Lenovo Group Limited

Lenovo System x3850 X6
(Intel Xeon E7-4820 v3, 1.90 GHz)

SPECint\_rate2006 = 1210
SPECint\_rate Base2006 = 1160

CPU2006 license: 9017
Test sponsor: Lenovo Group Limited
Tested by: Lenovo Group Limited

Test date: Jun-2015
Hardware Availability: Jul-2015
Software Availability: Oct-2014

400.perlbench
401.bzip2
403.gcc
429.mcf
445.gobmk
456.hmmer
458.sjeng
462.libquantum
464.h264ref
471.omnetpp
473.astar
483.xalancbmk

Hardware
CPU Name: Intel Xeon E7-4820 v3
CPU Characteristics:
CPU MHz: 1900
FPU: Integrated
CPU(s) enabled: 40 cores, 4 chips, 10 cores/chip, 2 threads/core
CPU(s) orderable: 2,4 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: 25 MB I+D on chip per chip
Other Cache: None
Memory: 1 TB (64 x 16 GB 2Rx4 PC4-2133P-R, running at 1333 MHz)
Disk Subsystem: 1 x 400 GB SSD
Other Hardware: None

Software
Operating System: SUSE Linux Enterprise Server 12 (x86_64) 3.12.28-4-default
Compiler: C/C++: Version 15.0.0.090 of Intel C++ Studio XE for Linux
Auto Parallel: No
File System: xfs
System State: Run level 3 (multi-user)
Base Pointers: 32-bit
Peak Pointers: 32/64-bit
Other Software: Microquill SmartHeap V10.0
### Lenovo Group Limited

**Lenovo System x3850 X6**  
(Intel Xeon E7-4820 v3, 1.90 GHz)

- **CPU2006 license:** 9017  
- **Test sponsor:** Lenovo Group Limited  
- **Tested by:** Lenovo Group Limited

**SPECint_rate2006 = 1210**  
**SPECint_rate_base2006 = 1160**

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Copies</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Base</td>
<td></td>
<td></td>
<td>Peak</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>400.perlbench</td>
<td>80</td>
<td>938</td>
<td>833</td>
<td>940</td>
<td>832</td>
<td>936</td>
<td>835</td>
</tr>
<tr>
<td>401.bzip2</td>
<td>80</td>
<td>1408</td>
<td>548</td>
<td>1406</td>
<td>549</td>
<td>1415</td>
<td>546</td>
</tr>
<tr>
<td>403.gcc</td>
<td>80</td>
<td>731</td>
<td>881</td>
<td>732</td>
<td>880</td>
<td>732</td>
<td>880</td>
</tr>
<tr>
<td>429.mcf</td>
<td>80</td>
<td>478</td>
<td>1520</td>
<td>482</td>
<td>1510</td>
<td>479</td>
<td>1520</td>
</tr>
<tr>
<td>445.gobmk</td>
<td>80</td>
<td>1067</td>
<td>786</td>
<td>1068</td>
<td>786</td>
<td>1068</td>
<td>786</td>
</tr>
<tr>
<td>456.hmmer</td>
<td>80</td>
<td>433</td>
<td>1720</td>
<td>434</td>
<td>1720</td>
<td>434</td>
<td>1720</td>
</tr>
<tr>
<td>458.sjeng</td>
<td>80</td>
<td>1168</td>
<td>829</td>
<td>1170</td>
<td>827</td>
<td>1168</td>
<td>829</td>
</tr>
<tr>
<td>462.libquantum</td>
<td>80</td>
<td>136</td>
<td>12200</td>
<td>136</td>
<td>12200</td>
<td>136</td>
<td>12200</td>
</tr>
<tr>
<td>464.h264ref</td>
<td>80</td>
<td>1268</td>
<td>1300</td>
<td>1310</td>
<td>1350</td>
<td>1276</td>
<td>1390</td>
</tr>
<tr>
<td>471.omnetpp</td>
<td>80</td>
<td>836</td>
<td>598</td>
<td>833</td>
<td>600</td>
<td>834</td>
<td>600</td>
</tr>
<tr>
<td>473.astar</td>
<td>80</td>
<td>865</td>
<td>649</td>
<td>861</td>
<td>653</td>
<td>861</td>
<td>652</td>
</tr>
<tr>
<td>483.xalancbmk</td>
<td>80</td>
<td>426</td>
<td>1300</td>
<td>426</td>
<td>1300</td>
<td>426</td>
<td>1300</td>
</tr>
</tbody>
</table>

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"

### Platform Notes

Operating Mode set to Custom in BIOS  
Cstates disabled in BIOS  
Sysinfo program /cpu2006.1.2/config/sysinfo.rev6914  
$Rev: 6914 $ $Date:: 2014-06-25 #$ e3fbb8667b5a285932ceab81e28219e1  
running on linux-w3yn Fri Jun 12 11:03:35 2015

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 E7-4820 v3 @ 1.90GHz  
4 "physical id"s (chips)  
80 "processors"  
cores, siblings (Caution: counting these is hw and system dependent. The following excerpts from /proc/cpuinfo might not be reliable. Use with caution.)
Lenovo Group Limited

Lenovo System x3850 X6
(Intel Xeon E7-4820 v3, 1.90 GHz)

