SPEC® CFP2006 Result
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Lenovo Group Limited

Lenovo System x3950 X6
(Intel Xeon E7-8894 v4, 2.40 GHz)

$SPECfp^{®}2006 =$ Not Run

$SPECfp\_base2006 =$ 118

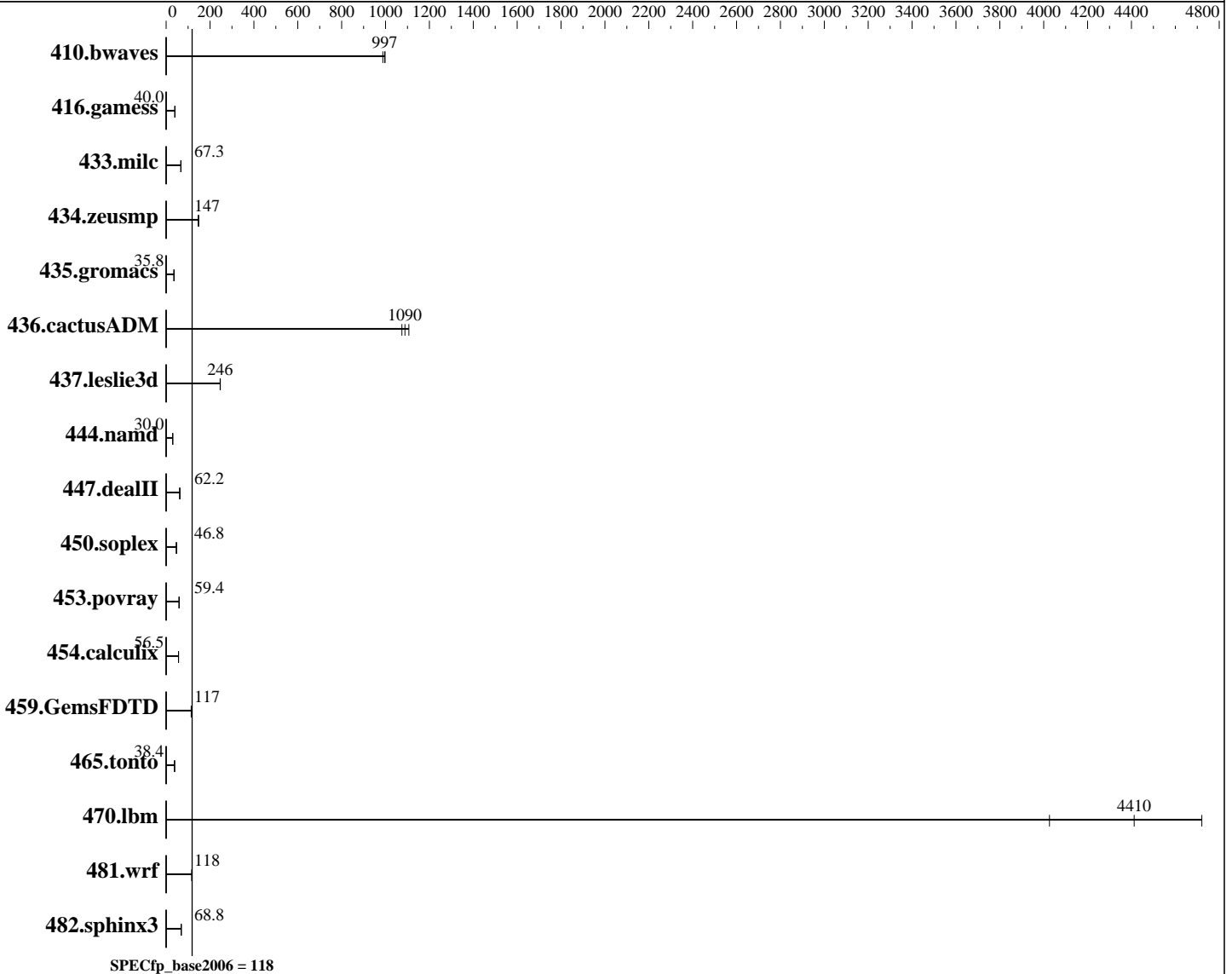|	
CPU2006 license: 9017	**Test date:** Jan-2017
Test sponsor: Lenovo Group Limited	**Hardware Availability:** Feb-2017
Tested by: Lenovo Group Limited	**Software Availability:** Sep-2016

