## Lenovo Group Limited

**Lenovo Flex System x240 M5**  
(2.40 GHz, Intel Xeon E5-2683 v4)

### CPU2006 license:
- Lenovo Group Limited

### Test date:
- Apr-2016

### Hardware

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Result</th>
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<tbody>
<tr>
<td>410.bwaves</td>
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<td>232</td>
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</table>

### Software

- Operating System: SUSE Linux Enterprise Server 12 SP1 (x86_64)  
  Kernel 3.12.49-11-default
- Compiler: C/C++: Version 16.0.0.101 of Intel C++ Studio XE for Linux
- Autoparallel: Yes
- File System: xfs
- System State: Run level 3 (multi-user)
- Base Pointers: 32-bit
- Peak Pointers: 32/64-bit

### SPECfp®2006 = 115

### SPECfp_base2006 = 109
### Lenovo Flex System x240 M5 (2.40 GHz, Intel Xeon E5-2683 v4)

**CPU2006 license:** 9017  
**Test sponsor:** Lenovo Group Limited  
**Tested by:** Lenovo Group Limited  
**Test date:** Apr-2016  
**Hardware Availability:** Mar-2016  
**Software Availability:** Dec-2015

#### L3 Cache: 40 MB I+D on chip per chip  
#### Other Cache: None  
#### Memory: 256 GB (16 x 16 GB 2Rx4 PC4-2400T-R)  
#### Disk Subsystem: 2 x 300 GB 10000 RPM SAS, RAID 0  
#### Other Hardware: None  
#### Other Software: None

---

### Results Table

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<th>Seconds</th>
<th>Ratio</th>
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</tr>
</tbody>
</table>

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

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### Operating System Notes

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

---

### Platform Notes

**BIOS Configuration:**  
- Operating Mode set to Maximum Performance  
- Intel Hyperthreading set to Disabled  
- COD Preference set to Disable  

Sysinfo program /home/cpu2006-1.2-ic16.0/config/sysinfo.rev6914  
$Rev: 6914 $ $Date:: 2014-06-25 #$ e3fbb8667b5a285932ceab81e28219e1  

This section contains SUT (System Under Test) info as seen by some common utilities. To remove or add to this section, see: Continued on next page

---

Standard Performance Evaluation Corporation  
info@spec.org  
http://www.spec.org/
Lenovo Group Limited
Lenovo Flex System x240 M5
(2.40 GHz, Intel Xeon E5-2683 v4)

SPECfp2006 = 115
SPECfp_base2006 = 109

CPU2006 license: 9017
Test sponsor: Lenovo Group Limited
Test date: Apr-2016
Tested by: Lenovo Group Limited
Hardware Availability: Mar-2016
Software Availability: Dec-2015

Platform Notes (Continued)

From /proc/cpuinfo
   model name : Intel(R) Xeon(R) CPU E5-2683 v4 @ 2.10GHz
   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
   caution.)
   cpu cores : 16
   siblings : 16
   physical 0: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
   physical 1: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
   cache size : 40960 KB

From /proc/meminfo
   MemTotal: 263828392 kB
   HugePages_Total: 0
   Hugepagesize: 2048 kB

From /etc/*release* /etc/*version*
   SuSE-release:
   SUSE Linux Enterprise Server 12 (x86_64)
   VERSION = 12
   PATCHLEVEL = 1
   # 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-SP1"
   VERSION_ID="12.1"
   PRETTY_NAME="SUSE Linux Enterprise Server 12 SP1"
   ID="sles"
   ANSI_COLOR="0;32"
   CPE_NAME="cpe:/o:suse:sles:12:sp1"

uname -a:
   (8d714a0) x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Apr 4 17:55

SPEC is set to: /home/cpu2006-1.2-ic16.0
Filesystem Type  Size Used Avail Use% Mounted on
   /dev/sda4 xfs 515G 7.0G 508G 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.

