SPEC® CINT2006 Result
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Lenovo Group Limited

SPECint®_rate2006 = 2070

Lenovo System x3850 X6
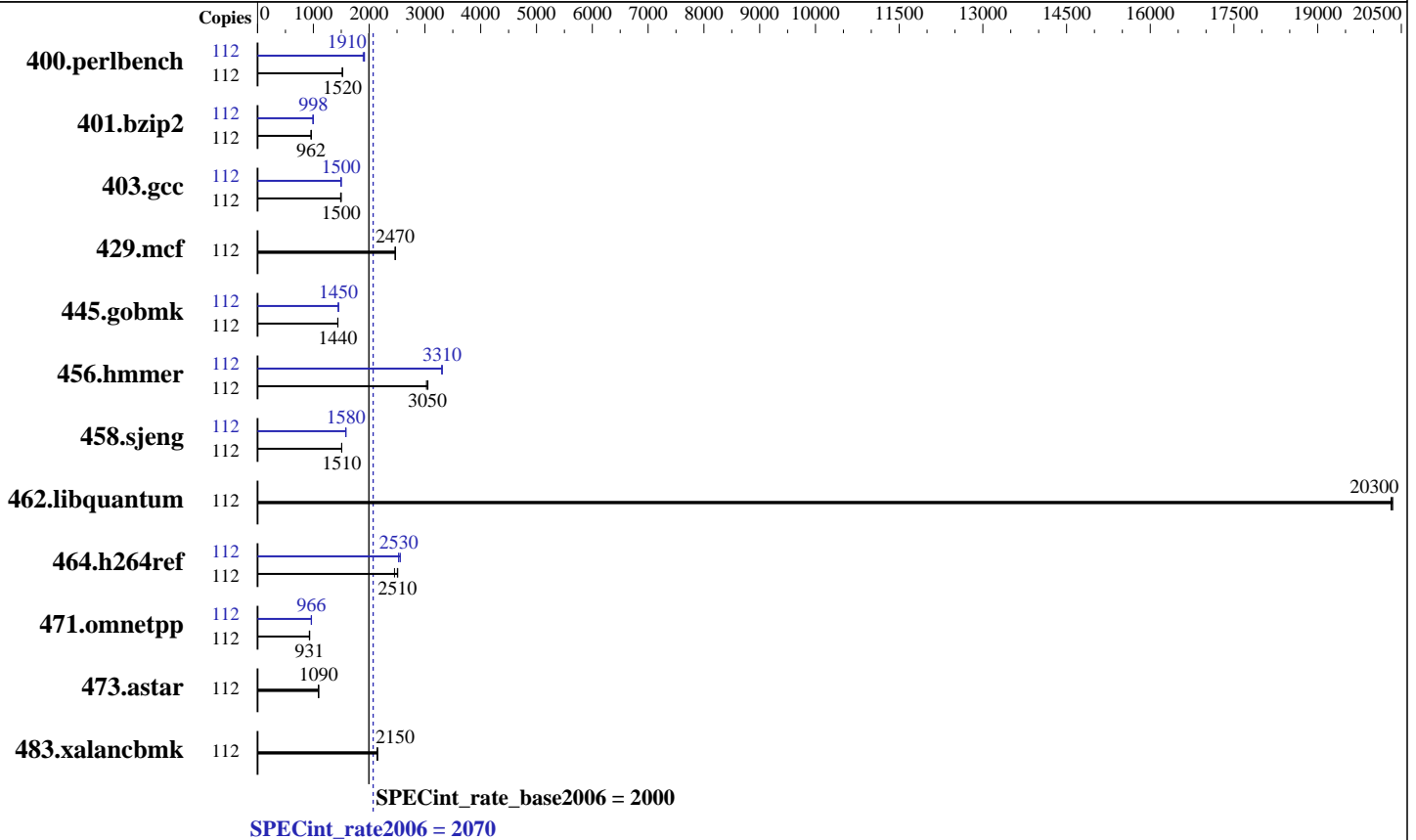(Intel Xeon E7-4850 v3, 2.20 GHz)

SPECint_rate_base2006 = 2000

CPU2006 license: 9017	**Test date:** Jun-2015
Test sponsor: Lenovo Group Limited	**Hardware Availability:** Jul-2015
Tested by: Lenovo Group Limited	**Software Availability:** Oct-2014

Copies

Benchmark	Copies	Peak	Base
400.perlbench	112	1910	1520
401.bzip2	112	998	962
403.gcc	112	1500	1500
429.mcf	112		2470
445.gobmk	112	1450	1440
456.hmmer	112	3310	3050
458.sjeng	112	1580	1510
462.libquantum	112		20300
464.h264ref	112	2530	2510
471.omnetpp	112	966	931
473.astar	112		1090
483.xalancbmk	112		2150

