# SPEC® CINT2006 Result
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## Lenovo Group Limited

Lenovo NeXtScale nx360 M5
(Intel Xeon E5-2630 v3, 2.40 GHz)

$SPECint®\_rate2006 = 695$

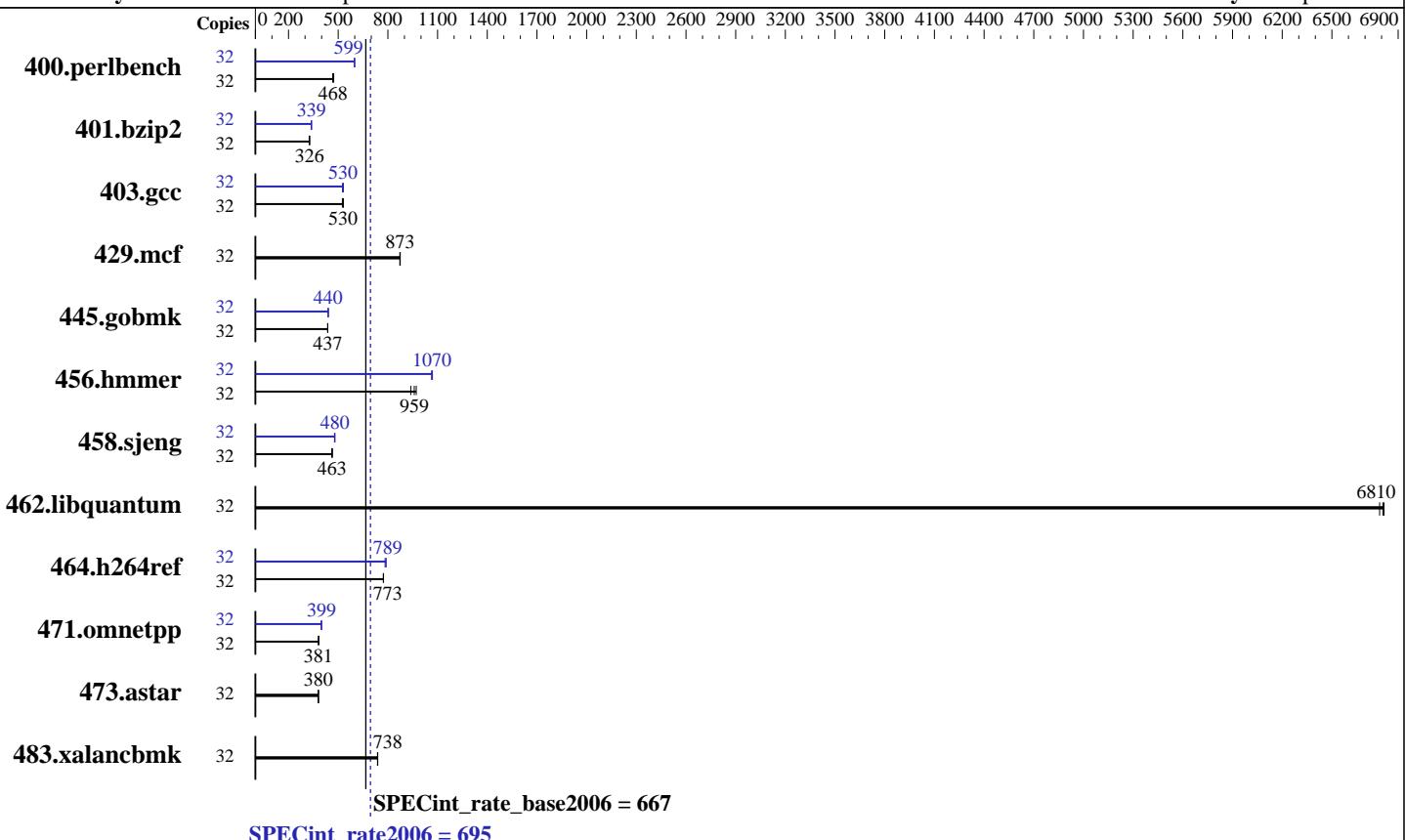$SPECint\_rate\_base2006 = 667$

**CPU2006 license:** 9017

**Test sponsor:** Lenovo Group Limited

**Tested by:** Lenovo Group Limited

**Test date:** Feb-2015

**Hardware Availability:** Nov-2014

**Software Availability:** Sep-2014



SPECint_rate_base2006 = 667

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| Benchmark | Copies | Result |
|---|---|---|
| 400.perlbench | 32 | 599 |
| | 32 | 468 |
| 401.bzip2 | 32 | 339 |
| | 32 | 326 |
| 403.gcc | 32 | 530 |
| | 32 | 530 |
| 429.mcf | 32 | 873 |
| 445.gobmk | 32 | 440 |
| | 32 | 437 |
| 456.hmmer | 32 | 1070 |
| | 32 | 959 |
| 458.sjeng | 32 | 480 |
| | 32 | 463 |
| 462.libquantum | 32 | 6810 |
| 464.h264ref | 32 | 789 |
| | 32 | 773 |
| 471.omnetpp | 32 | 399 |
| | 32 | 381 |
| 473.astar | 32 | 380 |
| 483.xalancbmk | 32 | 738 |

## Hardware

| | |
|---|---|
| CPU Name: | Intel Xeon E5-2630 v3 |
| CPU Characteristics: | Intel Turbo Boost Technology up to 3.20 GHz |
| CPU MHz: | 2400 |
| FPU: | Integrated |
| CPU(s) enabled: | 16 cores, 2 chips, 8 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: | 20 MB I+D on chip per chip |
| Other Cache: | None |
| Memory: | 256 GB (16 x 16 GB 2Rx4 PC4-2133P-R, running at 1866 MHz) |
| Disk Subsystem: | 1 x 250 GB 7200 RPM SATA |
| Other Hardware: | None |

