SPEC® CINT2006 Result
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Lenovo Group Limited

SPECint®2006 =   63.7

SPECint_base2006 =   62.1

Lenovo System x3100 M5
(Intel Xeon E3-1271 v3, 3.60 GHz)

CPU2006 license: 9017

Test sponsor: Lenovo Group Limited

Tested by: Lenovo Group Limited

Test date: Mar-2015

Hardware Availability: Jun-2014

Software Availability: Sep-2014

400.perlbench: 53.9 / 46.1
401.bzip2: 30.3 / 30.1
403.gcc: 39.3 / 39.2
429.mcf: 78.3 / 79.0
445.gobmk: 32.6 / 32.5
456.hmmer: 76.5 / 79.4
458.sjeng: 38.7 / 38.4
462.libquantum: 1590
464.h264ref: 61.1
471.omnetpp: 33.3 / 27.9
473.astar: 37.2 / 37.7
483.xalancbmk: 75.9 / 75.3

SPECint_base2006 = 62.1

SPECint2006 = 63.7
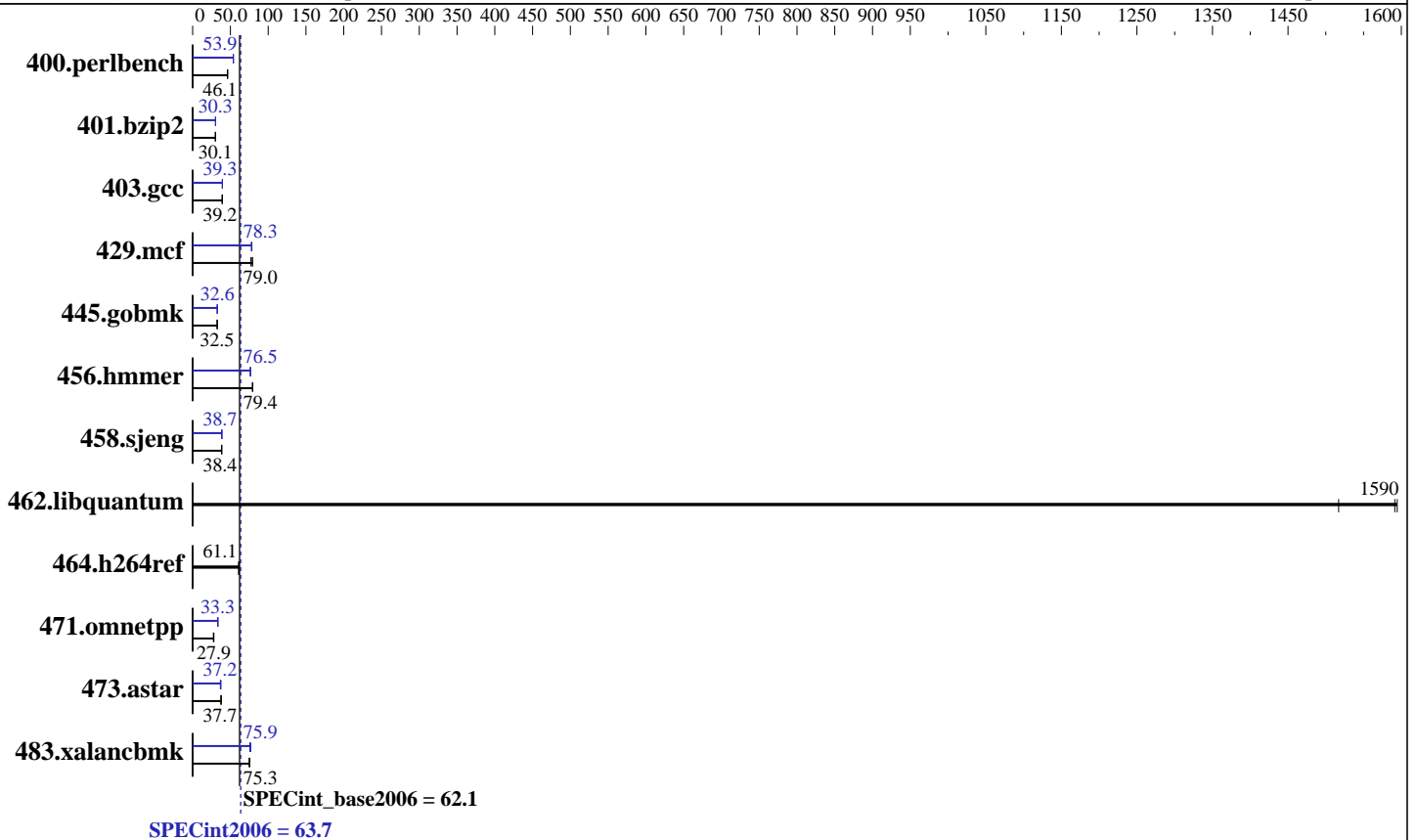
Hardware

CPU Name:	Intel Xeon E3-1271 v3
CPU Characteristics:	Intel Turbo Boost Technology up to 4.00 GHz
CPU MHz:	3600
FPU:	Integrated
CPU(s) enabled:	4 cores, 1 chip, 4 cores/chip, 2 threads/core
CPU(s) orderable:	1 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:	8 MB I+D on chip per chip
Other Cache:	None
Memory:	16 GB (4 x 4 GB 2Rx8 PC3-12800U-13)
Disk Subsystem:	1 x 500 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	211	46.4	**212**	**46.1**	212	46.1	**181**	**53.9**	181	54.0	181	53.9
401.bzip2	320	30.2	**320**	**30.1**	320	30.1	**319**	**30.3**	318	30.3	319	30.3
403.gcc	**205**	**39.2**	205	39.3	206	39.1	205	39.2	204	39.5	**205**	**39.3**
429.mcf	**115**	**79.0**	115	79.3	118	77.1	117	77.6	**117**	**78.3**	116	78.5
445.gobmk	323	32.5	**323**	**32.5**	323	32.5	322	32.6	**322**	**32.6**	322	32.6
456.hmmer	117	79.5	**118**	**79.4**	118	79.2	122	76.3	**122**	**76.5**	122	76.6
458.sjeng	315	38.5	315	38.4	**315**	**38.4**	313	38.7	**313**	**38.7**	314	38.6
462.libquantum	13.0	1590	**13.0**	**1590**	13.7	1520	13.0	1590	**13.0**	**1590**	13.7	1520
464.h264ref	362	61.1	**362**	**61.1**	362	61.2	362	61.1	**362**	**61.1**	362	61.2