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Hardware

CPU Name:	Intel Xeon E7-4850 v3
CPU Characteristics:	Intel Turbo Boost Technology up to 2.80 GHz
CPU MHz:	2200
FPU:	Integrated
CPU(s) enabled:	56 cores, 4 chips, 14 cores/chip, 2 threads/core
CPU(s) orderable:	2,4 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:	35 MB I+D on chip per chip
Other Cache:	None
Memory:	1 TB (64 x 16 GB 2Rx4 PC4-2133P-R, running at 1333 MHz)
Disk Subsystem:	1 x 400 GB SSD
Other Hardware:	None

Software

Operating System:	SUSE Linus Enterprise Server 12 (x86_64) 3.12.28-4-default
Compiler:	C/C++: Version 15.0.0.090 of Intel C++ Studio XE for Linux
Auto Parallel:	No
File System:	xfs
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	112	718	1520	**__720__**	**__1520__**	720	1520	112	571	1920	**__572__**	**__1910__**	578	1890
401.bzip2	112	1123	962	**__1124__**	**__962__**	1126	959	112	**__1083__**	**__998__**	1082	999	1090	991
403.gcc	112	602	1500	606	1490	**__602__**	**__1500__**	112	604	1490	601	1500	**__602__**	**__1500__**
429.mcf	112	413	2470	414	2470	**__414__**	**__2470__**	112	413	2470	414	2470	**__414__**	**__2470__**
445.gobmk	112	816	1440	818	1440	**__816__**	**__1440__**	112	**__811__**	**__1450__**	811	1450	810	1450
456.hmmer	112	345	3030	342	3050	**__343__**	**__3050__**	112	316	3300	**__316__**	**__3310__**	316	3310
458.sjeng	112	898	1510	899	1510	**__899__**	**__1510__**	112	857	1580	856	1580	**__856__**	**__1580__**
462.libquantum	112	114	20300	**__114__**	**__20300__**	114	20300	112	114	20300	**__114__**	**__20300__**	114	20300
464.h264ref	112	986	2510	1010	2450	**__989__**	**__2510__**	112	980	2530	968	2560	**__979__**	**__2530__**
471.omnetpp	112	754	928	**__752__**	**__931__**	748	935	112	728	962	**__725__**	**__966__**	724	967
473.astar	112	**__719__**	**__1090__**	721	1090	717	1100	112	**__719__**	**__1090__**	721	1090	717	1100
483.xalancbmk	112	**__360__**	**__2150__**	359	2150	361	2140	112	**__360__**	**__2150__**	359	2150	361	2140

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 Custom in BIOS
    Cstates disabled in BIOS
    Sysinfo program /home/cpu2006/config/sysinfo.rev6914
    $Rev: 6914 $ $Date:: 2014-06-25 #$ e3fbb8667b5a285932ceab81e28219e1
    running on linux-w3yn Fri Jun 19 10:56:28 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 E7-4850 v3 @ 2.20GHz
         4 "physical id"s (chips)
         112 "processors"
      cores, siblings (Caution: counting these is hw and system dependent. The
      following excerpts from /proc/cpuinfo might not be reliable. Use with
      caution.)

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Platform Notes (Continued)

```
       cpu cores : 14
       siblings  : 28
       physical 0: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14
       physical 1: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14
       physical 2: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14
       physical 3: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14
    cache size : 35840 KB

 From /proc/meminfo
    MemTotal:       1058526364 kB
    HugePages_Total:        0
    Hugepagesize:       2048 kB

 /usr/bin/lsb_release -d
    SUSE Linux Enterprise Server 12

 From /etc/*release* /etc/*version*
    SuSE-release:
       SUSE Linux Enterprise Server 12 (x86_64)
       VERSION = 12
       PATCHLEVEL = 0
       # This file is deprecated and will be removed in a future service pack or
       release.
       # Please check /etc/os-release for details about this release.
    os-release:
       NAME="SLES"
       VERSION="12"
       VERSION_ID="12"
       PRETTY_NAME="SUSE Linux Enterprise Server 12"
       ID="sles"
       ANSI_COLOR="0;32"
       CPE_NAME="cpe:/o:suse:sles:12"

 uname -a:
    Linux linux-w3yn 3.12.28-4-default #1 SMP Thu Sep 25 17:02:34 UTC 2014
    (9879bd4) x86_64 x86_64 x86_64 GNU/Linux

 run-level 5 Jun 19 10:34

 SPEC is set to: /home/cpu2006
    Filesystem      Type  Size  Used Avail Use% Mounted on
    /dev/sda4       xfs   331G  276G   55G  84% /home
 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 -[A9E121SUS-1.00]- 03/13/2015
    Memory:
    64x Hynix HMA42GR7MFR4N-TF 16 GB 2 rank 2133 MHz, configured at 1333 MHz
```
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Platform Notes (Continued)

```
    32x 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 = "/home/cpu2006/libs/32:/home/cpu2006/libs/64:/home/cpu2006/sh"

 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
 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
    -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
```

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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

> 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

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Peak Optimization Flags (Continued)

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:

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/Default-Platform-Flags.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/Default-Platform-Flags.xml

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