



# SPEC<sup>®</sup> CINT2006 Result

Copyright 2006-2017 Standard Performance Evaluation Corporation

## Lenovo Group Limited

SPECint<sup>®</sup>\_rate2006 = 282

Lenovo ThinkServer TS460  
(3.90 GHz, Intel Xeon E3-1280 v6)

SPECint\_rate\_base2006 = 271

CPU2006 license: 9017

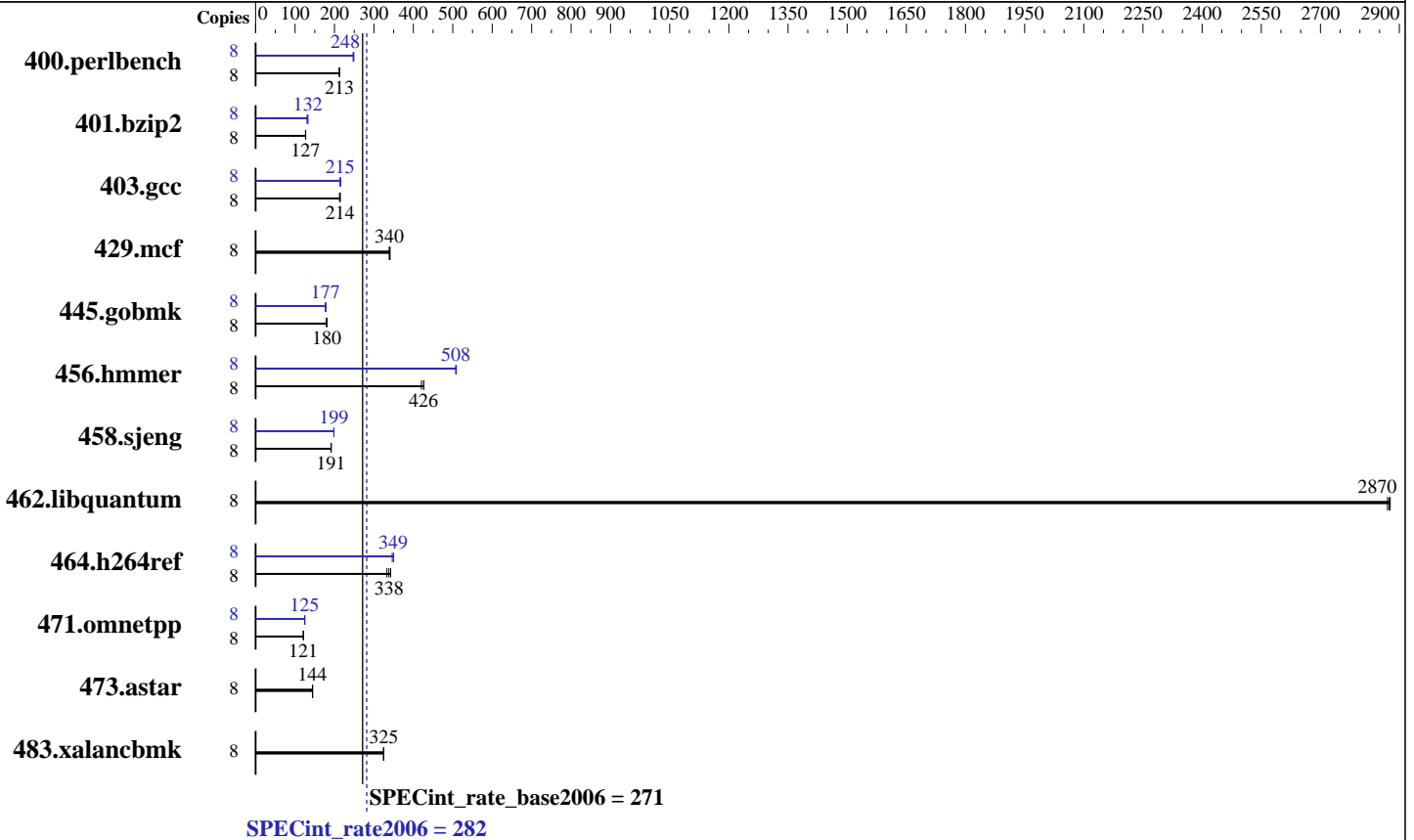
Test date: May-2017

Test sponsor: Lenovo Group Limited

Hardware Availability: Jun-2017

Tested by: Lenovo Group Limited

Software Availability: Nov-2016



### Hardware

CPU Name: Intel Xeon E3-1280 v6  
 CPU Characteristics: Intel Turbo Boost Technology up to 4.20 GHz  
 CPU MHz: 3900  
 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: 32 GB (2 x 16 GB 2Rx8 PC4-2400T-E)  
 Disk Subsystem: 1 x 960 GB SATA SSD  
 Other Hardware: None

