SPEC® CINT2006 Result
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Lenovo Group Limited

Lenovo System x3500 M5
(Intel Xeon E5-2699 v3, 2.30 GHz)

SPECint®_rate2006 = 1400

SPECint_rate_base2006 = 1360

CPU2006 license: 9017		**Test date:**	Dec-2014
Test sponsor:	Lenovo Group Limited	**Hardware Availability:**	Jan-2015
Tested by:	Lenovo Group Limited	**Software Availability:**	Nov-2013

Copies 0 500 1000 1500 2000 2500 3000 3500 4000 4500 5000 5500 6000 6500 7000 7500 8000 8500 9000 9500 10500 11500

400.perlbench — 72: 1410 / 72: 1150
401.bzip2 — 72: 761 / 72: 736
403.gcc — 72: 1040 / 72: 1040
429.mcf — 72: 1810
445.gobmk — 72: 1010 / 72: 978
456.hmmer — 72: 1830 / 72: 1810
458.sjeng — 72: 1110 / 72: 1070
462.libquantum — 72: 11200
464.h264ref — 72: 1710 / 72: 1670
471.omnetpp — 72: 727 / 72: 708
473.astar — 72: 725
483.xalancbmk — 72: 1320

SPECint_rate_base2006 = 1360
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Hardware

CPU Name:	Intel Xeon E5-2699 v3
CPU Characteristics:	Intel Turbo Boost Technology up to 3.60 GHz
CPU MHz:	2300
FPU:	Integrated
CPU(s) enabled:	36 cores, 2 chips, 18 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:	45 MB I+D on chip per chip
Other Cache:	None
Memory:	256 GB (16 x 16 GB 2Rx4 PC4-2133P-R)
Disk Subsystem:	1 x 1000 GB SATA
Other Hardware:	None

Software

Operating System:	Red Hat Enterprise Linux Server release 6.5 (Santiago)
	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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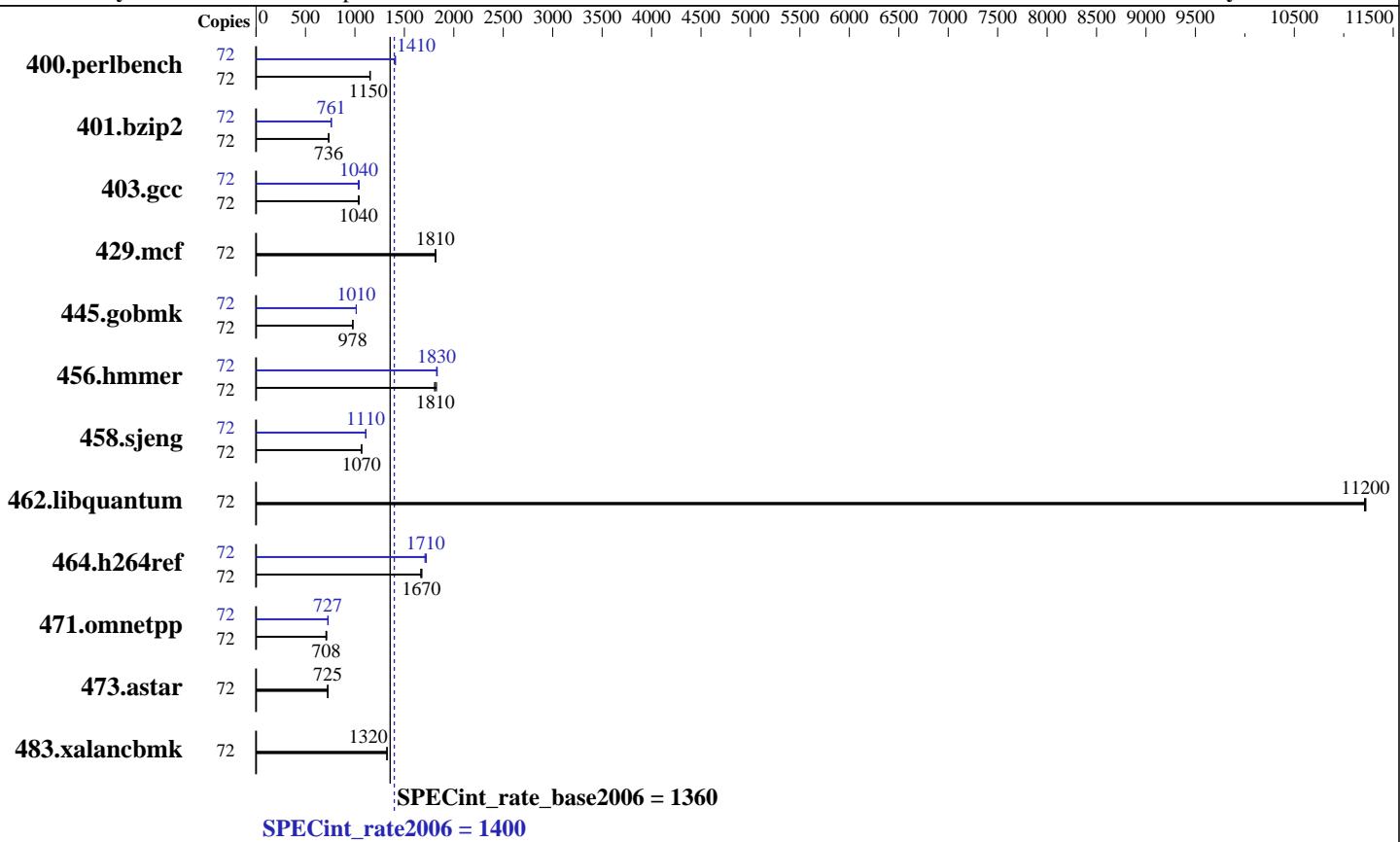**Test sponsor:** Lenovo Group Limited
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Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
400.perlbench	72	609	1160	612	1150	**610**	**1150**	72	**499**	**1410**	499	1410	501	1400
401.bzip2	72	948	733	944	736	**945**	**736**	72	**914**	**761**	912	761	914	760
403.gcc	72	**559**	**1040**	556	1040	560	1030	72	**558**	**1040**	561	1030	556	1040
429.mcf	72	362	1810	**362**	**1810**	361	1820	72	362	1810	**362**	**1810**	361	1820
445.gobmk	72	771	979	**772**	**978**	772	978	72	745	1010	746	1010	**746**	**1010**
456.hmmer	72	368	1830	372	1800	**370**	**1810**	72	367	1830	**368**	**1830**	368	1830
458.sjeng	72	**816**	**1070**	816	1070	816	1070	72	784	1110	**785**	**1110**	786	1110
462.libquantum	72	**133**	**11200**	133	11200	133	11200	72	**133**	**11200**	133	11200	133	11200
464.h264ref	72	957	1660	950	1680	**952**	**1670**	72	933	1710	925	1720	**929**	**1710**
471.omnetpp	72	629	715	636	708	**636**	**708**	72	617	730	**619**	**727**	620	726
473.astar	72	**698**	**725**	696	726	698	724	72	**698**	**725**	696	726	698	724
483.xalancbmk	72	**375**	**1320**	375	1320	376	1320	72	**375**	**1320**	375	1320	376	1320

