



SPEC® CINT2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

Lenovo Group Limited

SPECint®_rate2006 = 501

IBM System x iDataPlex dx360 M4
(Intel Xeon E5-2628L v2, 1.90 GHz)

SPECint_rate_base2006 = 483

CPU2006 license: 9017

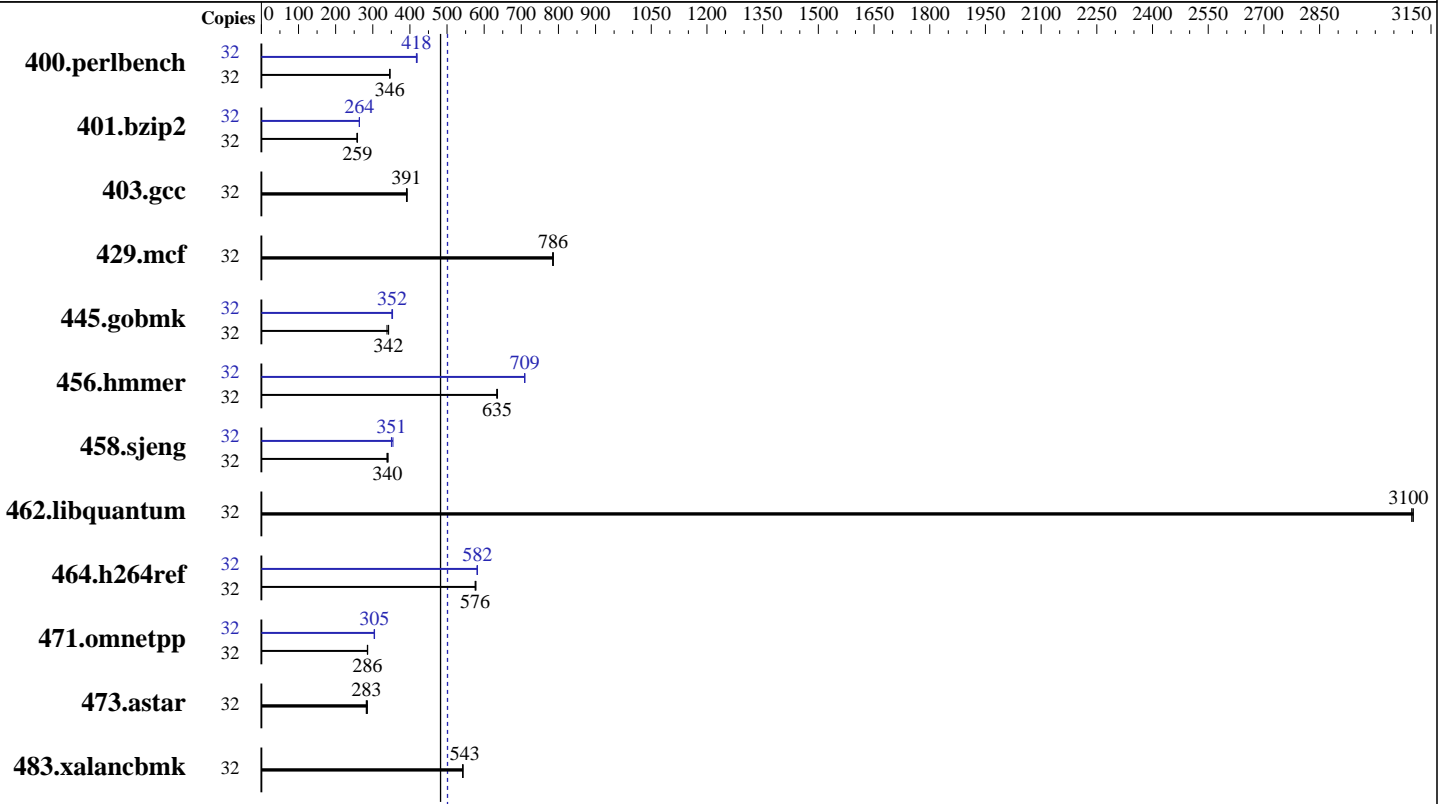
Test date: Oct-2014

Test sponsor: Lenovo Group Limited

Hardware Availability: Dec-2013

Tested by: IBM Corporation

Software Availability: Sep-2013



SPECint_rate2006 = 501

SPECint_rate_base2006 = 483

Hardware

CPU Name: Intel Xeon E5-2628L v2
 CPU Characteristics: Intel Turbo Boost Technology up to 2.40 GHz
 CPU MHz: 1900
 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 PC3-14900R-13, ECC, running at 1600 MHz)
 Disk Subsystem: 1 x 500 GB SATA, 7200 RPM
 Other Hardware: None

Software

Operating System: Red Hat Enterprise Linux Server release 6.4 (Santiago)
 2.6.32-358.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



SPEC CINT2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

Lenovo Group Limited

SPECint_rate2006 = 501

IBM System x iDataPlex dx360 M4
(Intel Xeon E5-2628L v2, 1.90 GHz)

SPECint_rate_base2006 = 483

CPU2006 license: 9017

Test date: Oct-2014

Test sponsor: Lenovo Group Limited

Hardware Availability: Dec-2013

Tested by: IBM Corporation

Software Availability: Sep-2013

Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
400.perlbench	32	902	346	904	346	905	346	32	745	419	748	418	749	417
401.bzip2	32	1201	257	1193	259	1193	259	32	1169	264	1169	264	1172	264
403.gcc	32	659	391	656	393	658	391	32	659	391	656	393	658	391
429.mcf	32	372	784	371	786	372	786	32	372	784	371	786	372	786
445.gobmk	32	982	342	992	338	979	343	32	950	353	953	352	954	352
456.hammer	32	471	634	469	636	470	635	32	421	710	421	709	421	709