Results graph (scale 0 to 4800):

- 410.bwaves: 997
- 416.gamess: 40.0
- 433.milc: 67.3
- 434.zeusmp: 147
- 435.gromacs: 35.8
- 436.cactusADM: 1090
- 437.leslie3d: 246
- 444.namd: 30.0
- 447.dealII: 62.2
- 450.soplex: 46.8
- 453.povray: 59.4
- 454.calculix: 56.5
- 459.GemsFDTD: 117
- 465.tonto: 38.4
- 470.lbm: 4410
- 481.wrf: 118
- 482.sphinx3: 68.8

SPECfp_base2006 = 118

Hardware

CPU Name:	Intel Xeon E7-8894 v4
CPU Characteristics:	Intel Turbo Boost Technology up to 3.40 GHz
CPU MHz:	2400
FPU:	Integrated
CPU(s) enabled:	192 cores, 8 chips, 24 cores/chip
CPU(s) orderable:	4,8 chips
Primary Cache:	32 KB I + 32 KB D on chip per core
Secondary Cache:	256 KB I+D on chip per core

Continued on next page

Software

Operating System:	SUSE Linux Enterprise Server 12 SP1 (x86_64) Kernel 3.12.49-11-default
Compiler:	C/C++: Version 17.0.0.098 of Intel C/C++ Compiler for Linux; Fortran: Version 17.0.0.098 of Intel Fortran Compiler for Linux
Auto Parallel:	Yes
File System:	btrfs
System State:	Run level 3 (multi-user)

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L3 Cache:	60 MB I+D on chip per chip	Base Pointers:	64-bit
Other Cache:	None	Peak Pointers:	Not Applicable
Memory:	1 TB (64 x 16 GB 2Rx4 PC4-2133P-R, running at 1600 MHz)	Other Software:	None
Disk Subsystem:	1 x 800 GB SATA SSD		
Other Hardware:	None		

Results Table

Benchmark	Base						Peak					
	Seconds	**Ratio**	**Seconds**	**Ratio**	**Seconds**	**Ratio**	**Seconds**	**Ratio**	**Seconds**	**Ratio**	**Seconds**	**Ratio**
410.bwaves	13.6	998	13.8	988	**13.6**	**997**						
416.gamess	**490**	**40.0**	491	39.8	489	40.0						
433.milc	137	67.2	**136**	**67.3**	136	67.5						
434.zeusmp	62.2	146	**61.9**	**147**	61.4	148						
435.gromacs	199	35.9	199	35.8	**199**	**35.8**						
436.cactusADM	10.8	1110	11.1	1070	**11.0**	**1090**						
437.leslie3d	**38.1**	**246**	38.2	246	38.0	247						
444.namd	268	30.0	268	30.0	**268**	**30.0**						
447.dealII	184	62.2	**184**	**62.2**	184	62.2						
450.soplex	178	46.8	**178**	**46.8**	178	46.8						
453.povray	91.4	58.2	**89.5**	**59.4**	88.5	60.1						
454.calculix	146	56.5	146	56.6	**146**	**56.5**						
459.GemsFDTD	90.6	117	**90.8**	**117**	93.0	114						
465.tonto	258	38.2	**257**	**38.4**	256	38.4						
470.lbm	**3.11**	**4410**	3.41	4030	2.91	4720						
481.wrf	95.9	116	94.2	119	**94.7**	**118**						
482.sphinx3	284	68.6	**283**	**68.8**	283	69.0						

