Cisco Systems

Cisco UCS C220 M3 (Intel Xeon E5-2640, 2.50 GHz)

<table>
<thead>
<tr>
<th>SPECint®2006</th>
<th>46.8</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECint_base2006</td>
<td>44.0</td>
</tr>
</tbody>
</table>

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

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<thead>
<tr>
<th>Test date:</th>
<th>Apr-2012</th>
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<tbody>
<tr>
<td>Hardware Availability:</td>
<td>Jun-2012</td>
</tr>
<tr>
<td>Software Availability:</td>
<td>Dec-2011</td>
</tr>
</tbody>
</table>

**Hardware**

- **CPU Name:** Intel Xeon E5-2640
- **CPU Characteristics:** Intel Turbo Boost Technology up to 3.0 GHz
- **CPU MHz:** 2500
- **FPU:** Integrated
- **CPU(s) enabled:** 12 cores, 2 chips, 6 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:** 15 MB I+D on chip per chip
- **Other Cache:** None
- **Memory:** 128 GB (16 x 8 GB 2Rx4 PC3-12800R-11, ECC, running at 1333 MHz and CL7)
- **Disk Subsystem:** 1 X 300 GB 10000 RPM SAS Disk
- **Other Hardware:** None

**Software**

- **Operating System:** Red Hat Enterprise Linux Server release 6.2 (Santiago)
- **Compiler:** C/C++ Version 12.1.3.293 of Intel C++ Studio XE for Linux
- **Auto Parallel:** Yes
- **File System:** ext4
- **System State:** Run level 3 (multi-user)
- **Base Pointers:** 32/64-bit
- **Peak Pointers:** 32/64-bit
- **Other Software:** Microquill SmartHeap V9.01
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Results Table

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<th>Benchmark</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
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<th>Ratio</th>
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<tbody>
<tr>
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<td>26.9</td>
<td>364</td>
<td>26.9</td>
<td>364</td>
<td>26.9</td>
<td>309</td>
<td>31.6</td>
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<tr>
<td>401.bzip2</td>
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<td>20.1</td>
<td>481</td>
<td>20.1</td>
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<td>20.1</td>
<td>472</td>
<td>20.4</td>
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<td>429.mcf</td>
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<td>59.0</td>
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<td>59.4</td>
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<td>58.8</td>
<td>155</td>
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<td>488</td>
<td>21.5</td>
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<td>21.5</td>
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<td>456.hmmer</td>
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<td>45.9</td>
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<td>45.6</td>
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<tr>
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<td>22.0</td>
<td>9.31</td>
<td>22.0</td>
<td>9.32</td>
<td>22.0</td>
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<td>22.0</td>
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<tr>
<td>464.h264ref</td>
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<td>40.6</td>
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<td>471.omnetpp</td>
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<td>26.2</td>
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<td>483.xalancbmk</td>
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<td>45.4</td>
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<td>45.7</td>
<td>152</td>
<td>45.3</td>
<td>145</td>
<td>47.4</td>
</tr>
</tbody>
</table>

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"

Platform Notes

BIOS Configuration:
Processor Power State C6 set to Disabled
Processor Power State C1 Enhanced set to Disabled
Power Technology set to Custom
Energy Performance set to Performance
DRAM Clock Throttling set to Performance
Sysinfo program /opt/cpu2006-1.2/config/sysinfo.rev6800
$Rev: 6800 $ $Date:: 2011-10-11 #$ 6f2ebdf5032aaa42e583f96b07f99d3
running on speccpu-rhel6.2 Thu Apr 5 16:35:23 2012

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 E5-2640 0 @ 2.50GHz
  2 "physical id"s (chips)
  12 "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 : 6
siblings : 6
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Platform Notes (Continued)

    physical 0: cores 0 1 2 3 4 5
    physical 1: cores 0 1 2 3 4 5
    cache size : 15360 KB

From /proc/meminfo
    MemTotal: 132103120 KB
    HugePages_Total: 0
    Hugepagesize: 2048 KB

/usr/bin/lsb_release -d
    Red Hat Enterprise Linux Server release 6.2 (Santiago)

From /etc/*release* /etc/*version*
    redhat-release: Red Hat Enterprise Linux Server release 6.2 (Santiago)
    system-release: Red Hat Enterprise Linux Server release 6.2 (Santiago)

uname -a:
    Linux speccpu-rhel6.2 2.6.32-220.el6.x86_64 #1 SMP Wed Nov 9 08:03:13 EST
    2011 x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Apr 5 15:22

SPEC is set to: /opt/cpu2006-1.2
    Filesystem Type Size Used Avail Use% Mounted on
    /dev/sda2 ext4 274G 10G 250G 4% /