471.omnetpp	223	28.0	228	27.4	**224**	**27.9**	**188**	**33.3**	186	33.6	188	33.2
473.astar	186	37.8	**186**	**37.7**	187	37.5	188	37.4	191	36.7	**189**	**37.2**
483.xalancbmk	**91.7**	**75.3**	92.2	74.9	91.4	75.5	**90.9**	**75.9**	91.0	75.8	89.6	77.0

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 x3100m5 Thu Mar 12 01:51:40 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 E3-1271 v3 @ 3.60GHz
      1 "physical id"s (chips)
      8 "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
```

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Platform Notes (Continued)

```
      physical 0: cores 0 1 2 3
    cache size : 8192 KB

  From /proc/meminfo
    MemTotal:        16102880 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 x3100m5 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

  run-level 3 Mar 12 01:39

  SPEC is set to: /home/SPEC
    Filesystem             Type  Size  Used Avail Use% Mounted on
    /dev/mapper/rhel-root xfs   458G  8.8G  449G   2% /
  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 -[J9E113EUS-1.02]- 04/25/2014
    Memory:
    4x Hynix/Hyundai HMT351U7EFR8A-PB 4 GB 2 rank 1600 MHz

  (End of data from sysinfo program)
```

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"
  OMP_NUM_THREADS = "4"
```

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General Notes (Continued)

```
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:

        `403.gcc: -Dalloca=_alloca`

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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

             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
```

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Peak Optimization Flags (Continued)

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/Lenovo-Platform-Flags-V1.2-HSW-A.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-A.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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