## Software

| | |
|---|---|
| Operating System: | Red Hat Enterprise Linux Server release 7.0 (Maipo) 3.10.0-123.el7.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 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 | 32 | **668** | **468** | 668 | 468 | 661 | 473 | 32 | **522** | **599** | 522 | 599 | 522 | 599 |
| 401.bzip2 | 32 | 951 | 325 | 940 | 328 | **946** | **326** | 32 | **912** | **339** | 911 | 339 | 915 | 338 |
| 403.gcc | 32 | **486** | **530** | 490 | 525 | 485 | 531 | 32 | 490 | 526 | **486** | **530** | 485 | 531 |
| 429.mcf | 32 | 334 | 873 | 334 | 875 | **334** | **873** | 32 | 334 | 873 | 334 | 875 | **334** | **873** |
| 445.gobmk | 32 | 768 | 437 | **769** | **437** | 769 | 437 | 32 | **763** | **440** | 764 | 440 | 763 | 440 |
| 456.hmmer | 32 | 318 | 939 | **311** | **959** | 307 | 971 | 32 | **280** | **1070** | 279 | 1070 | 281 | 1060 |
| 458.sjeng | 32 | 838 | 462 | **836** | **463** | 833 | 465 | 32 | 810 | 478 | **807** | **480** | 807 | 480 |
| 462.libquantum | 32 | 97.3 | 6810 | 97.7 | 6790 | **97.4** | **6810** | 32 | 97.3 | 6810 | 97.7 | 6790 | **97.4** | **6810** |
| 464.h264ref | 32 | 915 | 774 | **916** | **773** | 916 | 773 | 32 | **898** | **789** | 898 | 789 | 904 | 783 |
| 471.omnetpp | 32 | **525** | **381** | 522 | 383 | 526 | 381 | 32 | 501 | 400 | **501** | **399** | 503 | 397 |
| 473.astar | 32 | **591** | **380** | 590 | 381 | 591 | 380 | 32 | **591** | **380** | 590 | 381 | 591 | 380 |
| 483.xalancbmk | 32 | **299** | **738** | 299 | 739 | 299 | 738 | 32 | **299** | **738** | 299 | 739 | 299 | 738 |

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

## Submit Notes

```
   The config file option 'submit' was used.
    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

```
    Sysinfo program /usr/cpu2006/config/sysinfo.rev6914
    $Rev: 6914 $ $Date:: 2014-06-25 #$ e3fbb8667b5a285932ceab81e28219e1
    running on wilykat Fri Feb  6 03:28:24 2015

    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 v3 @ 2.40GHz
          2 "physical id"s (chips)
          32 "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 : 8
          siblings  : 16
```

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## Platform Notes (Continued)

```
      physical 0: cores 0 1 2 3 4 5 6 7
      physical 1: cores 0 1 2 3 4 5 6 7
   cache size : 20480 KB

 From /proc/meminfo
   MemTotal:       263588692 kB
   HugePages_Total:        0
   Hugepagesize:        2048 kB

 From /etc/*release* /etc/*version*
   os-release:
      NAME="Red Hat Enterprise Linux Server"
      VERSION="7.0 (Maipo)"
      ID="rhel"
      ID_LIKE="fedora"
      VERSION_ID="7.0"
      PRETTY_NAME="Red Hat Enterprise Linux Server 7.0 (Maipo)"
      ANSI_COLOR="0;31"
      CPE_NAME="cpe:/o:redhat:enterprise_linux:7.0:GA:server"
   redhat-release: Red Hat Enterprise Linux Server release 7.0 (Maipo)
   system-release: Red Hat Enterprise Linux Server release 7.0 (Maipo)
   system-release-cpe: cpe:/o:redhat:enterprise_linux:7.0:ga:server

 uname -a:
   Linux wilykat 3.10.0-123.el7.x86_64 #1 SMP Mon May 5 11:16:57 EDT 2014 x86_64
   x86_64 x86_64 GNU/Linux


 SPEC is set to: /usr/cpu2006
   Filesystem      Type  Size  Used Avail Use% Mounted on
   /dev/sda2       ext4  363G   19G  326G   6% /
 Additional information from dmidecode:

   Warning: Use caution when you interpret this section. The 'dmidecode' program
   reads system data which is "intended to allow hardware to be accurately
   determined", but the intent may not be met, as there are frequent changes to
   hardware, firmware, and the "DMTF SMBIOS" standard.

   BIOS IBM -[THE105F-1.10]- 12/22/2014
   Memory:
   6x Hynix HMA42GR7MFR4N-TF 16 GB 2 rank 2133 MHz
   10x Hynix HMA42GR7MFR4N-TFT1 16 GB 2 rank 2133 MHz

 (End of data from sysinfo program)
```

## General Notes

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

   Binaries compiled on a system with 1x Core i5-4670K CPU + 16GB
```

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## General Notes (Continued)

```
memory using RedHat EL 7.0
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>
```

## 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
```

C++ benchmarks:
```
-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch -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`

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: -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-ic15.0-official-linux64.html
http://www.spec.org/cpu2006/flags/Lenovo-Platform-Flags-V1.2-HSW-B.20141230.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/Lenovo-Platform-Flags-V1.2-HSW-B.20141230.xml

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

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