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

Operating System Notes

```
Stack size set to unlimited using "ulimit -s unlimited"
Transparent Huge Pages disabled with:
echo never > /sys/kernel/mm/transparent_hugepage/enabled
```

Platform Notes

```
BIOS configuration:
Memory Mode set to Independent
Operating Mode set to Maximum Performance
Hyper-Threading set to Disable
 Sysinfo program /home/cpu2006-1.2-ic17.0/config/sysinfo.rev6993
 Revision 6993 of 2015-11-06 (b5e8d4b4eb51ed28d7f98696cbe290c1)
 running on Draco-8S Sun Jan 22 08:05:36 2017
```

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Platform Notes (Continued)

```
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 E7-8894 v4 @ 2.40GHz
      8 "physical id"s (chips)
      192 "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 : 24
      siblings  : 24
      physical 0: cores 0 1 2 3 4 5 8 9 10 11 12 13 16 17 18 19 20 21 24 25 26
      27 28 29
      physical 1: cores 0 1 2 3 4 5 8 9 10 11 12 13 16 17 18 19 20 21 24 25 26
      27 28 29
      physical 2: cores 0 1 2 3 4 5 8 9 10 11 12 13 16 17 18 19 20 21 24 25 26
      27 28 29
      physical 3: cores 0 1 2 3 4 5 8 9 10 11 12 13 16 17 18 19 20 21 24 25 26
      27 28 29
      physical 4: cores 0 1 2 3 4 5 8 9 10 11 12 13 16 17 18 19 20 21 24 25 26
      27 28 29
      physical 5: cores 0 1 2 3 4 5 8 9 10 11 12 13 16 17 18 19 20 21 24 25 26
      27 28 29
      physical 6: cores 0 1 2 3 4 5 8 9 10 11 12 13 16 17 18 19 20 21 24 25 26
      27 28 29
      physical 7: cores 0 1 2 3 4 5 8 9 10 11 12 13 16 17 18 19 20 21 24 25 26
      27 28 29
   cache size : 61440 KB

From /proc/meminfo
   MemTotal:       1058550028 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"
```

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Platform Notes (Continued)

```
        CPE_NAME="cpe:/o:suse:sles:12:sp1"

  uname -a:
     Linux Draco-8S 3.12.49-11-default #1 SMP Wed Nov 11 20:52:43 UTC 2015
     (8d714a0) x86_64 x86_64 x86_64 GNU/Linux

  run-level 3 Jan 22 05:32

  SPEC is set to: /home/cpu2006-1.2-ic17.0
     Filesystem      Type   Size  Used Avail Use% Mounted on
     /dev/sda2       btrfs  744G   30G  710G   5% /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 -[A9E135LUS-3.11]- 11/18/2016
   Memory:
   47x Hynix HMA42GR7MFR4N-TF 16 GB 2 rank 2133 MHz, configured at 1600 MHz
   17x Hynix HMA42GR7MFR4N-TFTD 16 GB 2 rank 2133 MHz, configured at 1600 MHz
   128x 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-ic17.0/libs/32:/home/cpu2006-1.2-ic17.0/libs/64:/home/cpu2006-1.2-ic17.0/sh10.2"
OMP_NUM_THREADS = "192"

 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 -m64
```

C++ benchmarks:
```
    icpc -m64
```

Fortran benchmarks:
```
    ifort -m64
```

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

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Base Portability Flags

```
 410.bwaves: -DSPEC_CPU_LP64
 416.gamess: -DSPEC_CPU_LP64
   433.milc: -DSPEC_CPU_LP64
 434.zeusmp: -DSPEC_CPU_LP64
 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
  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 -qopt-prefetch
```

C++ benchmarks:

```
-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch
```

Fortran benchmarks:

```
-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -qopt-prefetch
```

Benchmarks using both Fortran and C:

```
-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -qopt-prefetch
```

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-Flags-V1.2-BDW-D.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-Flags-V1.2-BDW-D.xml

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

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