SPEC® CINT2006 Result
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Lenovo Group Limited

SPECint®2006 = 58.0

Lenovo NeXtScale nx360 M5
(Intel Xeon E5-2623 v3, 3.00 GHz)
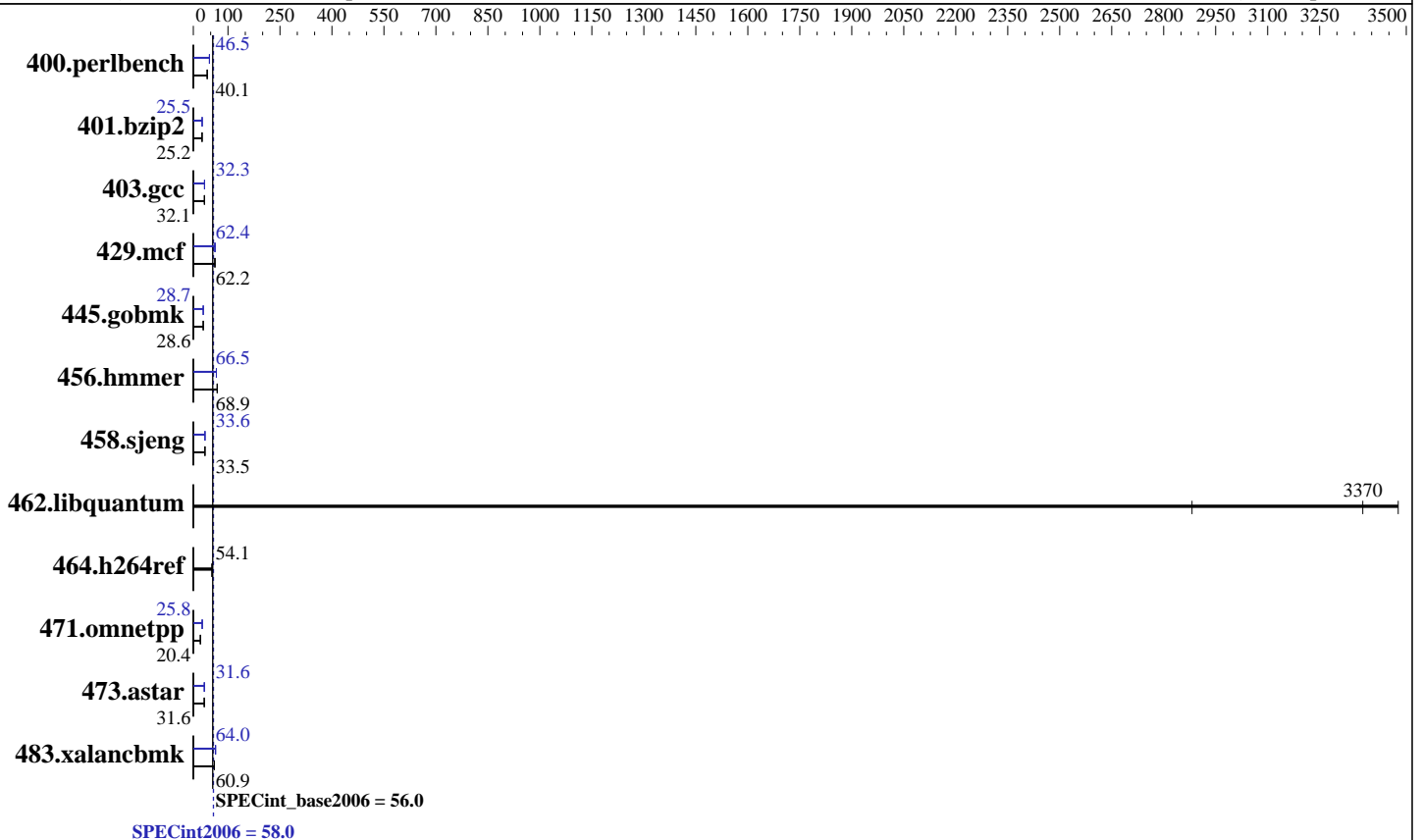
SPECint_base2006 = 56.0

