## Lenovo Group Limited

**Lenovo System x3850 X6**  
*(Intel Xeon E7-8894 v4, 2.40 GHz)*

### CPU2006 license: 9017

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

| SPECint_rate_base2006 | 1840 |

#### 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:** 48 cores, 2 chips, 24 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:** 60 MB I+D on chip per chip  
- **Memory:** 256 GB (16 x 16 GB 2Rx4 PC4-2133P-R, running at 1600 MHz)  
- **Disk Subsystem:** 1 x 800 GB SATA SSD  
- **Other Hardware:** None

#### 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  
- **Auto Parallel:** No  
- **File System:** xfs  
- **System State:** Run level 3 (multi-user)  
- **Base Pointers:** 32-bit  
- **Peak Pointers:** Not Applicable  
- **Other Software:** Microquill SmartHeap V10.2
Lenovo Group Limited

Lenovo System x3850 X6
(Intel Xeon E7-8894 v4, 2.40 GHz)

**SPEC CINT2006 Result**

**Lenovo Group Limited**

**SPECint_rate2006 = Not Run**

**SPECint_rate_base2006 = 1840**

**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 Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Copies</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Base</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>400.perlbench</td>
<td>96</td>
<td>607</td>
<td>1540</td>
<td>606</td>
<td>1550</td>
</tr>
<tr>
<td>401.bzip2</td>
<td>96</td>
<td>1010</td>
<td>917</td>
<td>1016</td>
<td>911</td>
</tr>
<tr>
<td>403.gcc</td>
<td>96</td>
<td>594</td>
<td>1300</td>
<td>597</td>
<td>1290</td>
</tr>
<tr>
<td>429.mcf</td>
<td>96</td>
<td>411</td>
<td>2130</td>
<td>411</td>
<td>2130</td>
</tr>
<tr>
<td>445.gobmk</td>
<td>96</td>
<td>722</td>
<td>1390</td>
<td>723</td>
<td>1390</td>
</tr>
<tr>
<td>456.hmmer</td>
<td>96</td>
<td>335</td>
<td>2670</td>
<td>336</td>
<td>2670</td>
</tr>
<tr>
<td>458.sjeng</td>
<td>96</td>
<td>773</td>
<td>1500</td>
<td>773</td>
<td>1500</td>
</tr>
<tr>
<td>462.libquantum</td>
<td>96</td>
<td>97.2</td>
<td>20500 97.4</td>
<td>20400 97.2</td>
<td>20500</td>
</tr>
<tr>
<td>464.h264ref</td>
<td>96</td>
<td>881</td>
<td>2410</td>
<td>867</td>
<td>2450</td>
</tr>
<tr>
<td>471.omnetpp</td>
<td>96</td>
<td>794</td>
<td>755</td>
<td>795</td>
<td>755</td>
</tr>
<tr>
<td>473.astar</td>
<td>96</td>
<td>666</td>
<td>1010</td>
<td>665</td>
<td>1010</td>
</tr>
<tr>
<td>483.xalancbmk</td>
<td>96</td>
<td>365</td>
<td>1810</td>
<td>365</td>
<td>1820</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Peak</strong></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>400.perlbench</td>
<td>96</td>
<td>606</td>
<td>1550</td>
<td>606</td>
<td>1550</td>
</tr>
<tr>
<td>401.bzip2</td>
<td>96</td>
<td>1015</td>
<td>913</td>
<td>1015</td>
<td>913</td>
</tr>
<tr>
<td>403.gcc</td>
<td>96</td>
<td>598</td>
<td>1290</td>
<td>598</td>
<td>1290</td>
</tr>
<tr>
<td>429.mcf</td>
<td>96</td>
<td>411</td>
<td>2130</td>
<td>411</td>
<td>2130</td>
</tr>
<tr>
<td>445.gobmk</td>
<td>96</td>
<td>723</td>
<td>1390</td>
<td>723</td>
<td>1390</td>
</tr>
<tr>
<td>456.hmmer</td>
<td>96</td>
<td>336</td>
<td>2670</td>
<td>336</td>
<td>2670</td>
</tr>
<tr>
<td>458.sjeng</td>
<td>96</td>
<td>773</td>
<td>1500</td>
<td>773</td>
<td>1500</td>
</tr>
<tr>
<td>462.libquantum</td>
<td>96</td>
<td>97.4</td>
<td>20400</td>
<td>97.2</td>
<td>20500</td>
</tr>
<tr>
<td>464.h264ref</td>
<td>96</td>
<td>865</td>
<td>2460</td>
<td>865</td>
<td>2460</td>
</tr>
<tr>
<td>471.omnetpp</td>
<td>96</td>
<td>794</td>
<td>756</td>
<td>794</td>
<td>756</td>
</tr>
<tr>
<td>473.astar</td>
<td>96</td>
<td>666</td>
<td>1010</td>
<td>666</td>
<td>1010</td>
</tr>
<tr>
<td>483.xalancbmk</td>
<td>96</td>
<td>364</td>
<td>1820</td>
<td>364</td>
<td>1820</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"  
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`

