SPEC® CINT2006 Result

Lenovo Group Limited

Lenovo Flex System x240 M5
(Intel Xeon E5-2618L v3, 2.30 GHz)

$SPECint®_rate2006 = $ 662

$SPECint_rate_base2006 = $ 641

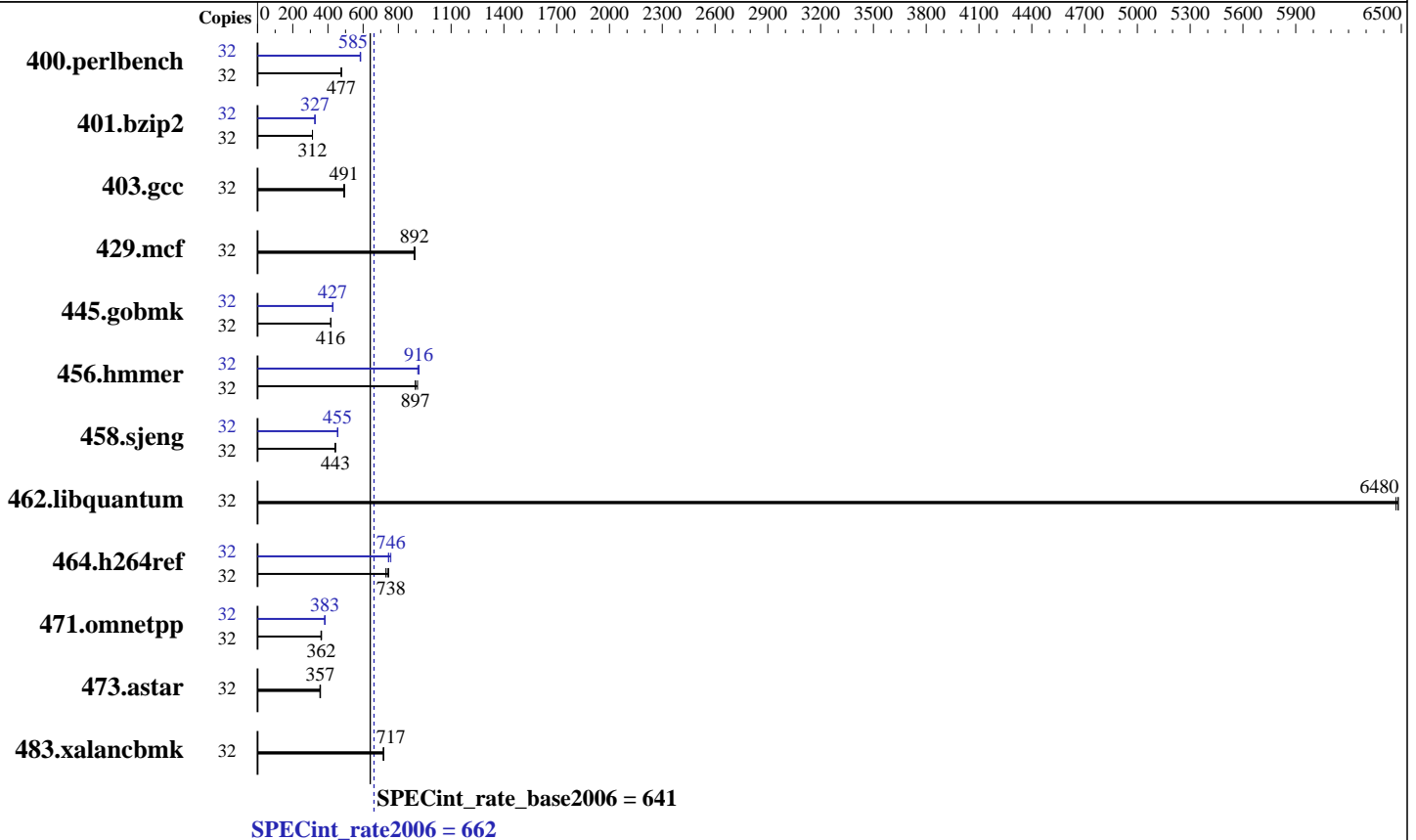|	
CPU2006 license: 9017	**Test date:** Oct-2015
Test sponsor: Lenovo Group Limited	**Hardware Availability:** Dec-2014
Tested by: Lenovo Group Limited	**Software Availability:** Nov-2013

