



# SPEC® CINT2006 Result

Copyright 2006-2016 Standard Performance Evaluation Corporation

## Lenovo Group Limited

SPECint®2006 = **72.8**

Lenovo ThinkServer TS450  
(3.40 GHz, Intel Xeon E3-1230 v5)

SPECint\_base2006 = **70.5**

CPU2006 license: 9017

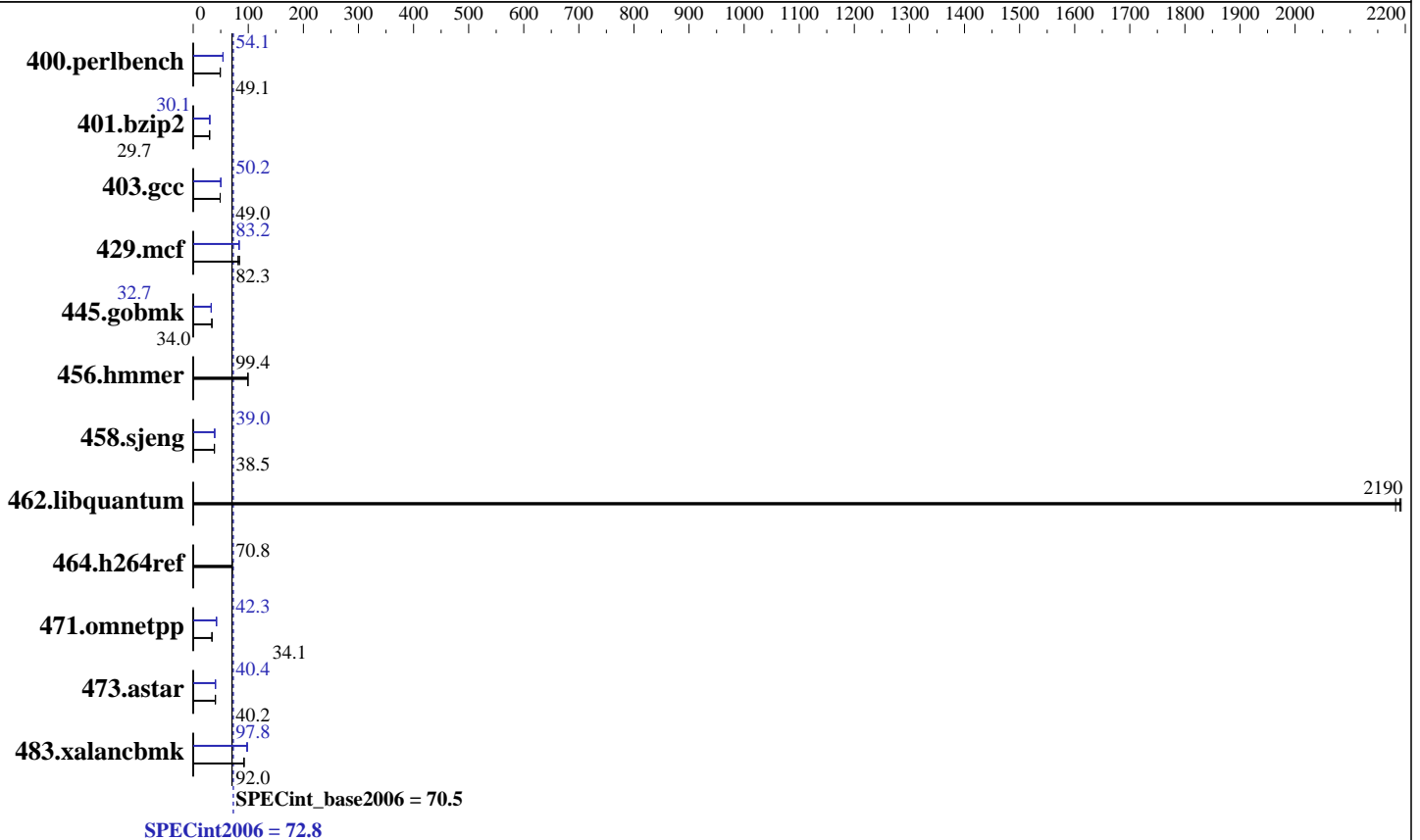
Test date: Jan-2016

Test sponsor: Lenovo Group Limited

Hardware Availability: Oct-2015

Tested by: Lenovo Group Limited

Software Availability: Aug-2015



### Hardware

CPU Name: Intel Xeon E3-1230 v5  
 CPU Characteristics: Intel Turbo Boost Technology up to 3.80 GHz  
 CPU MHz: 3400  
 FPU: Integrated  
 CPU(s) enabled: 4 cores, 1 chip, 4 cores/chip  
 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 (4 x 8 GB 2Rx8 PC4-2133P-U)  
 Disk Subsystem: 1 x 800 GB SATA SSD  
 Other Hardware: None

