# SPEC® CINT2006 Result

## Cisco Systems

Cisco UCS B420 M4 (Intel Xeon CPU E5-4667 v4 2.20 GHz)

<table>
<thead>
<tr>
<th>SPECint®2006</th>
<th>64.2</th>
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<tbody>
<tr>
<td>SPECint_base2006</td>
<td>62.2</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Test date:</th>
<th>Mar-2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hardware Availability:</td>
<td>Apr-2016</td>
</tr>
<tr>
<td>Software Availability:</td>
<td>Dec-2015</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>SPECint®2006</th>
<th>SPECint_base2006</th>
</tr>
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<tbody>
<tr>
<td>400.perlbench</td>
<td>39.8</td>
<td>34.5</td>
</tr>
<tr>
<td>401.bzip2</td>
<td>22.0</td>
<td>21.9</td>
</tr>
<tr>
<td>403.gcc</td>
<td>57.4</td>
<td>58.5</td>
</tr>
<tr>
<td>429.mcf</td>
<td>26.8</td>
<td>27.6</td>
</tr>
<tr>
<td>445.gobmk</td>
<td>87.3</td>
<td>87.9</td>
</tr>
<tr>
<td>456.hmmer</td>
<td>26.1</td>
<td>26.3</td>
</tr>
<tr>
<td>458.sjeng</td>
<td>30.2</td>
<td>30.3</td>
</tr>
<tr>
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<td>29.4</td>
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</tr>
<tr>
<td>464.h264ref</td>
<td>50.7</td>
<td>50.4</td>
</tr>
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<td>471.omnetpp</td>
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</tr>
<tr>
<td>473.astar</td>
<td>67.4</td>
<td>67.8</td>
</tr>
<tr>
<td>483.xalancbmk</td>
<td>67.4</td>
<td>67.4</td>
</tr>
</tbody>
</table>

**Hardware**

<table>
<thead>
<tr>
<th>CPU Name:</th>
<th>Intel Xeon E5-4667 v4</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU MHZ:</td>
<td>2200</td>
</tr>
<tr>
<td>CPU(s) enabled:</td>
<td>72 cores, 4 chips, 18 cores/chip</td>
</tr>
<tr>
<td>Primary Cache:</td>
<td>32 KB I + 32 KB D on chip per core</td>
</tr>
<tr>
<td>Secondary Cache:</td>
<td>256 KB I+D on chip per core</td>
</tr>
<tr>
<td>L3 Cache:</td>
<td>45 MB I+D on chip per chip</td>
</tr>
<tr>
<td>Memory:</td>
<td>1 TB (32 x 32 GB 2Rx4 PC4-2400T-R)</td>
</tr>
<tr>
<td>Disk Subsystem:</td>
<td>1 x 300 GB SAS, 15K RPM</td>
</tr>
</tbody>
</table>

**Software**

<table>
<thead>
<tr>
<th>Operating System:</th>
<th>SUSE Linux Enterprise Server 12 SP1 (x86_64) 3.12.49-11-default</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compiler:</td>
<td>C/C++: Version 17.0.0.098 of Intel C/C++ Compiler for Linux</td>
</tr>
<tr>
<td>Auto Parallel:</td>
<td>Yes</td>
</tr>
<tr>
<td>File System:</td>
<td>xfs</td>
</tr>
<tr>
<td>System State:</td>
<td>Run level 3 (multi-user)</td>
</tr>
<tr>
<td>Base Pointers:</td>
<td>32/64-bit</td>
</tr>
<tr>
<td>Peak Pointers:</td>
<td>32/64-bit</td>
</tr>
<tr>
<td>Other Software:</td>
<td>Microquill SmartHeap V10.2</td>
</tr>
</tbody>
</table>
Cisco Systems
Cisco UCS B420 M4 (Intel Xeon CPU E5-4667 v4 2.20 GHz)