### Software

Operating System: SUSE Linux Enterprise Server 12 SP2 (x86\_64)  
 Kernel 4.4.21-69-default  
 Compiler: C/C++: Version 17.0.0.098 of Intel C/C++ Compiler for Linux  
 Auto Parallel: No  
 File System: btrfs  
 System State: Run level 3 (multi-user)  
 Base Pointers: 32-bit  
 Peak Pointers: 32/64-bit  
 Other Software: Microquill SmartHeap V10.2



# SPEC CINT2006 Result

Copyright 2006-2017 Standard Performance Evaluation Corporation

## Lenovo Group Limited

SPECint\_rate2006 = 282

Lenovo ThinkServer TS460  
(3.90 GHz, Intel Xeon E3-1280 v6)

SPECint\_rate\_base2006 = 271

CPU2006 license: 9017

Test date: May-2017

Test sponsor: Lenovo Group Limited

Hardware Availability: Jun-2017

Tested by: Lenovo Group Limited

Software Availability: Nov-2016

## Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
400.perlbench	8	368	213	<b>368</b>	<b>213</b>	368	212	8	316	247	<b>315</b>	<b>248</b>	314	249
401.bzip2	8	<b>609</b>	<b>127</b>	608	127	611	126	8	<b>584</b>	<b>132</b>	592	130	583	132
403.gcc	8	300	215	303	213	<b>301</b>	<b>214</b>	8	300	214	298	216	<b>300</b>	<b>215</b>
429.mcf	8	214	341	<b>215</b>	<b>340</b>	215	339	8	214	341	<b>215</b>	<b>340</b>	215	339
445.gobmk	8	<b>466</b>	<b>180</b>	464	181	466	180	8	474	177	<b>474</b>	<b>177</b>	470	179
456.hammer	8	177	421	<b>175</b>	<b>426</b>	175	427	8	147	507	147	509	<b>147</b>	<b>508</b>
458.sjeng	8	505	192	<b>505</b>	<b>191</b>	506	191	8	487	199	<b>487</b>	<b>199</b>	488	198
462.libquantum	8	57.6	2880	57.8	2870	<b>57.7</b>	<b>2870</b>	8	57.6	2880	57.8	2870	<b>57.7</b>	<b>2870</b>
464.h264ref	8	532	333	<b>524</b>	<b>338</b>	517	343	8	506	350	511	346	<b>507</b>	<b>349</b>
471.omnetpp	8	413	121	<b>413</b>	<b>121</b>	413	121	8	401	125	401	125	<b>401</b>	<b>125</b>
473.astar	8	390	144	<b>389</b>	<b>144</b>	388	145	8	390	144	<b>389</b>	<b>144</b>	388	145
483.xalancbmk	8	170	324	<b>170</b>	<b>325</b>	170	325	8	170	324	<b>170</b>	<b>325</b>	170	325

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

## Submit Notes

The taskset mechanism was used to bind copies to processors. The config file option 'submit' was used to generate taskset 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"  
Transparent Huge Pages enabled with:  
echo always > /sys/kernel/mm/transparent\_hugepage/enabled  
Filesystem dentries and inodes cleared with:  
echo 2 > /proc/sys/vm/drop\_caches

## Platform Notes

BIOS Configuration:  
Boot performance mode set to Turbo Performance  
Sysinfo program /home/cpu2006-1.2-ic17.0/config/sysinfo.rev6993  
Revision 6993 of 2015-11-06 (b5e8d4b4eb51ed28d7f98696cbe290c1)  
running on TS460 Tue May 23 09:33:39 2017

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 E3-1280 v6 @ 3.90GHz  
1 "physical id"s (chips)

Continued on next page



# SPEC CINT2006 Result

Copyright 2006-2017 Standard Performance Evaluation Corporation

## Lenovo Group Limited

SPECint\_rate2006 = 282

Lenovo ThinkServer TS460  
(3.90 GHz, Intel Xeon E3-1280 v6)

SPECint\_rate\_base2006 = 271

CPU2006 license: 9017

Test date: May-2017

Test sponsor: Lenovo Group Limited

Hardware Availability: Jun-2017

Tested by: Lenovo Group Limited

Software Availability: Nov-2016

### Platform Notes (Continued)

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

From /proc/meminfo

```
MemTotal:      32888952 kB
HugePages_Total:    0
Hugepagesize:    2048 kB
```