### Software

Operating System: SUSE Linux Enterprise Server 12 (x86\_64)  
 Kernel 3.12.28-4-default  
 Compiler: C/C++: Version 16.0.0.101 of Intel C++ Studio XE for Linux  
 Auto Parallel: Yes  
 File System: xfs  
 System State: Run level 3 (multi-user)  
 Base Pointers: 32/64-bit  
 Peak Pointers: 32/64-bit  
 Other Software: Microquill SmartHeap V10.2



# SPEC CINT2006 Result

Copyright 2006-2016 Standard Performance Evaluation Corporation

## Lenovo Group Limited

SPECint2006 = **72.8**

Lenovo ThinkServer TS450  
(3.40 GHz, Intel Xeon E3-1230 v5)

SPECint\_base2006 = **70.5**

CPU2006 license: 9017

Test date: Jan-2016

Test sponsor: Lenovo Group Limited

Hardware Availability: Oct-2015

Tested by: Lenovo Group Limited

Software Availability: Aug-2015

## Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
400.perlbench	198	49.3	<b><u>199</u></b>	<b><u>49.1</u></b>	199	49.1	<b><u>181</u></b>	<b><u>54.1</u></b>	180	54.2	181	54.0
401.bzip2	325	29.7	325	29.7	<b><u>325</u></b>	<b><u>29.7</u></b>	<b><u>321</u></b>	<b><u>30.1</u></b>	321	30.0	320	30.2
403.gcc	164	49.1	<b><u>164</u></b>	<b><u>49.0</u></b>	164	48.9	161	50.1	160	50.3	<b><u>160</u></b>	<b><u>50.2</u></b>
429.mcf	<b><u>111</u></b>	<b><u>82.3</u></b>	112	81.3	108	84.3	<b><u>110</u></b>	<b><u>83.2</u></b>	110	83.1	109	83.7
445.gobmk	<b><u>309</u></b>	<b><u>34.0</u></b>	309	34.0	309	34.0	321	32.7	<b><u>321</u></b>	<b><u>32.7</u></b>	321	32.7
456.hammer	93.9	99.3	<b><u>93.9</u></b>	<b><u>99.4</u></b>	93.8	99.4	93.9	99.3	<b><u>93.9</u></b>	<b><u>99.4</u></b>	93.8	99.4
458.sjeng	314	38.5	315	38.4	<b><u>314</u></b>	<b><u>38.5</u></b>	310	39.0	<b><u>310</u></b>	<b><u>39.0</u></b>	310	39.0
462.libquantum	9.45	2190	<b><u>9.46</u></b>	<b><u>2190</u></b>	9.49	2180	9.45	2190	<b><u>9.46</u></b>	<b><u>2190</u></b>	9.49	2180
464.h264ref	<b><u>313</u></b>	<b><u>70.8</u></b>	313	70.8	313	70.7	<b><u>313</u></b>	<b><u>70.8</u></b>	313	70.8	313	70.7
471.omnetpp	<b><u>183</u></b>	<b><u>34.1</u></b>	183	34.2	183	34.1	148	42.4	<b><u>148</u></b>	<b><u>42.3</u></b>	148	42.1
473.astar	173	40.5	<b><u>175</u></b>	<b><u>40.2</u></b>	175	40.1	174	40.3	173	40.5	<b><u>174</u></b>	<b><u>40.4</u></b>
483.xalancbmk	74.4	92.8	75.1	91.9	<b><u>75.0</u></b>	<b><u>92.0</u></b>	70.7	97.5	<b><u>70.6</u></b>	<b><u>97.8</u></b>	70.1	98.4

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

## Submit Notes

The config file option 'submit' was used.