CPU2006 license: 9017
Test sponsor: Lenovo Group Limited
Tested by: Lenovo Group Limited

Test date: May-2015
Hardware Availability: Nov-2014
Software Availability: Sep-2014

Benchmark	Peak	Base
400.perlbench	46.5	40.1
401.bzip2	25.5	25.2
403.gcc	32.3	32.1
429.mcf	62.4	62.2
445.gobmk	28.7	28.6
456.hmmer	66.5	68.9
458.sjeng	33.6	33.5
462.libquantum		3370
464.h264ref		54.1
471.omnetpp	25.8	20.4
473.astar	31.6	31.6
483.xalancbmk	64.0	60.9

SPECint_base2006 = 56.0

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Hardware

CPU Name:	Intel Xeon E5-2623 v3
CPU Characteristics:	Intel Turbo Boost Technology up to 3.50 GHz
CPU MHz:	3000
FPU:	Integrated
CPU(s) enabled:	8 cores, 2 chips, 4 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:	10 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 1000 GB SATA, 7200 RPM
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:	Yes
File System:	xfs
System State:	Run level 3 (multi-user)
Base Pointers:	32/64-bit
Peak Pointers:	32/64-bit
Other Software:	Microquill SmartHeap V10.0

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Results Table

Benchmark	Base						Peak					
	Seconds	**Ratio**	**Seconds**	**Ratio**	**Seconds**	**Ratio**	**Seconds**	**Ratio**	**Seconds**	**Ratio**	**Seconds**	**Ratio**
400.perlbench	**244**	**40.1**	244	40.1	244	40.1	210	46.5	**210**	**46.5**	210	46.6
401.bzip2	382	25.2	384	25.2	**383**	**25.2**	378	25.5	379	25.5	**379**	**25.5**
403.gcc	251	32.1	**251**	**32.1**	251	32.0	249	32.4	249	32.3	**249**	**32.3**
429.mcf	148	61.8	145	62.9	**147**	**62.2**	**146**	**62.4**	144	63.2	148	61.6
445.gobmk	367	28.6	367	28.6	**367**	**28.6**	**366**	**28.7**	366	28.6	366	28.7
456.hmmer	135	68.9	**135**	**68.9**	135	69.0	140	66.6	**140**	**66.5**	140	66.4
458.sjeng	361	33.5	**361**	**33.5**	361	33.5	**360**	**33.6**	360	33.6	360	33.6
462.libquantum	**6.14**	**3370**	7.19	2880	5.96	3480	**6.14**	**3370**	7.19	2880	5.96	3480
464.h264ref	409	54.1	411	53.8	**409**	**54.1**	409	54.1	411	53.8	**409**	**54.1**
471.omnetpp	308	20.3	**306**	**20.4**	305	20.5	247	25.3	**242**	**25.8**	241	25.9
473.astar	221	31.8	223	31.4	**222**	**31.6**	218	32.2	**222**	**31.6**	223	31.5
483.xalancbmk	**113**	**60.9**	114	60.5	113	60.9	107	64.4	**108**	**64.0**	108	64.0

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.

Operating System Notes

Stack size set to unlimited using "ulimit -s unlimited"

Platform Notes

```
BIOS setting:
Operating Mode set to "Efficiency-Favor Performance"
Sysinfo program /home/SPEC/config/sysinfo.rev6914
$Rev: 6914 $ $Date:: 2014-06-25 #$ e3fbb8667b5a285932ceab81e28219e1
running on wilykat-2.labs.lenovo.com Fri May  1 13:22:46 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 E5-2623 v3 @ 3.00GHz
      2 "physical id"s (chips)
     16 "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 : 4
      siblings  : 8
```
Continued on next page

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Platform Notes (Continued)

```
     physical 0: cores 0 1 2 3
     physical 1: cores 0 1 2 3
   cache size : 10240 KB

 From /proc/meminfo
    MemTotal:       263587828 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-2.labs.lenovo.com 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: /home/SPEC
    Filesystem              Type  Size  Used Avail Use% Mounted on
    /dev/mapper/rhel-root xfs   927G  9.2G  918G   1% /
 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 -[THE106CUS-1.11]- 02/16/2015
    Memory:
    10x Hynix HMA42GR7MFR4N-TF 16 GB 2 rank 2133 MHz
    6x Hynix HMA42GR7MFR4N-TFT1 16 GB 2 rank 2133 MHz

 (End of data from sysinfo program)
 System memory running at the CPU supported max DIMM speed (1866 MHz)
```

