Cisco Systems
Cisco UCS B420 M3 (Intel Xeon E5-4640 v2, 2.20 GHz)

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

CPU Name: Intel Xeon E5-4640 v2
CPU Characteristics: Intel Turbo Boost Technology up to 2.70 GHz
CPU MHz: 2200
FPU: Integrated
CPU(s) enabled: 40 cores, 4 chips, 10 cores/chip, 2 threads/core
CPU(s) orderable: 1,2,3,4 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: 20 MB I+D on chip per chip
Other Cache: None
Memory: 256 GB (32 x 8 GB 2Rx4 PC3-14900R-13, ECC)
Disk Subsystem: 1 X 300 GB 15000 RPM SAS
Other Hardware: None

Software
Operating System: Red Hat Enterprise Linux Server release 6.4 (Santiago)
Compiler: C/C++: Version 14.0.0.080 of Intel C++ Studio XE for Linux
Auto Parallel: No
File System: ext4
System State: Run level 3 (multi-user)
Base Pointers: 32-bit
Peak Pointers: 32/64-bit
Other Software: Microquill SmartHeap V10.0

Hardware

SPECint\_rate2006 = 1390
SPECint\_rate_base2006 = 1340

Test date: May-2014
Hardware Availability: Dec-2013
Software Availability: Sep-2013

Graph showing SPECint results for various benchmarks with CPU and memory usage details.

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Graph showing SPECint results for various benchmarks with CPU and memory usage details.
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| CPU2006 license: | 9019 |  
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**SPECint_rate2006** = 1390  
**SPECint_rate_base2006** = 1340

**Results Table**

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<th>Ratio</th>
<th>Base</th>
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<td><strong>752</strong></td>
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<tr>
<td>483.xalancbmk</td>
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<td>1400</td>
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<td><strong>1400</strong></td>
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<td>1410</td>
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<td>394</td>
<td>1400</td>
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<td><strong>1400</strong></td>
<td>393</td>
<td>1410</td>
<td></td>
<td></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**
Intel HT Technology = Enabled  
CPU performance set to HPC  
Power Technology set to Custom  
CPU Power State C6 set to Disabled  
CPU Power State C1 Enhanced set to Disabled  
Memory RAS configuration set to Maximum Performance  
DRAM Clock Throttling Set to Performance  
Sysinfo program /opt/cpu2006-1.2/config/sysinfo.rev6818  
$Rev: 6818 $ $Date:: 2012-07-17 #$ e86d102572650a6e4d596a3cee98f191 running on rhe16.4 Tue May 27 22:46:21 2014

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 E5-4640 v2 @ 2.20GHz

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Platform Notes (Continued)

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.)
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 : 20480 KB

From /proc/meminfo
MemTotal: 264496064 kB
HugePages_Total: 0
Hugepagesize: 2048 kB

/usr/bin/lsb_release -d
Red Hat Enterprise Linux Server release 6.4 (Santiago)

From /etc/*release* /etc/*version*
redhat-release: Red Hat Enterprise Linux Server release 6.4 (Santiago)
system-release: Red Hat Enterprise Linux Server release 6.4 (Santiago)

uname -a:
Linux rhel6.4 2.6.32-358.el6.x86_64 #1 SMP Tue Jan 29 11:47:41 EST 2013
x86_64 x86_64 x86_64 GNU/Linux

run-level 3 May 27 10:36

SPEC is set to: /opt/cpu2006-1.2

Filesystem Type Size Used Avail Use% Mounted on
/dev/sda1 ext4 275G 72G 189G 28% /

Additional information from dmidecode:
BIOS Cisco Systems, Inc. B420M3.2.2.1.8.042120142113 04/21/2014
Memory:
32x 0xAD00 HMT31GR7EFR4C-RD 8 GB 1600 MHz 2 rank
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 i7-860 CPU + 8GB
memory using RedHat EL 6.4

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Software Availability: Sep-2013

General Notes (Continued)

Transparent Huge Pages enabled with:
```bash
echo always > /sys/kernel/mm/redhat_transparent_hugepage/enabled
```

Filesystem page cache cleared with:
```bash
echo 1> /proc/sys/vm/drop_caches
```

runspec command invoked through numactl i.e.:
```bash
numactl --interleave=all runspec <etc>
```

Base Compiler Invocation

C benchmarks:
```bash
icc -m32
```

C++ benchmarks:
```bash
icpc -m32
```

Base Portability Flags

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

Base Optimization Flags

C benchmarks:
```bash
-xSSE4.2 -ipo -O3 -no-prec-div -opt-prefetch -opt-mem-layout-trans=3
```

C++ benchmarks:
```bash
-xSSE4.2 -ipo -O3 -no-prec-div -opt-prefetch -opt-mem-layout-trans=3
-Wl,-z,muldefs -L/sh -lsmartheap
```

Base Other Flags

C benchmarks:
```bash
403.gcc: -Dalloca=_alloca
```

Peak Compiler Invocation

C benchmarks (except as noted below):
```bash
icc -m32
```
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SPECint\_rate\_base2006 = 1340

CPU2006 license: 9019
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<tr>
<td>Hardware Availability:</td>
<td>Dec-2013</td>
</tr>
<tr>
<td>Software Availability:</td>
<td>Sep-2013</td>
</tr>
</tbody>
</table>

**Peak Compiler Invocation (Continued)**

```
400.perlbench: icc -m64
401.bzip2: icc -m64
456.hmmer: icc -m64
458.sjeng: icc -m64
```

C++ benchmarks:
```
icpc -m32
```

**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: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
-o3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)
-auto-ilp32
```
```
401.bzip2: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
-o3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)
-opt-prefetch -auto-ilp32 -ansi-alias
```
```
403.gcc: -xSSE4.2 -ipo -o3 -no-prec-div
```
```
429.mcf: basepeak = yes
```
```
445.gobmk: -xSSE4.2(pass 2) -prof-gen(pass 1) -prof-use(pass 2)
-ansi-alias -opt-mem-layout-trans=3
```
```
456.hmmer: -xSSE4.2 -ipo -o3 -no-prec-div -unroll2 -auto-ilp32
```
```
458.sjeng: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
-o3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)
-unroll4 -auto-ilp32
```

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## Cisco Systems

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**Test sponsor:** Cisco Systems

**Tested by:** Cisco Systems

**Test date:** May-2014

**Hardware Availability:** Dec-2013

**Software Availability:** Sep-2013

### Peak Optimization Flags (Continued)

```plaintext
462.libquantum: basepeak = yes
464.h264ref: -xSSE4.2(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: -xSSE4.2(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

```plaintext
C benchmarks:

403.gcc: -Dalloca=_alloca
```

The flags files that were used to format this result can be browsed at


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

- [http://www.spec.org/cpu2006/flags/Cisco-Platform-Settings-V1.2-revB.xml](http://www.spec.org/cpu2006/flags/Cisco-Platform-Settings-V1.2-revB.xml)

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

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