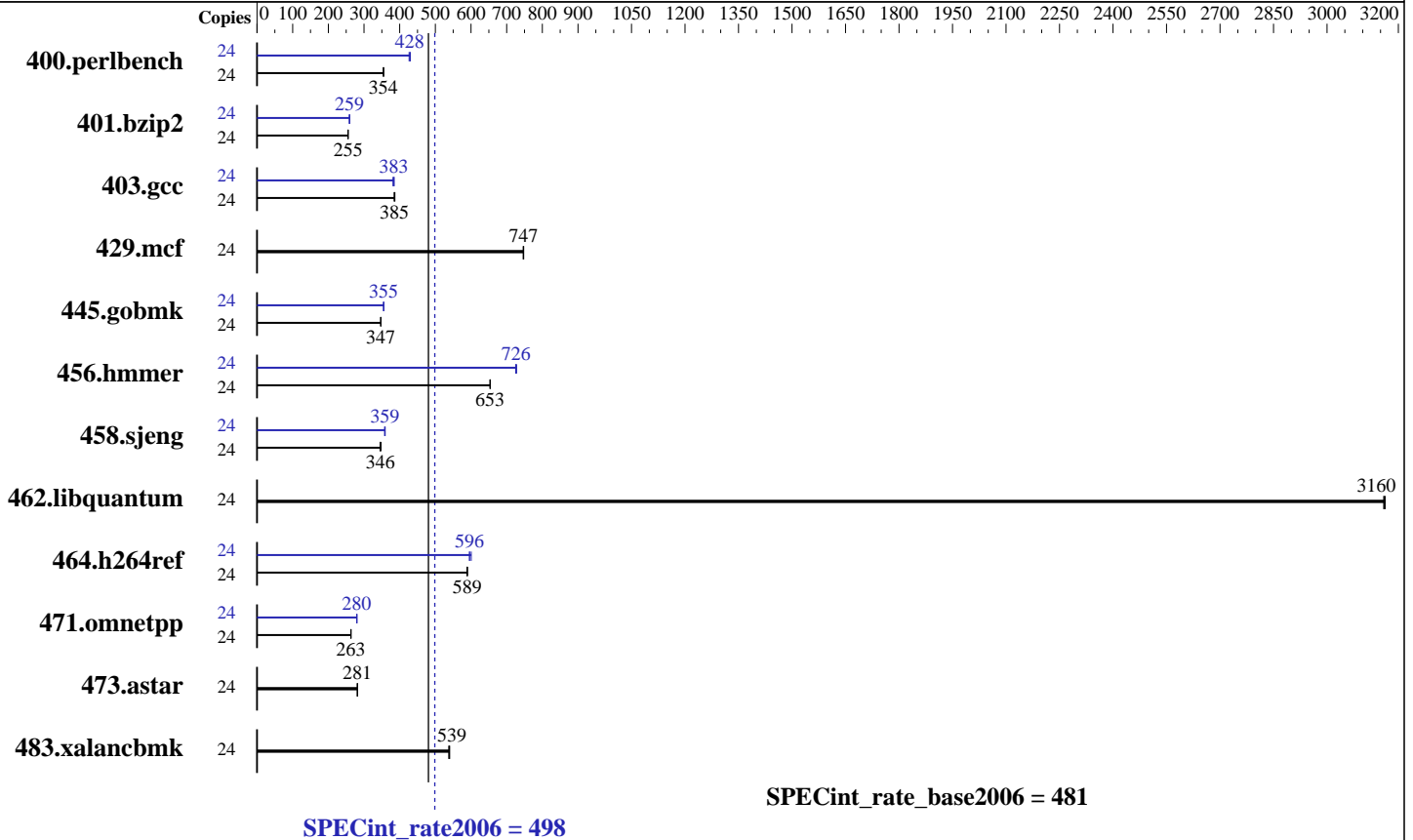
IBM NeXtScale nx360 M4  
(Intel Xeon E5-2630 v2, 2.60 GHz)

SPECint®\_rate2006 = 498

SPECint\_rate\_base2006 = 481

CPU2006 license: 11  
Test sponsor: IBM Corporation  
Tested by: IBM Corporation

Test date: Apr-2014  
Hardware Availability: Nov-2013  
Software Availability: Sep-2013



### Hardware

CPU Name: Intel Xeon E5-2630 v2  
 CPU Characteristics: Intel Turbo Boost Technology up to 3.10 GHz  
 CPU MHz: 2600  
 FPU: Integrated  
 CPU(s) enabled: 12 cores, 2 chips, 6 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: 15 MB I+D on chip per chip  
 Other Cache: None  
 Memory: 128 GB (8 x 16 GB 2Rx4 PC3-14900R-13, ECC, running at 1600 MHz)  
 Disk Subsystem: 2 x 250 GB SATA, 7200RPM, RAID 0  
 Other Hardware: None