Additional information from dmidecode:
    Memory:
    16x 0xCE00 M393B1K70DH0-YK0 8 GB 1600 MHz 1 rank

(End of data from sysinfo program)

General Notes

Environment variables set by runspec before the start of the run:
    KMP_AFFINITY = "granularity=fine,scatter"
    LD_LIBRARY_PATH = "/opt/cpu2006-1.2/libs/32:/opt/cpu2006-1.2/libs/64"
    OMP_NUM_THREADS = "12"
    Intel HT Technology = Disable

Binaries compiled on a system with 2 X Intel Xeon E5-2690 CPU + 128 GB memory using RHEL 6.2
Transparent Huge Pages enabled with:
    echo always > /sys/kernel/mm/redhat_transparent_hugepage/enabled
Filesystem page cache cleared with:
    echo 1> /proc/sys/vm/drop_caches
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Base Compiler Invocation

C benchmarks:
   icc  -m64

C++ benchmarks:
   icpc  -m64

Base Portability Flags

C benchmarks:
   400.perlbench: -DSPEC_CPU_LP64
   401.bzip2: -DSPEC_CPU_LP64
   403.gcc: -DSPEC_CPU_LP64
   429.mcf: -DSPEC_CPU_LP64
   445.gobmk: -DSPEC_CPU_LP64
   456.hmmer: -DSPEC_CPU_LP64
   458.sjeng: -DSPEC_CPU_LP64
   462.libquantum: -DSPEC_CPU_LP64
   464.h264ref: -DSPEC_CPU_LP64
   471.omnetpp: -DSPEC_CPU_LP64
   473.astar: -DSPEC_CPU_LP64
   483.xalancbmk: -DSPEC_CPU_LP64

C++ benchmarks:
   400.perlbench: -DSPEC_CPU_LP64
   401.bzip2: -DSPEC_CPU_LP64

Base Optimization Flags

C benchmarks:
   -xsse4.2 -ipo -O3 -no-prec-div -parallel -opt-prefetch -auto-p32

C++ benchmarks:
   -xsse4.2 -ipo -O3 -no-prec-div -opt-prefetch -auto-p32
   -Wl,-z,muldefs -L/smartheap -lsmartheap64

Base Other Flags

C benchmarks:
   403.gcc: -Dalloca=_alloca

Peak Compiler Invocation

C benchmarks (except as noted below):
   icc  -m64

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Peak Compiler Invocation (Continued)

400.perlbench: icc -m32
445.gobmk: icc -m32
464.h264ref: icc -m32

C++ benchmarks (except as noted below):
icpc -m32
473.astar: icpc -m64

Peak Portability Flags

400.perlbench: -DSPEC_CPU_LINUX_IA32
401.bzip2: -DSPEC_CPU_LP64
403.gcc: -DSPEC_CPU_LP64
429.mcf: -DSPEC_CPU_LP64
456.hmmer: -DSPEC_CPU_LP64
458.sjeng: -DSPEC_CPU_LP64
462.libquantum: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX
473.astar: -DSPEC_CPU_LP64
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)
-opt-prefetch -ansi-alias
401.bzip2: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
-o3(pass 2) -no-prec-div -prof-use(pass 2) -auto-ilp32
-opt-prefetch -ansi-alias
403.gcc: -xSSE4.2 -ipo -o3 -no-prec-div -inline-calloc
-opt-malloc-options=3 -auto-ilp32
429.mcf: basepeak = yes
445.gobmk: -xSSE4.2(pass 2) -prof-gen(pass 1) -prof-use(pass 2)
-ansi-alias
456.hmmer: -xSSE4.2 -ipo -o3 -no-prec-div -unroll2 -auto-ilp32
-ansi-alias

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Peak Optimization Flags (Continued)

- 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

- 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)
  -unroll12 -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)
    -opt-ra-region-strategy=block -ansi-alias
    -Wl,-z,muldefs -L/smartheap -lsmartheap

  - 473.astar: basepeak = yes

  - 483.xalancbmk: -xSSE4.2 -ipo -o3 -no-prec-div -opt-prefetch -ansi-alias
    -Wl,-z,muldefs -L/smartheap -lsmartheap

Peak Other Flags

- C benchmarks:

  - 403.gcc: -Daloca=_alloca

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/Intel-ic12.1-official-linux64.20111122.html
http://www.spec.org/cpu2006/flags/Cisco-Platform-Settings-V1.2.20130607.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic12.1-official-linux64.20111122.xml
http://www.spec.org/cpu2006/flags/Cisco-Platform-Settings-V1.2.20130607.xml

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