Cisco Systems
Cisco UCS B200 M4 (Intel Xeon E5-2643 v4, 3.40 GHz)

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>SPECint2006</th>
<th>SPECint_base2006</th>
</tr>
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<tbody>
<tr>
<td>perlbench</td>
<td>43.4</td>
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<tr>
<td>bzip2</td>
<td>32.7</td>
<td>18.5</td>
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<tr>
<td>gcc</td>
<td>39.1</td>
<td>20.9</td>
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<td>mcf</td>
<td>71.2</td>
<td>50.9</td>
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<tr>
<td>gobmk</td>
<td>31.4</td>
<td>31.5</td>
</tr>
<tr>
<td>hmmer</td>
<td>67.8</td>
<td>66.8</td>
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<tr>
<td>sjeng</td>
<td>36.4</td>
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<tr>
<td>libquantum</td>
<td>63.7</td>
<td>50.6</td>
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<tr>
<td>h264ref</td>
<td>34.5</td>
<td>33.0</td>
</tr>
<tr>
<td>omnetpp</td>
<td>38.8</td>
<td>38.9</td>
</tr>
<tr>
<td>astar</td>
<td>38.8</td>
<td>37.8</td>
</tr>
<tr>
<td>xalancbmk</td>
<td>38.9</td>
<td>37.9</td>
</tr>
</tbody>
</table>

**Hardware**
- **CPU Name:** Intel Xeon E5-2643 v4
- **CPU Characteristics:** Intel Turbo Boost Technology up to 3.70 GHz
- **CPU MHz:** 3400
- **FPU:** Integrated
- **CPU(s) enabled:** 12 cores, 2 chips, 6 cores/chip
- **CPU(s) orderable:** 1, 2 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:** 20 MB I+D on chip per chip
- **Other Cache:** None
- **Memory:** 256 GB (16 x 16 GB 2Rx4 PC4-2400T-R)
- **Disk Subsystem:** 1 x 400 GB SSD SAS
- **Other Hardware:** None

**Software**
- **Operating System:** SUSE Linux Enterprise Server 12 SP1 (x86_64) 3.12.49-11-default
- **Compiler:** C++: Version 16.0.0.101 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 V10.2

**CPU2006 license:** 9019
**Test sponsor:** Cisco Systems
**Tested by:** Cisco Systems
**Test date:** Jul-2016
**Hardware Availability:** Apr-2016
**Software Availability:** Dec-2015
## SPEC CINT2006 Result

### Cisco Systems
Cisco UCS B200 M4 (Intel Xeon E5-2643 v4, 3.40 GHz)

(spec)

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Base</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Peak</th>
<th>Seconds</th>
<th>Ratio</th>
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</thead>
<tbody>
<tr>
<td>400.perlbench</td>
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<td>224</td>
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<td>401.bzip2</td>
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<td>361</td>
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<td>403.mcf</td>
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<td>206</td>
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<td>429gcc</td>
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<td>445.gobmk</td>
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<td>333</td>
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<tr>
<td>456.hmmer</td>
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<td>91.1</td>
<td></td>
<td>102</td>
<td>91.1</td>
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<tr>
<td>462.libquantum</td>
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<td>4.09</td>
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<td></td>
<td>4.09</td>
<td>5060</td>
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<tr>
<td>464.hmmer</td>
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<td>347</td>
<td>63.8</td>
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<td>348</td>
<td>63.6</td>
</tr>
<tr>
<td>471.omnetpp</td>
<td></td>
<td>209</td>
<td>29.9</td>
<td></td>
<td>205</td>
<td>30.5</td>
</tr>
<tr>
<td>473.astar</td>
<td></td>
<td>181</td>
<td>38.9</td>
<td></td>
<td>181</td>
<td>38.8</td>
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<tr>
<td>483.xalancbmk</td>
<td></td>
<td>88.5</td>
<td>77.9</td>
<td></td>
<td>89.3</td>
<td>77.3</td>
</tr>
</tbody>
</table>

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

### Submit Notes

The config file option 'submit' was used.

### Operating System Notes

Stack size set to unlimited using "ulimit -s unlimited"

### Platform Notes

BIOS Settings:
- Intel Hyper-Threading Technology option set to Disabled
- 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
- Memory Power Saving Mode set to Disabled
- QPI Snoop Mode set to Home Directory Snoop with OSB

Sysinfo program /opt/cpu2006-1.2/config/sysinfo.rev6914
$Rev: 6914 $ $Date:: 2014-06-25 #$ e3fbb8667b5a285932ceab81e28219e1
running on linux-6akz Thu Jul 14 00:28:23 2016

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 E5-2643 v4 @ 3.40GHz
2 "physical id"s (chips)
Cisco Systems
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SPECint2006 = 71.6
SPECint_base2006 = 68.1

CPU2006 license: 9019
Test sponsor: Cisco Systems
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Platform Notes (Continued)

12 "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 : 6
  siblings : 6
  physical 0: cores 0 1 2 3 6 7
  physical 1: cores 0 1 2 3 6 7
  cache size : 20480 KB