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Platform Notes (Continued)

BIOS LENOVO -[C4E123H-2.10]- 03/25/2016
Memory:
16x Hynix HMA42GR7AFR4N-UH 16 GB 2 rank 2400 MHz
8x NO DIMM Unknown

(End of data from sysinfo program)

General Notes

Environment variables set by runspec before the start of the run:
KMP_AFFINITY = "granularity=fine,compact"
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 = "32"

Binaries compiled on a system with 1x Intel Core i5-4670K CPU + 32GB
memory using RedHat EL 7.1
Transparent Huge Pages disabled with:
echo never > /sys/kernel/mm/transparent_hugepage/enabled

Base Compiler Invocation

C benchmarks:
  icc   -m64

C++ benchmarks:
  icpc  -m64

Fortran benchmarks:
  ifort -m64

Benchmarks using both Fortran and C:
  icc   -m64 ifort -m64

Base Portability Flags

410.bwaves: -DSPEC_CPU_LP64
416.gamess: -DSPEC_CPU_LP64
  -DSPEC_CPU_LP64
433.milc:  -DSPEC_CPU_LP64
434.zeusmp: -DSPEC_CPU_LP64
  -nofor_main
435.gromacs: -DSPEC_CPU_LP64
  -nofor_main
436.cactusADM: -DSPEC_CPU_LP64
  -nofor_main
437.leslie3d: -DSPEC_CPU_LP64
444.namd:   -DSPEC_CPU_LP64
447.dealII:  -DSPEC_CPU_LP64
450.soplex:  -DSPEC_CPU_LP64

Continued on next page
Lenovo Group Limited

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Test date: Apr-2016
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Base Portability Flags (Continued)

- 453.povray: -DSPEC_CPU_LP64
- 454.calculix: -DSPEC_CPU_LP64 -nofor_main
- 459.GemsFDTD: -DSPEC_CPU_LP64
- 465.tonto: -DSPEC_CPU_LP64
- 470.lbm: -DSPEC_CPU_LP64
- 481.wrf: -DSPEC_CPU_LP64 -DSPEC_CPU_CASE_FLAG -DSPEC_CPU_LINUX
- 482.sphinx3: -DSPEC_CPU_LP64

Base Optimization Flags

C benchmarks:
- -xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -opt-prefetch
- -ansi-alias

C++ benchmarks:
- -xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch -ansi-alias

Fortran benchmarks:
- -xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -opt-prefetch

Benchmarks using both Fortran and C:
- -xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -opt-prefetch
- -ansi-alias

Peak Compiler Invocation

C benchmarks:
- icc -m64

C++ benchmarks:
- icpc -m64

Fortran benchmarks:
- ifort -m64

Benchmarks using both Fortran and C:
- icc -m64 ifort -m64

Peak Portability Flags

Same as Base Portability Flags
Lenovo Group Limited
Lenovo Flex System x240 M5
(2.40 GHz, Intel Xeon E5-2683 v4)

SPEC CFP2006 Result

SPECfp2006 = 115

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Hardware Availability: Mar-2016
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Peak Optimization Flags

C benchmarks:

433.milc: basepeak = yes
470.lbm: basepeak = yes
482.sphinx3: basepeak = yes

C++ benchmarks:

444.namd: -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) -fno-alias
                        -auto-ilp32
447.dealII: basepeak = yes
450.soplex: basepeak = yes
453.povray: -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
                        -ansi-alias

Fortran benchmarks:

410.bwaves: basepeak = yes
416.gamess: -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) -unroll2
                        -inline-level=0 -scalar-rep-
434.zeusmp: basepeak = yes
437.leslie3d: basepeak = yes
459.GemsFDTD: -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) -unroll2
                        -inline-level=0 -opt-prefetch -parallel
465.tonto: -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) -inline-calloc
                        -opt-malloc-options=3 -auto -unroll4

Benchmarks using both Fortran and C:

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**Peak Optimization Flags (Continued)**

435.gromacs: basepeak = yes

436.cactusADM: basepeak = yes

454.calculix: -xCORE-AVX2 -ipo -O3 -no-prec-div -auto-ilp32 -ansi-alias

481.wrf: basepeak = yes

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

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

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For other inquiries, please contact webmaster@spec.org.

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