Cisco Systems
Cisco UCS B420 M4 (Intel Xeon E5-4627 v3, 2.60 GHz)

<table>
<thead>
<tr>
<th>SPECint_rate2006</th>
<th>SPECint_rate_base2006</th>
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<tbody>
<tr>
<td>1610</td>
<td>1560</td>
</tr>
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</table>

CPU2006 license: 9019
Test sponsor: Cisco Systems
Tested by: Cisco Systems

Hardware
- CPU Name: Intel Xeon E5-4627 v3
- CPU Characteristics: Intel Turbo Boost Technology up to 3.20 GHz
- CPU MHz: 2600
- FPU: Integrated
- CPU(s) enabled: 40 cores, 4 chips, 10 cores/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: 25 MB I+D on chip per chip
- Memory: 512 GB (32 x 16 GB 2Rx4 PC4-2133P-R)
- Other Cache: None
- Disk Subsystem: 1 x 300 GB SAS, 15K RPM

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

Test date: Jul-2015
Hardware Availability: Jun-2015
Software Availability: Nov-2014
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**Results Table**

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Copies</th>
<th>Seconds Base</th>
<th>Ratio</th>
<th>Seconds Peak</th>
<th>Ratio</th>
<th>Seconds Peak</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>400.perlbench</td>
<td>40</td>
<td>314</td>
<td>1240</td>
<td>315</td>
<td>1240</td>
<td>315</td>
<td>1240</td>
</tr>
<tr>
<td>401.bzip2</td>
<td>40</td>
<td>537</td>
<td>719</td>
<td>537</td>
<td>719</td>
<td>537</td>
<td>719</td>
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<tr>
<td>403.gcc</td>
<td>40</td>
<td>275</td>
<td>1170</td>
<td>280</td>
<td>1150</td>
<td>276</td>
<td>1170</td>
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<tr>
<td>429.mcf</td>
<td>40</td>
<td>170</td>
<td>2150</td>
<td>169</td>
<td>2160</td>
<td>169</td>
<td>2150</td>
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<tr>
<td>445.gobmk</td>
<td>40</td>
<td>439</td>
<td>956</td>
<td>439</td>
<td>956</td>
<td>439</td>
<td>956</td>
</tr>
<tr>
<td>454.hmmer</td>
<td>40</td>
<td>170</td>
<td>2200</td>
<td>170</td>
<td>2200</td>
<td>170</td>
<td>2200</td>
</tr>
<tr>
<td>458.sjeng</td>
<td>40</td>
<td>435</td>
<td>1110</td>
<td>435</td>
<td>1110</td>
<td>435</td>
<td>1110</td>
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<tr>
<td>462.libquantum</td>
<td>40</td>
<td>50.4</td>
<td>16400</td>
<td>50.4</td>
<td>16500</td>
<td>50.4</td>
<td>16400</td>
</tr>
<tr>
<td>464.h264ref</td>
<td>40</td>
<td>436</td>
<td>2030</td>
<td>437</td>
<td>2030</td>
<td>421</td>
<td>2100</td>
</tr>
<tr>
<td>471.omnetpp</td>
<td>40</td>
<td>327</td>
<td>765</td>
<td>327</td>
<td>763</td>
<td>321</td>
<td>778</td>
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<tr>
<td>473.astar</td>
<td>40</td>
<td>329</td>
<td>853</td>
<td>327</td>
<td>858</td>
<td>329</td>
<td>853</td>
</tr>
<tr>
<td>483.xalancbmk</td>
<td>40</td>
<td>150</td>
<td>1840</td>
<td>150</td>
<td>1840</td>
<td>150</td>
<td>1840</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**

BIOS Configuration:
CPU performance set to Enterprise
Power Technology set to Energy-Efficient
Energy Performance BIAS setting set to Balanced Performance
Memory RAS configuration set to Maximum Performance
LV DDR Mode set to Performance-mode
Sysinfo program /opt/cpu2006-1.2/config/sysinfo.rev6914
$Rev: 6914 $ $Date:: 2014-06-25 #$ e3fbb8667b5a285932ceab81e28219e1
running on linux-616o Fri Jul 17 17:03:54 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 E5-4627 v3 @ 2.60GHz
4 "physical id"s (chips)
SPEC CINT2006 Result

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Platform Notes (Continued)

40 "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 : 10
siblings : 10
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: 529335684 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 linux-616o 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 Jul 17 16:51

SPEC is set to: /opt/cpu2006-1.2

Filesystem Type Size Used Avail Use% Mounted on
/dev/sdc2 xfs 250G 11G 240G 5% /

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 Cisco Systems, Inc. B420M4.2.2.5.0.043020152304 04/30/2015
Memory:

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Platform Notes (Continued)

32x 0xCE00 M393A2G40DB0-CPB 16 GB 2 rank 2133 MHz
16x NO DIMM NO DIMM

(End of data from sysinfo program)

General Notes

Environment variables set by runspec before the start of the run:
LD_LIBRARY_PATH = "/opt/cpu2006-1.2/libs/32:/opt/cpu2006-1.2/libs/64:/opt/cpu2006-1.2/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
**Cisco Systems**

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### SPECint_rate2006

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**SPECint_rate_base2006 = 1560**

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### Base Other Flags

C benchmarks:

403.gcc: -Dalloca=_alloca

---

### Peak Compiler Invocation

C benchmarks (except as noted below):

```shell
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:

```shell
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:

```shell
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
```

```shell
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
```

```shell
403.gcc: -xCORE-AVX2 -ipo -03 -no-prec-div
```

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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
http://www.spec.org/cpu2006/flags/Cisco-Platform-Settings-V1.2-revC.20150812.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
http://www.spec.org/cpu2006/flags/Cisco-Platform-Settings-V1.2-revC.20150812.xml
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For other inquiries, please contact webmaster@spec.org.

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