458.sjeng	32	1145	338	1140	340	1134	341	32	1106	350	1093	354	1104	351
462.libquantum	32	214	3100	214	3100	214	3100	32	214	3100	214	3100	214	3100
464.h264ref	32	1225	578	1229	576	1229	576	32	1217	582	1220	581	1217	582
471.omnetpp	32	699	286	701	285	699	286	32	656	305	656	305	659	304
473.astar	32	795	282	792	283	787	286	32	795	282	792	283	787	286
483.xalancbmk	32	407	543	407	542	406	543	32	407	543	407	542	406	543

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"
Zone reclaim mode enabled with:
echo 1 > /proc/sys/vm/zone_reclaim_mode
Intel Idle Driver disabled with the following Linux kernel parameter in /etc/grub.conf:
intel_idle.max_cstate=0

Platform Notes

BIOS setting:
Operating Mode set to Maximum Performance
Sysinfo program /home/SPECcpu-20140116-ic14.0/config/sysinfo.rev6874
\$Rev: 6874 \$ \$Date:: 2013-11-20 #\$ 654bd3fcf53b06faef0efe54ed011998
running on dx360M4 Fri Oct 31 14:12:13 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 E5-2628L v2 @ 1.90GHz
2 "physical id"s (chips)

Continued on next page



SPEC CINT2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

Lenovo Group Limited

SPECint_rate2006 = 501

IBM System x iDataPlex dx360 M4
(Intel Xeon E5-2628L v2, 1.90 GHz)

SPECint_rate_base2006 = 483

CPU2006 license: 9017

Test date: Oct-2014

Test sponsor: Lenovo Group Limited

Hardware Availability: Dec-2013

Tested by: IBM Corporation

Software Availability: Sep-2013

Platform Notes (Continued)

32 "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 : 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:      264641468 kB
HugePages_Total: 0
Hugepagesize:   2048 kB
```

/usr/bin/lsb_release -d

```
Red Hat Enterprise Linux Server release 6.4 (Santiago)
```

From /etc/*release* /etc/*version*