## Operating System Notes

Stack size set to unlimited using "ulimit -s unlimited"

## Platform Notes

BIOS Configuration:

```

EIST Support set to Enabled
Intel (R) Hyper-Threading set to Disabled
ClE Support set to Enabled
C State Support set to Enabled
Turbo Mode set to Enable
Sysinfo program /home/cpu2006-1.2-ic16.0/config/sysinfo.rev6914
$Rev: 6914 $ $Date:: 2014-06-25 #$ e3fbb8667b5a285932ceab81e28219e1
running on TS450-SLE12 Wed Jan 6 17:17:04 2016

```

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 E3-1230 v5 @ 3.40GHz
1 "physical id"s (chips)
4 "processors"
cores, siblings (Caution: counting these is hw and system dependent. The

```

Continued on next page



# SPEC CINT2006 Result

Copyright 2006-2016 Standard Performance Evaluation Corporation

## Lenovo Group Limited

SPECint2006 = 72.8

Lenovo ThinkServer TS450  
(3.40 GHz, Intel Xeon E3-1230 v5)

SPECint\_base2006 = 70.5

CPU2006 license: 9017

Test date: Jan-2016

Test sponsor: Lenovo Group Limited

Hardware Availability: Oct-2015

Tested by: Lenovo Group Limited

Software Availability: Aug-2015

### Platform Notes (Continued)

following excerpts from /proc/cpuinfo might not be reliable. Use with caution.)

```
cpu cores : 4
siblings  : 4
physical 0: cores 0 1 2 3
cache size : 8192 KB
```

From /proc/meminfo

```
MemTotal: 32933544 kB
HugePages_Total: 0
Hugepagesize: 2048 kB
```

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 TS450-SLE12 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 3 Jan 6 17:07

SPEC is set to: /home/cpu2006-1.2-ic16.0

```
Filesystem Type Size Used Avail Use% Mounted on
/dev/sda3 xfs 600G 7.6G 593G 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 LENOVO FWKT32A 12/25/2015

Memory:

4x Samsung M378A1G43DB0-CPB 8 GB 2 rank 2133 MHz

(End of data from sysinfo program)



# SPEC CINT2006 Result

Copyright 2006-2016 Standard Performance Evaluation Corporation

**Lenovo Group Limited**

**SPECint2006 = 72.8**

Lenovo ThinkServer TS450  
(3.40 GHz, Intel Xeon E3-1230 v5)

**SPECint\_base2006 = 70.5**

**CPU2006 license:** 9017

**Test date:** Jan-2016

**Test sponsor:** Lenovo Group Limited

**Hardware Availability:** Oct-2015

**Tested by:** Lenovo Group Limited

**Software Availability:** Aug-2015

## General Notes

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

KMP\_AFFINITY = "granularity=fine,scatter"

LD\_LIBRARY\_PATH = "/home/cpu2006-1.2-ic16.0/libs/32:/home/cpu2006-1.2-ic16.0/libs/64:/home/cpu2006-1.2-ic16.0/sh"

OMP\_NUM\_THREADS = "4"

Binaries compiled on a system with 1x Intel Core i5-4670K CPU + 32GB memory using RedHat EL 7.1

Transparent Huge Pages enabled with:

echo always > /sys/kernel/mm/transparent\_hugepage/enabled

## Base Compiler Invocation

C benchmarks:

icc -m64

C++ benchmarks:

icpc -m64

## Base Portability Flags

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

401.bzip2: -DSPEC\_CPU\_LP64

403.gcc: -DSPEC\_CPU\_LP64

429.mcf: -DSPEC\_CPU\_LP64

445.gobmk: -DSPEC\_CPU\_LP64

456.hmmer: -DSPEC\_CPU\_LP64

458.sjeng: -DSPEC\_CPU\_LP64

462.libquantum: -DSPEC\_CPU\_LP64 -DSPEC\_CPU\_LINUX

464.h264ref: -DSPEC\_CPU\_LP64

471.omnetpp: -DSPEC\_CPU\_LP64

473.astar: -DSPEC\_CPU\_LP64

483.xalancbmk: -DSPEC\_CPU\_LP64 -DSPEC\_CPU\_LINUX

## Base Optimization Flags

C benchmarks:

-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -opt-prefetch -auto-p32

C++ benchmarks:

-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch -auto-p32

-Wl,-z,muldefs -L/sh -lsmartheap64



# SPEC CINT2006 Result

Copyright 2006-2016 Standard Performance Evaluation Corporation

**Lenovo Group Limited**

**SPECint2006 = 72.8**

Lenovo ThinkServer TS450  
(3.40 GHz, Intel Xeon E3-1230 v5)

**SPECint\_base2006 = 70.5**

**CPU2006 license:** 9017

**Test date:** Jan-2016

**Test sponsor:** Lenovo Group Limited

**Hardware Availability:** Oct-2015

**Tested by:** Lenovo Group Limited

**Software Availability:** Aug-2015

## Base Other Flags

C benchmarks:

403.gcc: -Dalloca=\_alloca

## Peak Compiler Invocation

C benchmarks (except as noted below):

icc -m64

400.perlbench: icc -m32 -L/opt/intel/compilers\_and\_libraries\_2016/linux/compiler/lib/ia32\_lin

445.gobmk: icc -m32 -L/opt/intel/compilers\_and\_libraries\_2016/linux/compiler/lib/ia32\_lin

C++ benchmarks (except as noted below):

icpc -m32 -L/opt/intel/compilers\_and\_libraries\_2016/linux/compiler/lib/ia32\_lin

473.astar: icpc -m64

## Peak Portability Flags

400.perlbench: -D\_FILE\_OFFSET\_BITS=64 -DSPEC\_CPU\_LINUX\_IA32

401.bzip2: -DSPEC\_CPU\_LP64

403.gcc: -DSPEC\_CPU\_LP64

429.mcf: -DSPEC\_CPU\_LP64

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

456.hmmmer: -DSPEC\_CPU\_LP64

458.sjeng: -DSPEC\_CPU\_LP64

462.libquantum: -DSPEC\_CPU\_LP64 -DSPEC\_CPU\_LINUX

464.h264ref: -DSPEC\_CPU\_LP64

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

473.astar: -DSPEC\_CPU\_LP64

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

## Peak Optimization Flags

C benchmarks:

400.perlbench: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)  
-ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2)  
-par-num-threads=1(pass 1) -prof-use(pass 2) -opt-prefetch  
-ansi-alias

401.bzip2: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)  
-ipo(pass 2) -O3(pass 2) -no-prec-div  
-par-num-threads=1(pass 1) -prof-use(pass 2) -auto-ilp32

Continued on next page



# SPEC CINT2006 Result

Copyright 2006-2016 Standard Performance Evaluation Corporation

Lenovo Group Limited

SPECint2006 = 72.8

Lenovo ThinkServer TS450  
(3.40 GHz, Intel Xeon E3-1230 v5)

SPECint\_base2006 = 70.5

CPU2006 license: 9017

Test date: Jan-2016

Test sponsor: Lenovo Group Limited

Hardware Availability: Oct-2015

Tested by: Lenovo Group Limited

Software Availability: Aug-2015

## Peak Optimization Flags (Continued)

401.bzip2 (continued):

-opt-prefetch -ansi-alias

403.gcc: -xCORE-AVX2 -ipo -O3 -no-prec-div -inline-calloc

-opt-malloc-options=3 -auto-ilp32

429.mcf: -xCORE-AVX2 -ipo -O3 -no-prec-div -parallel

-opt-prefetch -auto-p32

445.gobmk: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)

-prof-use(pass 2) -par-num-threads=1(pass 1) -ansi-alias

456.hmmr: basepeak = yes

458.sjeng: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)

-ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2)

-par-num-threads=1(pass 1) -prof-use(pass 2) -unroll4

462.libquantum: basepeak = yes

464.h264ref: basepeak = yes

C++ benchmarks:

471.omnetpp: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)

-ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2)

-par-num-threads=1(pass 1) -prof-use(pass 2)

-opt-ra-region-strategy=block

-ansi-alias

-Wl,-z,muldefs -L/sh -lsmartheap

473.astar: -xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch

-auto-p32 -Wl,-z,muldefs -L/sh -lsmartheap64

483.xalancbmk: -xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch

-ansi-alias -Wl,-z,muldefs -L/sh -lsmartheap

## 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-ic16.0-official-linux64.html>

<http://www.spec.org/cpu2006/flags/Default-Platform-Flags.html>



# SPEC CINT2006 Result

Copyright 2006-2016 Standard Performance Evaluation Corporation

## Lenovo Group Limited

Lenovo ThinkServer TS450  
(3.40 GHz, Intel Xeon E3-1230 v5)

**SPECint2006 = 72.8**

**SPECint\_base2006 = 70.5**

**CPU2006 license:** 9017

**Test sponsor:** Lenovo Group Limited

**Tested by:** Lenovo Group Limited

**Test date:** Jan-2016

**Hardware Availability:** Oct-2015

**Software Availability:** Aug-2015

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

<http://www.spec.org/cpu2006/flags/Intel-ic16.0-official-linux64.xml>

<http://www.spec.org/cpu2006/flags/Default-Platform-Flags.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 Tue Feb 9 17:22:04 2016 by SPEC CPU2006 PS/PDF formatter v6932.  
Originally published on 9 February 2016.