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 setting:
    Operating Mode set to "Efficiency-Favor Performance"
    COD Preference set to Enable
    Sysinfo program /root/SPECCpu2014Aug23/config/sysinfo.rev6874
    $Rev: 6874 $ $Date:: 2013-11-20 #$ 654bd3fcf53b06faef0efe54ed011998
    running on x3500M5 Sat Dec 20 23:35:11 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 E5-2699 v3 @ 2.30GHz
          2 "physical id"s (chips)
          72 "processors"
       cores, siblings (Caution: counting these is hw and system dependent. The
          following excerpts from /proc/cpuinfo might not be reliable. Use with

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Platform Notes (Continued)

```
    caution.)
      cpu cores : 18
      siblings  : 36
      physical 0: cores 0 1 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27
      physical 1: cores 0 1 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27
    cache size : 23040 KB

  From /proc/meminfo
    MemTotal:       264153244 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 x3500M5 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 Dec 20 20:33

  SPEC is set to: /root/SPECCpu2014Aug23
    Filesystem                    Type  Size  Used Avail Use% Mounted on
    /dev/mapper/VolGroup-lv_root ext4  1.8T   26G  1.7T   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 -[TAE103F-1.02]- 12/05/2014
    Memory:
    3x Hynix HMA42GR7MFR4N-TF 16 GB 2 rank 2133 MHz
    13x Hynix HMA42GR7MFR4N-TFT1 16 GB 2 rank 2133 MHz
    8x NO DIMM Unknown

  (End of data from sysinfo program)
```

General Notes

```
  Environment variables set by runspec before the start of the run:
  LD_LIBRARY_PATH = "/root/SPECCpu2014Aug23/libs/32:/root/SPECCpu2014Aug23/libs/64:/root/SPECCpu2014Aug23/sh"

  Binaries compiled on a system with 1x Core i7-860 CPU + 8GB
  memory using RedHat EL 6.4
```

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General Notes (Continued)

```
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.:
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
```

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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
```

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 -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
```

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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-ic14.0-official-linux64.20140128.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-ic14.0-official-linux64.20140128.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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