```
redhat-release: Red Hat Enterprise Linux Server release 6.4 (Santiago)
system-release: Red Hat Enterprise Linux Server release 6.4 (Santiago)
system-release-cpe: cpe:/o:redhat:enterprise_linux:6server:ga:server
```

uname -a:

```
Linux dx360M4 2.6.32-358.el6.x86_64 #1 SMP Tue Jan 29 11:47:41 EST 2013
x86_64 x86_64 x86_64 GNU/Linux
```

run-level 3 Oct 31 12:31

SPEC is set to: /home/SPECcpu-20140116-ic14.0

```
Filesystem      Type      Size  Used Avail Use% Mounted on
/dev/mapper/vg_td2-lv_home
                ext4      380G  174G  187G  49% /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 -[TDE139OUS-1.50]- 02/21/2014

Memory:

```
16x Samsung M393B2G70QH0-CMA 16 GB 2 rank 1866 MHz, configured at 1600 MHz
```

(End of data from sysinfo program)

General Notes

Environment variables set by runspec before the start of the run:

```
LD_LIBRARY_PATH = "/home/SPECcpu-20140116-ic14.0/libs/32:/home/SPECcpu-20140116-ic14.0/libs/64:/home/SPECcpu-20140116-ic14.0/sh"
```

Continued on next page

Standard Performance Evaluation Corporation

info@spec.org

http://www.spec.org/

Page 3



SPEC CINT2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

Lenovo Group Limited

SPECint_rate2006 = 501

IBM System x iDataPlex dx360 M4
(Intel Xeon E5-2628L v2, 1.90 GHz)

SPECint_rate_base2006 = 483

CPU2006 license: 9017

Test date: Oct-2014

Test sponsor: Lenovo Group Limited

Hardware Availability: Dec-2013

Tested by: IBM Corporation

Software Availability: Sep-2013

General Notes (Continued)

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>

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:
-xSSE4.2 -ipo -O3 -no-prec-div -opt-prefetch -opt-mem-layout-trans=3

C++ benchmarks:
-xSSE4.2 -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

Continued on next page



SPEC CINT2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

Lenovo Group Limited

SPECint_rate2006 = 501

IBM System x iDataPlex dx360 M4
(Intel Xeon E5-2628L v2, 1.90 GHz)

SPECint_rate_base2006 = 483

CPU2006 license: 9017

Test date: Oct-2014

Test sponsor: Lenovo Group Limited

Hardware Availability: Dec-2013

Tested by: IBM Corporation

Software Availability: Sep-2013

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: -xSSE4.2(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: -xSSE4.2(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: -xSSE4.2(pass 2) -prof-gen(pass 1) -prof-use(pass 2)
-ansi-alias -opt-mem-layout-trans=3

456.hmmer: -xSSE4.2 -ipo -O3 -no-prec-div -unroll2 -auto-ilp32

458.sjeng: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
-O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)
-unroll4 -auto-ilp32

Continued on next page



SPEC CINT2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

Lenovo Group Limited

SPECint_rate2006 = 501

IBM System x iDataPlex dx360 M4
(Intel Xeon E5-2628L v2, 1.90 GHz)

SPECint_rate_base2006 = 483

CPU2006 license: 9017

Test date: Oct-2014

Test sponsor: Lenovo Group Limited

Hardware Availability: Dec-2013

Tested by: IBM Corporation

Software Availability: Sep-2013

Peak Optimization Flags (Continued)

462.libquantum: basepeak = yes

464.h264ref: -xSSE4.2(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: -xSSE4.2(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/IBM-Platform-Flags-V1.2-IVB-C.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/IBM-Platform-Flags-V1.2-IVB-C.xml>

SPEC and SPECint are registered trademarks of the Standard Performance Evaluation Corporation. All other brand and product names appearing in this result are trademarks or registered trademarks of their respective holders.

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

Tested with SPEC CPU2006 v1.2.

Report generated on Wed Dec 3 10:29:56 2014 by SPEC CPU2006 PS/PDF formatter v6932.

Originally published on 2 December 2014.