General Notes

```
 Environment variables set by runspec before the start of the run:
 KMP_AFFINITY = "granularity=fine,scatter"
 LD_LIBRARY_PATH = "/home/SPEC/libs/32:/home/SPEC/libs/64:/home/SPEC/sh"
```

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General Notes (Continued)

```
OMP_NUM_THREADS = "8"

 Binaries compiled on a system with 1x Core i5-4670K CPU + 16GB
 memory using RedHat EL 7.0
 Transparent Huge Pages enabled with:
 echo always > /sys/kernel/mm/transparent_hugepage/enabled
```

Base Compiler Invocation

C benchmarks:
    icc -m64

C++ benchmarks:
    icpc -m64

Base Portability Flags

        400.perlbench: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX_X64
          401.bzip2: -DSPEC_CPU_LP64
            403.gcc: -DSPEC_CPU_LP64
            429.mcf: -DSPEC_CPU_LP64
          445.gobmk: -DSPEC_CPU_LP64
          456.hmmer: -DSPEC_CPU_LP64
           458.sjeng: -DSPEC_CPU_LP64
      462.libquantum: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX
         464.h264ref: -DSPEC_CPU_LP64
         471.omnetpp: -DSPEC_CPU_LP64
           473.astar: -DSPEC_CPU_LP64
      483.xalancbmk: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX

Base Optimization Flags

C benchmarks:
    -xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -opt-prefetch -auto-p32

C++ benchmarks:
    -xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch -auto-p32
    -Wl,-z,muldefs -L/sh -lsmartheap64

Base Other Flags

C benchmarks:

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Base Other Flags (Continued)

```
403.gcc: -Dalloca=_alloca
```

Peak Compiler Invocation

C benchmarks (except as noted below):
```
icc -m64
```

```
400.perlbench: icc -m32 -L/opt/intel/composer_xe_2015/lib/ia32
```

```
445.gobmk: icc -m32 -L/opt/intel/composer_xe_2015/lib/ia32
```

C++ benchmarks (except as noted below):
```
icpc -m32 -L/opt/intel/composer_xe_2015/lib/ia32
```

```
473.astar: icpc -m64
```

Peak Portability Flags

```
400.perlbench: -DSPEC_CPU_LINUX_IA32
    401.bzip2: -DSPEC_CPU_LP64
      403.gcc: -DSPEC_CPU_LP64
      429.mcf: -DSPEC_CPU_LP64
    456.hmmer: -DSPEC_CPU_LP64
    458.sjeng: -DSPEC_CPU_LP64
462.libquantum: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX
   464.h264ref: -DSPEC_CPU_LP64
     473.astar: -DSPEC_CPU_LP64
 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)
               -opt-prefetch -ansi-alias
```

```
    401.bzip2: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
               -O3(pass 2) -no-prec-div -prof-use(pass 2) -auto-ilp32
               -opt-prefetch -ansi-alias
```

```
      403.gcc: -xCORE-AVX2 -ipo -O3 -no-prec-div -inline-calloc
               -opt-malloc-options=3 -auto-ilp32
```

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Peak Optimization Flags (Continued)

429.mcf: `-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel`
`-opt-prefetch -auto-p32`

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`
`-ansi-alias`

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`

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)`
`-opt-ra-region-strategy=block            -ansi-alias`
`-Wl,-z,muldefs -L/sh -lsmartheap`

473.astar: `-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch`
`-auto-p32 -Wl,-z,muldefs -L/sh -lsmartheap64`

483.xalancbmk: `-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch`
`-ansi-alias -Wl,-z,muldefs -L/sh -lsmartheap`

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/IBM-Platform-Flags-V1.2-HSW-B.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/IBM-Platform-Flags-V1.2-HSW-B.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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