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

Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
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<td>400.perlbench</td>
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<tr>
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<td>403.mcf</td>
<td>241</td>
<td>33.4</td>
<td>240</td>
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<tr>
<td>429.mcf</td>
<td>158</td>
<td>57.8</td>
<td>159</td>
<td>57.3</td>
<td>156</td>
<td>58.4</td>
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<td>445.gobmk</td>
<td>401</td>
<td>26.1</td>
<td>402</td>
<td>26.1</td>
<td>401</td>
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<tr>
<td>456.hmmer</td>
<td>127</td>
<td>73.7</td>
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<td>458.sjeng</td>
<td>411</td>
<td>29.4</td>
<td>413</td>
<td>29.3</td>
<td>412</td>
<td>29.4</td>
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<td>462.libquantum</td>
<td>2.39</td>
<td>8680</td>
<td>2.42</td>
<td>8570</td>
<td>2.38</td>
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<td>464.h264ref</td>
<td>435</td>
<td>50.8</td>
<td>439</td>
<td>50.4</td>
<td>436</td>
<td>50.7</td>
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<tr>
<td>471.omnetpp</td>
<td>140</td>
<td>44.7</td>
<td>141</td>
<td>44.5</td>
<td>141</td>
<td>44.2</td>
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<tr>
<td>473.astar</td>
<td>231</td>
<td>30.4</td>
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<td>30.7</td>
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<tr>
<td>483.xalancbmk</td>
<td>102</td>
<td>67.6</td>
<td>102</td>
<td>67.4</td>
<td>103</td>
<td>67.2</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 /home/cpu2006-1.2/config/sysinfo.rev6993
Revision 6993 of 2015-11-06 (b5e8d4b4eb51ed28d7f98696cbe290c1)
running on linux-84bk Tue Mar 14 02:48:06 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
model name : Intel(R) Xeon(R) CPU E5-4667 v4 @ 2.20GHz
4 "physical id"s (chips)
Cisco Systems
Cisco UCS B420 M4 (Intel Xeon CPU E5-4667 v4 2.20 GHz)

SPECint2006 = 64.2
SPECint_base2006 = 62.2

CPU2006 license: 9019
Test sponsor: Cisco Systems
Tested by: Cisco Systems
Test date: Mar-2017
Hardware Availability: Apr-2016
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Platform Notes (Continued)

72 "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 : 18
  siblings : 18
  physical 0: cores 0 1 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27
  physical 1: cores 0 1 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27
  physical 2: cores 0 1 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27
  physical 3: cores 0 1 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27
  cache size : 46080 KB

From /proc/meminfo
  MemTotal: 1058472616 kB
  HugePages_Total: 0
  Hugepagesize: 2048 kB

/usr/bin/lsb_release -d
  SUSE Linux Enterprise Server 12 SP1

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 Mar 14 02:47

SPEC is set to: /home/cpu2006-1.2
  Filesystem  Type   Size  Used Avail Use% Mounted on
  /dev/sda7   xfs     236G  10G  226G   5%  /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
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Platform Notes (Continued)

BIOS Cisco Systems, Inc. B420M4.3.1.2g.0.011820171605 01/18/2017
Memory:
32x 0xCE00 M393A4K40BB1-CRC 32 GB 2 rank 2400 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:
KMP_AFFINITY = "granularity=fine,compact"
LD_LIBRARY_PATH = "/home/cpu2006-1.2/libs/32:/home/cpu2006-1.2/libs/64:/home/cpu2006-1.2/sh10.2"
OMP_NUM_THREADS = "72"

Binaries compiled on a system with 1x Intel Core i7-4790K CPU + 32GB RAM
memory using Redhat Enterprise Linux 7.2
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
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Base Optimization Flags

C benchmarks:
- -xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -qopt-prefetch
  -auto-p32

C++ benchmarks:
- -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -auto-p32
  -Wl,-z,muldefs -L/sh10.2 -lsmartheap64

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_2017/linux/lib/ia32
  445.gobmk: icc -m32 -L/opt/intel/compilers_and_libraries_2017/linux/lib/ia32

C++ benchmarks (except as noted below):
  icc -m32 -L/opt/intel/compilers_and_libraries_2017/linux/lib/ia32
  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
Cisco Systems
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CPU2006 license: 9019
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Tested by: Cisco Systems
Hardware Availability: Apr-2016
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Test date: Mar-2017

Peak Optimization Flags

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

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

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

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

445.gobmk: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2(pass 2)
   -par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)
   -no-prec-div(pass 2)

456.hmmer: basepeak = yes

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

462.libquantum: basepeak = yes

464.h264ref: basepeak = yes

C++ benchmarks:
471.omnetpp: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2(pass 2)
   -par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)
   -no-prec-div(pass 2) -qopt-ra-region-strategy=block
   -Wl,-z,muldefs -L/sh10.2 -lsmartheap

473.astar: -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch
   -auto-p32 -Wl,-z,muldefs -L/sh10.2 -lsmartheap64

483.xalancbmk: -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch
   -Wl,-z,muldefs -L/sh10.2 -lsmartheap

Peak Other Flags

C benchmarks:
Cisco Systems
Cisco UCS B420 M4 (Intel Xeon CPU E5-4667 v4 2.20 GHz)

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Peak Other Flags (Continued)

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

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/Cisco-Platform-Settings-V1.2-revD.20170404.xml

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

Tested with SPEC CPU2006 v1.2.
Report generated on Tue Apr 4 16:57:30 2017 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 4 April 2017.