Copies

- 400.perlbench: 32 / 585, 32 / 477
- 401.bzip2: 32 / 327, 32 / 312
- 403.gcc: 32 / 491
- 429.mcf: 32 / 892
- 445.gobmk: 32 / 427, 32 / 416
- 456.hmmer: 32 / 916, 32 / 897
- 458.sjeng: 32 / 455, 32 / 443
- 462.libquantum: 32 / 6480
- 464.h264ref: 32 / 746, 32 / 738
- 471.omnetpp: 32 / 383, 32 / 362
- 473.astar: 32 / 357
- 483.xalancbmk: 32 / 717

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Hardware

CPU Name:	Intel Xeon E5-2618L v3
CPU Characteristics:	Intel Turbo Boost Technology up to 3.40 GHz
CPU MHz:	2300
FPU:	Integrated
CPU(s) enabled:	16 cores, 2 chips, 8 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:	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 300 GB SAS, 10000 RPM
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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Results Table

Benchmark	Base Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Peak Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
400.perlbench	32	658	475	656	477	**656**	**477**	32	**535**	**585**	536	583	534	586
401.bzip2	32	**990**	**312**	989	312	990	312	32	948	326	945	327	**946**	**327**
403.gcc	32	525	491	**524**	**491**	520	495	32	525	491	**524**	**491**	520	495
429.mcf	32	326	894	**327**	**892**	328	890	32	326	894	**327**	**892**	328	890
445.gobmk	32	**806**	**416**	806	416	806	416	32	784	428	**786**	**427**	786	427
456.hmmer	32	328	909	333	897	**333**	**897**	32	328	911	**326**	**916**	325	917
458.sjeng	32	879	440	874	443	**875**	**443**	32	849	456	**851**	**455**	852	455
462.libquantum	32	102	6470	102	6480	**102**	**6480**	32	102	6470	102	6480	**102**	**6480**
464.h264ref	32	**959**	**738**	950	745	971	729	32	952	744	**949**	**746**	935	757
471.omnetpp	32	**553**	**362**	554	361	550	364	32	525	381	522	383	**522**	**383**
473.astar	32	628	357	**630**	**357**	634	354	32	628	357	**630**	**357**	634	354
483.xalancbmk	32	309	714	308	717	**308**	**717**	32	309	714	308	717	**308**	**717**

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

    Operating Mode set to Maximum Performance in BIOS
    Enabled COD Preference in BIOS
    Disable Early Snoop Preference in BIOS
    Sysinfo program /cpu2006.1.2_14.0_jan2014/config/sysinfo.rev6818
    $Rev: 6818 $ $Date:: 2012-07-17 #$ e86d102572650a6e4d596a3cee98f191
    running on newport-rhel6.5 Thu Oct 1 14:57:04 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 E5-2618L v3 @ 2.30GHz
          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

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Platform Notes (Continued)

```
      caution.)
        cpu cores : 8
        siblings  : 16
        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:        264121860 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 newport-rhel6.5 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 Oct 1 14:56 last=5

  SPEC is set to: /cpu2006.1.2_14.0_jan2014
     Filesystem                        Type  Size  Used Avail Use% Mounted on
     /dev/mapper/vg_newportrhel6-lv_root ext4  265G   87G  166G  35% /

  Additional information from dmidecode:
    BIOS IBM -[C4E105JUS-1.10]- 04/11/2015
    Memory:
    8x NO DIMM Unknown
    16x Samsung M393A2G40DB0-CPB 16 GB 1867 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 = "/cpu2006.1.2_14.0_jan2014/libs/32:/cpu2006.1.2_14.0_jan2014/libs/64:/cpu2006.1.2_14.0_jan2014/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.:
 numactl --interleave=all runspec <etc>
```

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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

    400.perlbench: icc -m64

    401.bzip2: icc -m64

    456.hmmer: icc -m64

    458.sjeng: icc -m64

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Peak Compiler Invocation (Continued)

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: basepeak = yes

             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

      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:

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Peak Optimization Flags (Continued)

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-BB.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-BB.xml

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

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