## Platform Notes

BIOS configuration:  
Memory Mode set to Independent  
Operating Mode set to Maximum Performance  
DCU Streamer Prefetcher set to Disable  
Sysinfo program /home/cpu2006-1.2-ic17.0/config/sysinfo.rev6993  
Revision 6993 of 2015-11-06 (b5e8d4beb51ed28d7f98696cbe290c1)  
running on Draco-SLES12SP1 Thu Jan 19 08:44:00 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

---

Standard Performance Evaluation Corporation  
info@spec.org  
http://www.spec.org/
Lenovo Group Limited
Lenovo System x3850 X6 (Intel Xeon E7-8894 v4, 2.40 GHz)

SPECint_rate2006 = Not Run
SPECint_rate_base2006 = 1840

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

Platform Notes (Continued)

model name : Intel(R) Xeon(R) CPU E7-8894 v4 @ 2.40GHz
2 "physical id"s (chips)
96 "processors"
cores, siblings (Caution: counting these is hw and system dependent. The
following excerpts from /proc/cpuinfo might not be reliable. Use with
cautions.)
cpu cores : 24
siblings : 48
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
cache size : 61440 KB

From /proc/meminfo
MemTotal: 264394596 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:
Linux Draco-SLES12SP1 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 19 08:42
SPEC is set to: /home/cpu2006-1.2-ic17.0
Filesystem Type Size Used Avail Use% Mounted on
/dev/sdb4 xfs 701G 221G 481G 32% /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.

Continued on next page
**Lenovo Group Limited**  
**Lenovo System x3850 X6**  
(Intel Xeon E7-8894 v4, 2.40 GHz)

<table>
<thead>
<tr>
<th>SPECint_rate2006</th>
<th>Not Run</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECint_rate_base2006</td>
<td>1840</td>
</tr>
</tbody>
</table>

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

### Platform Notes (Continued)

- **BIOS** LENOVO -[A9E137KUS-3.20]- 12/13/2016
- **Memory:**
  - 15x Hynix HMA42GR7MF4N-TF 16 GB 2 rank 2133 MHz, configured at 1600 MHz
  - 1x Hynix HMA42GR7MF4N-TFTD 16 GB 2 rank 2133 MHz, configured at 1600 MHz
  - 80x 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/cpu2006-1.2-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**

**runspec command invoked through numactl i.e.**:

```
numactl --interleave=all runspec <etc>
```

### 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
```

(Continued on next page)
Lenovo Group Limited

Lenovo System x3850 X6
(Intel Xeon E7-8894 v4, 2.40 GHz)

SPECint_rate2006 = Not Run
SPECint_rate_base2006 = 1840

<table>
<thead>
<tr>
<th>CPU2006 license: 9017</th>
<th>Test date: Jan-2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test sponsor: Lenovo Group Limited</td>
<td>Hardware Availability: Feb-2017</td>
</tr>
<tr>
<td>Tested by: Lenovo Group Limited</td>
<td>Software Availability: Sep-2016</td>
</tr>
</tbody>
</table>

**Base Optimization Flags (Continued)**

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

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-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

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.
Report generated on Tue Feb 7 17:01:03 2017 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 7 February 2017.