SPECint_rate2006 = 1210
SPECint_rate_base2006 = 1160

CPU2006 license: 9017
Test sponsor: Lenovo Group Limited
Tested by: Lenovo Group Limited

Lenovo Group Limited

(Continued)

Platform Notes (Continued)

cpu cores : 10
siblings : 20
physical 0: cores 0 1 2 3 4 8 9 10 11 12
physical 1: cores 0 1 2 3 4 8 9 10 11 12
physical 2: cores 0 1 2 3 4 8 9 10 11 12
physical 3: cores 0 1 2 3 4 8 9 10 11 12
cache size : 25600 KB

From /proc/meminfo
MemTotal: 1058529820 kB
HugePages_Total: 0
Hugepagesize: 2048 kB

/usr/bin/lsb_release -d
SUSE Linux Enterprise Server 12

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 linux-w3yn 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 5 Jun 12 10:33

SPEC is set to: /home/cpu2006
Filesystem Type Size Used Avail Use% Mounted on
/dev/sda4 xfs 331G 276G 55G 84% /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 -[A9E121SUS-1.00] - 03/13/2015
Memory:
64x Hynix HMA42GR7MFR4N-TF 16 GB 2 rank 2133 MHz, configured at 1333 MHz

Continued on next page
Lenovo Group Limited

Lenovo System x3850 X6
(Intel Xeon E7-4820 v3, 1.90 GHz)

SPECint_rate2006 = 1210
SPECint_rate_base2006 = 1160

CPU2006 license: 9017
Test sponsor: Lenovo Group Limited
Tested by: Lenovo Group Limited

Test date: Jun-2015
Hardware Availability: Jul-2015
Software Availability: Oct-2014

Platform Notes (Continued)

32x NO DIMM Unknown

(End of data from sysinfo program)

General Notes

Environment variables set by runspec before the start of the run:
LD_LIBRARY_PATH = "-/home/cpu2006/libs/32:/home/cpu2006/libs/64:/home/cpu2006/sh"

Binaries compiled on a system with 1x Core i5-4670K CPU + 16GB
memory using RedHat EL 7.0
Transparent Huge Pages enabled with:
echo always > /sys/kernel/mm/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 -L/opt/intel/composer_xe_2015/lib/ia32

C++ benchmarks:
  icpc -m32 -L/opt/intel/composer_xe_2015/lib/ia32

Base Portability Flags

400.perlbench: -DSPEC_CPU_LINUX_IA32
462.libquantum: -DSPEC_CPU_LINUX
483.xalancbmk: -DSPEC_CPU_LINUX

Base Optimization Flags

C benchmarks:
  -xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch
  -opt-mem-layout-trans=3

C++ benchmarks:
  -xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch
  -opt-mem-layout-trans=3 -Wl,-z,muldefs -L/sh -lsmartheap
SPEC CINT2006 Result

Lenovo Group Limited
Lenovo System x3850 X6
(Intel Xeon E7-4820 v3, 1.90 GHz)

SPECint_rate2006 = 1210
SPECint_rate_base2006 = 1160

CPU2006 license: 9017
Test date: Jun-2015
Test sponsor: Lenovo Group Limited
Hardware Availability: Jul-2015
Tested by: Lenovo Group Limited
Software Availability: Oct-2014

Base Other Flags

C benchmarks:
403.gcc: -Dalloca=_alloca

Peak Compiler Invocation

C benchmarks (except as noted below):
icc -m32 -L/opt/intel/composer_xe_2015/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/composer_xe_2015/lib/ia32

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: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
-03(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)
-auto-ilp32
401.bzip2: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
-03(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)
-opt-prefetch -auto-ilp32 -ansi-alias
403.gcc: -xCORE-AVX2 -ipo -03 -no-prec-div

Continued on next page
Lenovo Group Limited
Lenovo System x3850 X6
(Intel Xeon E7-4820 v3, 1.90 GHz)

**SPECint_rate2006 = 1210**
**SPECint_rate_base2006 = 1160**

**CPU2006 license:** 9017
**Test date:** Jun-2015
**Test sponsor:** Lenovo Group Limited
**Hardware Availability:** Jul-2015
**Tested by:** Lenovo Group Limited
**Software Availability:** Oct-2014

---

### Peak Optimization Flags (Continued)

#### 429.mcf: basepeak = yes

```
445.gobmk: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -prof-use(pass 2)
-ansi-alias -opt-mem-layout-trans=3
```

#### 456.hmmer: -xCORE-AVX2 -ipo -O3 -no-prec-div -unroll2 -auto-ilp32

```
458.sjeng: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
-O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)
-unroll4 -auto-ilp32
```

#### 462.libquantum: basepeak = yes

```
464.h264ref: -xCORE-AVX2(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: -xCORE-AVX2(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-ic15.0-official-linux64.html

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

http://www.spec.org/cpu2006/flags/Intel-ic15.0-official-linux64.xml
Lenovo Group Limited

Lenovo System x3850 X6
(Intel Xeon E7-4820 v3, 1.90 GHz)

SPECint_rate2006 = 1210
SPECint_rate_base2006 = 1160

CPU2006 license: 9017
Test date: Jun-2015
Test sponsor: Lenovo Group Limited
Hardware Availability: Jul-2015
Tested by: Lenovo Group Limited
Software Availability: Oct-2014

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.
Originally published on 10 August 2015.