### Software

Operating System: Red Hat Enterprise Linux Server release 6.4 (Santiago)  
 2.6.32-358.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  | 24     | <b>662</b> | <b>354</b> | 660        | 355        | 662        | 354         | 24     | 550        | 426        | 545        | 430        | <b>548</b> | <b>428</b>  |
| 401.bzip2      | 24     | 908        | 255        | 906        | 256        | <b>907</b> | <b>255</b>  | 24     | <b>893</b> | <b>259</b> | 895        | 259        | 891        | 260         |
| 403.gcc        | 24     | 502        | 385        | 500        | 387        | <b>502</b> | <b>385</b>  | 24     | 502        | 385        | 507        | 381        | <b>504</b> | <b>383</b>  |
| 429.mcf        | 24     | 293        | 746        | <b>293</b> | <b>747</b> | 293        | 748         | 24     | 293        | 746        | <b>293</b> | <b>747</b> | 293        | 748         |
| 445.gobmk      | 24     | <b>725</b> | <b>347</b> | 726        | 347        | 725        | 347         | 24     | 708        | 355        | 709        | 355        | <b>709</b> | <b>355</b>  |
| 456.hammer     | 24     | 342        | 654        | 343        | 653        | <b>343</b> | <b>653</b>  | 24     | 309        | 725        | 308        | 728        | <b>308</b> | <b>726</b>  |
| 458.sjeng      | 24     | 841        | 345        | <b>840</b> | <b>346</b> | 835        | 348         | 24     | 812        | 358        | 808        | 359        | <b>810</b> | <b>359</b>  |
| 462.libquantum | 24     | 157        | 3160       | 157        | 3160       | <b>157</b> | <b>3160</b> | 24     | 157        | 3160       | 157        | 3160       | <b>157</b> | <b>3160</b> |
| 464.h264ref    | 24     | <b>902</b> | <b>589</b> | 900        | 590        | 902        | 589         | 24     | 891        | 596        | <b>891</b> | <b>596</b> | 884        | 601         |
| 471.omnetpp    | 24     | 570        | 263        | 569        | 264        | <b>570</b> | <b>263</b>  | 24     | 535        | 280        | <b>536</b> | <b>280</b> | 536        | 280         |
| 473.astar      | 24     | 598        | 282        | 599        | 281        | <b>599</b> | <b>281</b>  | 24     | 598        | 282        | 599        | 281        | <b>599</b> | <b>281</b>  |
| 483.xalancbmk  | 24     | 307        | 540        | <b>307</b> | <b>539</b> | 308        | 538         | 24     | 307        | 540        | <b>307</b> | <b>539</b> | 308        | 538         |

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"  
Zone reclaim mode enabled with:  
echo 1 > /proc/sys/vm/zone\_reclaim\_mode

## Platform Notes

BIOS setting:  
Operating Mode set to Maximum Performance  
Sysinfo program /home/SPECcpu-new/config/sysinfo.rev6818  
\$Rev: 6818 \$ \$Date:: 2012-07-17 #\$ e86d102572650a6e4d596a3cee98f191  
running on nx360M4 Tue Apr 8 14:48:04 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 E5-2630 v2 @ 2.60GHz  
2 "physical id"s (chips)  
24 "processors"  
cores, siblings (Caution: counting these is hw and system dependent. The  
Continued on next page



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### Platform Notes (Continued)

following excerpts from /proc/cpuinfo might not be reliable. Use with caution.)

```
cpu cores : 6
siblings  : 12
physical 0: cores 0 1 2 3 4 5
physical 1: cores 0 1 2 3 4 5
cache size : 15360 KB
```

```
From /proc/meminfo
MemTotal:      132089152 kB
HugePages_Total:      0
Hugepagesize:    2048 kB
```

```
/usr/bin/lsb_release -d
Red Hat Enterprise Linux Server release 6.4 (Santiago)
```

```
From /etc/*release* /etc/*version*
redhat-release: Red Hat Enterprise Linux Server release 6.4 (Santiago)
system-release: Red Hat Enterprise Linux Server release 6.4 (Santiago)
system-release-cpe: cpe:/o:redhat:enterprise_linux:6server:ga:server
```

```
uname -a:
Linux nx360M4 2.6.32-358.el6.x86_64 #1 SMP Tue Jan 29 11:47:41 EST 2013
x86_64 x86_64 x86_64 GNU/Linux
```

```
run-level 3 Apr 8 14:44
```

```
SPEC is set to: /home/SPECcpu-new
Filesystem      Type      Size  Used Avail Use% Mounted on
/dev/mapper/vg_nx360m4-lv_home
                ext4      403G  5.3G  378G   2% /home
```

```
Additional information from dmidecode:
BIOS IBM  -[FHE105GUS-1.00]- 08/23/2013
Memory:
8x Samsung M393B2G70QH0-CMA 16 GB 1600 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 = "/home/SPECcpu-new/libs/32:/home/SPECcpu-new/libs/64:/home/SPECcpu-new/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:
echo 1> /proc/sys/vm/drop_caches
runspec command invoked through numactl i.e.:
```

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## General Notes (Continued)

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:

-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

400.perlbench: icc -m64

401.bzip2: icc -m64

456.hmmer: icc -m64

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## Peak Compiler Invocation (Continued)

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: -xSSE4.2(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: -xSSE4.2(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: -xSSE4.2 -ipo -O3 -no-prec-div

429.mcf: basepeak = yes

445.gobmk: -xSSE4.2(pass 2) -prof-gen(pass 1) -prof-use(pass 2)  
-ansi-alias -opt-mem-layout-trans=3

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

458.sjeng: -xSSE4.2(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: -xSSE4.2(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: -xSSE4.2(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/IBM-Platform-Flags-V1.2-IVB-A.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/IBM-Platform-Flags-V1.2-IVB-A.xml>

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For questions about this result, please contact the tester.  
For other inquiries, please contact [webmaster@spec.org](mailto:webmaster@spec.org).

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