From /proc/meminfo
  MemTotal: 264569756 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:
      (8d714a0) x86_64 x86_64 x86_64 GNU/Linux

  run-level 3 Jul 12 01:17

  SPEC is set to: /opt/cpu2006-1.2
  Filesystem Type Size Used Avail Use% Mounted on
  /dev/sdb1 ext4 345G 14G 330G 4% /

  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. B200M4.3.1.2.4.041120161047 04/11/2016
  Memory:
    16x 0xCE00 M393A2G40EB1-CRC 16 GB 2 rank 2400 MHz
    8x NO DIMM NO DIMM

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Platform Notes (Continued)

(End of data from sysinfo program)

General Notes

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

Binaries compiled on a system with 1x Intel Core i5-4670K CPU + 32GB memory using RedHat EL 7.1
Transparent Huge Pages enabled with:
echo always > /sys/kernel/mm/transparent_hugepage/enabled

Base Compiler Invocation

C benchmarks:
  icc -m64

C++ benchmarks:
  icpc -m64

Base Portability Flags

400.perlbench: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX_X64
  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 -DSPEC_CPU_LINUX
  464.h264ref: -DSPEC_CPU_LP64
  471.omnetpp: -DSPEC_CPU_LP64
  473.astar: -DSPEC_CPU_LP64
  483.xalancbmk: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX

Base Optimization Flags

C benchmarks:
  -xCORE-AVX2 -ipo -03 -no-prec-div -parallel -opt-prefetch -auto-p32

C++ benchmarks:
  -xCORE-AVX2 -ipo -03 -no-prec-div -opt-prefetch -auto-p32
  -Wl,-z,muldefs -L/sh -lsmartheap64
Cisco UCS B200 M4 (Intel Xeon E5-2643 v4, 3.40 GHz)

UNIX Performance Results

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Tested by: Cisco Systems

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Base Other Flags

C benchmarks:
403.gcc: -Dalloca=_alloca

Peak Compiler Invocation

C benchmarks (except as noted below):
icc -m64
400.perlbench: icc -m32 -L/opt/intel/compilers_and_libraries_2016/linux/compiler/lib/ia32_lin
445.gobmk: icc -m32 -L/opt/intel/compilers_and_libraries_2016/linux/compiler/lib/ia32_lin

C++ benchmarks (except as noted below):
icpc -m32 -L/opt/intel/compilers_and_libraries_2016/linux/compiler/lib/ia32_lin
473.astar: icpc -m64

Peak Portability Flags

400.perlbench: -D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LINUX_IA32
401.bzip2: -DSPEC_CPU_LP64
403.gcc: -DSPEC_CPU_LP64
429.mcf: -DSPEC_CPU_LP64
445.gobmk: -D_FILE_OFFSET_BITS=64
456.hmmer: -DSPEC_CPU_LP64
458.sjeng: -DSPEC_CPU_LP64
462.libquantum: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX
464.h264ref: -DSPEC_CPU_LP64
471.omnetpp: -D_FILE_OFFSET_BITS=64
473.astar: -DSPEC_CPU_LP64
483.xalancbmk: -D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LINUX

Peak Optimization Flags

C benchmarks:
400.perlbench: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)
-ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2)
-par-num-threads=1(pass 1) -prof-use(pass 2) -opt-prefetch
-ansi-alias

401.bzip2: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)
-ipo(pass 2) -O3(pass 2) -no-prec-div
-par-num-threads=1(pass 1) -prof-use(pass 2) -auto-ilp32

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Peak Optimization Flags (Continued)

401.bzip2 (continued):
   -opt-prefetch -ansi-alias

403.gcc: -xCORE-AVX2 -ipo -O3 -no-prec-div -inline-calloc
   -opt-malloc-options=3 -auto-ilp32

429.mcf: -xCORE-AVX2 -ipo -O3 -no-prec-div -parallel
   -opt-prefetch -auto-p32

445.gobmk: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)
   -prof-use(pass 2) -par-num-threads=1(pass 1) -ansi-alias

456.hmmer: basepeak = yes

458.sjeng: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)
   -ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2)
   -par-num-threads=1(pass 1) -prof-use(pass 2) -unroll4

462.libquantum: basepeak = yes

464.h264ref: basepeak = yes

C++ benchmarks:

471.omnetpp: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)
   -ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2)
   -par-num-threads=1(pass 1) -prof-use(pass 2)
   -opt-ra-region-strategy=block -ansi-alias
   -Wl,-z,muldefs -L/sh -lsmartheap

473.astar: -xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch
   -auto-p32 -Wl,-z,muldefs -L/sh -lsmartheap64

483.xalancbmk: -xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch
   -ansi-alias -Wl,-z,muldefs -L/sh -lsmartheap

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-ic16.0-official-linux64.html
http://www.spec.org/cpu2006/flags/Cisco-Platform-Settings-V1.2-revE.html
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You can also download the XML flags sources by saving the following links:


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

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