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

SuSE-release:

```
SUSE Linux Enterprise Server 12 (x86_64)
VERSION = 12
PATCHLEVEL = 2
```

# 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-SP2"
VERSION_ID="12.2"
PRETTY_NAME="SUSE Linux Enterprise Server 12 SP2"
ID="sles"
ANSI_COLOR="0;32"
CPE_NAME="cpe:/o:suse:sles:12:sp2"
```

uname -a:

```
Linux TS460 4.4.21-69-default #1 SMP Tue Oct 25 10:58:20 UTC 2016 (9464f67)
x86_64 x86_64 x86_64 GNU/Linux
```

run-level 3 May 23 09:32

SPEC is set to: /home/cpu2006-1.2-ic17.0

```
Filesystem      Type      Size  Used Avail Use% Mounted on
/dev/sda2        btrfs    895G  11G  883G   2% /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 American Megatrends Inc. TB1TS223 03/16/2017

Memory:

```
2x Micron 18ASF2G72AZ-2G3B1 16 GB 2 rank 2400 MHz
2x Not Specified Not Specified
```

Continued on next page



# SPEC CINT2006 Result

Copyright 2006-2017 Standard Performance Evaluation Corporation

**Lenovo Group Limited**

**SPECint\_rate2006 = 282**

Lenovo ThinkServer TS460  
(3.90 GHz, Intel Xeon E3-1280 v6)

**SPECint\_rate\_base2006 = 271**

**CPU2006 license:** 9017

**Test date:** May-2017

**Test sponsor:** Lenovo Group Limited

**Hardware Availability:** Jun-2017

**Tested by:** Lenovo Group Limited

**Software Availability:** Nov-2016

## Platform Notes (Continued)

(End of data from sysinfo program)

## General Notes

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

LD\_LIBRARY\_PATH = "/home/cpu2006-1.2-ic17.0/libs/32:/home/cpu2006-1.2-ic17.0/libs/64:/home/cpu2006-1.2-ic17.0/sh10.2"

Binaries compiled on a system with 1x Intel Core i7-4790 CPU + 32GB RAM  
memory using Redhat Enterprise Linux 7.2

## Base Compiler Invocation

C benchmarks:

icc -m32 -L/opt/intel/compilers\_and\_libraries\_2017/linux/lib/ia32

C++ benchmarks:

icpc -m32 -L/opt/intel/compilers\_and\_libraries\_2017/linux/lib/ia32

## Base Portability Flags

400.perlbench: -D\_FILE\_OFFSET\_BITS=64 -DSPEC\_CPU\_LINUX\_IA32  
401.bzip2: -D\_FILE\_OFFSET\_BITS=64  
403.gcc: -D\_FILE\_OFFSET\_BITS=64  
429.mcf: -D\_FILE\_OFFSET\_BITS=64  
445.gobmk: -D\_FILE\_OFFSET\_BITS=64  
456.hmmer: -D\_FILE\_OFFSET\_BITS=64  
458.sjeng: -D\_FILE\_OFFSET\_BITS=64  
462.libquantum: -D\_FILE\_OFFSET\_BITS=64 -DSPEC\_CPU\_LINUX  
464.h264ref: -D\_FILE\_OFFSET\_BITS=64  
471.omnetpp: -D\_FILE\_OFFSET\_BITS=64  
473.astar: -D\_FILE\_OFFSET\_BITS=64  
483.xalancbmk: -D\_FILE\_OFFSET\_BITS=64 -DSPEC\_CPU\_LINUX

## Base Optimization Flags

C benchmarks:

-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch  
-qopt-mem-layout-trans=3

C++ benchmarks:

-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch  
-qopt-mem-layout-trans=3 -Wl,-z,muldefs -L/sh10.2 -lsmartheap



# SPEC CINT2006 Result

Copyright 2006-2017 Standard Performance Evaluation Corporation

**Lenovo Group Limited**

**SPECint\_rate2006 = 282**

Lenovo ThinkServer TS460  
(3.90 GHz, Intel Xeon E3-1280 v6)

**SPECint\_rate\_base2006 = 271**

**CPU2006 license:** 9017

**Test date:** May-2017

**Test sponsor:** Lenovo Group Limited

**Hardware Availability:** Jun-2017

**Tested by:** Lenovo Group Limited

**Software Availability:** Nov-2016

## Base Other Flags

C benchmarks:

403.gcc: -Dalloca=\_alloca

## Peak Compiler Invocation

C benchmarks (except as noted below):

icc -m32 -L/opt/intel/compilers\_and\_libraries\_2017/linux/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/compilers\_and\_libraries\_2017/linux/lib/ia32

## Peak Portability Flags

400.perlbench: -DSPEC\_CPU\_LP64 -DSPEC\_CPU\_LINUX\_X64

401.bzip2: -DSPEC\_CPU\_LP64

403.gcc: -D\_FILE\_OFFSET\_BITS=64

429.mcf: -D\_FILE\_OFFSET\_BITS=64

445.gobmk: -D\_FILE\_OFFSET\_BITS=64

456.hmmer: -DSPEC\_CPU\_LP64

458.sjeng: -DSPEC\_CPU\_LP64

462.libquantum: -D\_FILE\_OFFSET\_BITS=64 -DSPEC\_CPU\_LINUX

464.h264ref: -D\_FILE\_OFFSET\_BITS=64

471.omnetpp: -D\_FILE\_OFFSET\_BITS=64

473.astar: -D\_FILE\_OFFSET\_BITS=64

483.xalanbmk: -D\_FILE\_OFFSET\_BITS=64 -DSPEC\_CPU\_LINUX

## Peak Optimization Flags

C benchmarks:

400.perlbench: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2(pass 2)

-par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)

-no-prec-div(pass 2) -auto-ilp32 -qopt-mem-layout-trans=3

Continued on next page



# SPEC CINT2006 Result

Copyright 2006-2017 Standard Performance Evaluation Corporation

**Lenovo Group Limited**

**SPECint\_rate2006 = 282**

Lenovo ThinkServer TS460  
(3.90 GHz, Intel Xeon E3-1280 v6)

**SPECint\_rate\_base2006 = 271**

**CPU2006 license:** 9017

**Test date:** May-2017

**Test sponsor:** Lenovo Group Limited

**Hardware Availability:** Jun-2017

**Tested by:** Lenovo Group Limited

**Software Availability:** Nov-2016

## Peak Optimization Flags (Continued)

401.bzip2: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2(pass 2)  
-par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -qopt-prefetch -auto-ilp32  
-qopt-mem-layout-trans=3

403.gcc: -xCORE-AVX2 -ipo -O3 -no-prec-div  
-qopt-mem-layout-trans=3

429.mcf: basepeak = yes

445.gobmk: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2(pass 2)  
-par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -qopt-mem-layout-trans=3

456.hmmer: -xCORE-AVX2 -ipo -O3 -no-prec-div -unroll2 -auto-ilp32  
-qopt-mem-layout-trans=3

458.sjeng: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2(pass 2)  
-par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -unroll4 -auto-ilp32  
-qopt-mem-layout-trans=3

462.libquantum: basepeak = yes

464.h264ref: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2(pass 2)  
-par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -unroll2 -qopt-mem-layout-trans=3

C++ benchmarks:

471.omnetpp: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2(pass 2)  
-par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2)  
-qopt-ra-region-strategy=block  
-qopt-mem-layout-trans=3 -Wl,-z,muldefs  
-L/sh10.2 -lsmartheap

473.astar: basepeak = yes

483.xalancbmk: basepeak = yes

## Peak Other Flags

C benchmarks:

403.gcc: -Dalloca=\_alloca



# SPEC CINT2006 Result

Copyright 2006-2017 Standard Performance Evaluation Corporation

## Lenovo Group Limited

Lenovo ThinkServer TS460  
(3.90 GHz, Intel Xeon E3-1280 v6)

**SPECint\_rate2006 = 282**

**SPECint\_rate\_base2006 = 271**

**CPU2006 license:** 9017

**Test sponsor:** Lenovo Group Limited

**Tested by:** Lenovo Group Limited

**Test date:** May-2017

**Hardware Availability:** Jun-2017

**Software Availability:** Nov-2016

The flags files that were used to format this result can be browsed at

<http://www.spec.org/cpu2006/flags/Intel-ic17.0-official-linux64.html>

<http://www.spec.org/cpu2006/flags/Lenovo-Platform-Settings-V1.2-BDW-revE.html>

You can also download the XML flags sources by saving the following links:

<http://www.spec.org/cpu2006/flags/Intel-ic17.0-official-linux64.xml>

<http://www.spec.org/cpu2006/flags/Lenovo-Platform-Settings-V1.2-BDW-revE.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](mailto:webmaster@spec.org).

Tested with SPEC CPU2006 v1.2.  
Report generated on Wed Jun 14 10:46:08 2017 by SPEC CPU2006 PS/PDF formatter v6932.  
Originally published on 13 June 2017.