Cisco Systems
Cisco UCS B200 M5 (Intel Xeon Bronze 3106, 1.70 GHz)

**SPECint_rate2006 = 458**
SPECint_rate_base2006 = 437

Hardware
- **CPU Name:** Intel Xeon Bronze 3106
- **CPU Characteristics:**
  - FPU: Integrated
  - CPU(s) enabled: 16 cores, 2 chips, 8 cores/chip
  - CPU(s) orderable: 1,2 chips
  - Primary Cache: 32 KB I + 32 KB D on chip per core
  - Secondary Cache: 1 MB I+D on chip per core
  - L3 Cache: 11 MB I+D on chip per chip
  - Other Cache: None
- **Memory:** 384 GB (24 x 16 GB 2Rx4 PC4-2666V-R, running at 2133)
- **Disk Subsystem:** 1 x 600 GB SAS HDD, 10K RPM
- **Other Hardware:** None

Software
- **Operating System:** SUSE Linux Enterprise Server 12 SP2 (x86_64)
  - 4.4.21-69-default
- **Compiler:**
  - C/C++: Version 18.0.0.128 of Intel C/C++ Compiler for Linux;
  - Fortran: Version 18.0.0.128 of Intel Fortran
- **Auto Parallel:** Yes
- **File System:** xfs
- **System State:** Run level 3 (multi-user)
- **Base Pointers:** 32-bit
- **Peak Pointers:** 32/64-bit
- **Other Software:** Microquill SmartHeap V10.2
Cisco Systems
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CPU2006 license: 9019
Test sponsor: Cisco Systems
Tested by: Cisco Systems

Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
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<th>Ratio</th>
<th>Seconds</th>
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<td>471.omnetpp</td>
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<td>629</td>
<td>175</td>
<td>630</td>
</tr>
</tbody>
</table>

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

Submit Notes
The numacli mechanism was used to bind copies to processors. The config file option 'submit' was used to generate numacli 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 Settings:
CPU performance set to Enterprise
Power Performance Tuning set to OS Controls
SNC set to Disabled
Patrol Scrub set to Disabled
Sysinfo program /home/cpu2006-1.2/config/sysinfo.rev6993
Revision 6993 of 2015-11-06 (b5e8d4b4eb51ed28d7f98696cbe290c1)
running on linux Thu Dec 14 01:22:46 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) Bronze 3106 CPU @ 1.70GHz
 2 "physical id"s (chips)
 16 "processors"
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<table>
<thead>
<tr>
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<th>9019</th>
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<tbody>
<tr>
<td>Test sponsor:</td>
<td>Cisco Systems</td>
</tr>
<tr>
<td>Tested by:</td>
<td>Cisco Systems</td>
</tr>
</tbody>
</table>

Test date: Dec-2017
Hardware Availability: Aug-2017
Software Availability: Jul-2017

Platform Notes (Continued)

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 : 8
- siblings : 8
- physical 0: cores 0 1 2 3 4 5 6 7
- physical 1: cores 0 1 2 3 4 5 6 7
- cache size : 11264 KB

From /proc/meminfo
MemTotal: 394667604 kB
HugePages_Total: 0
Hugepagesize: 2048 kB

From /etc/*release* /etc/*version*
SuSE-release:
- SUSE Linux Enterprise Server 12 (x86_64)
- VERSION = 12
- PATCHLEVEL = 2
- # 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-SP2"
- VERSION_ID="12.2"
- PRETTY_NAME="SUSE Linux Enterprise Server 12 SP2"
- ID="sles"
- ANSI_COLOR="0;32"
- CPE_NAME="cpe:/o:suse:sles:12:sp2"

uname -a:
- Linux linux 4.4.21-69-default #1 SMP Tue Oct 25 10:58:20 UTC 2016 (9464f67)
- x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Jan 1 01:54

SPEC is set to: /home/cpu2006-1.2

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. B200M5.3.2.1d.5.0727171353 07/27/2017
Memory:
- 24x 0xCE00 M393A2G40EB2-CTD 16 GB 2 rank 2666 MHz, configured at 2133 MHz

(End of data from sysinfo program)
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General Notes

Environment variables set by runspec before the start of the run:
LD_LIBRARY_PATH = "/opt/intel/lib/ia32:/opt/intel/lib/intel64:/home/cpu2006-1.2/sh10.2"

Binaries compiled on a system with 1x Intel Core i7-4790 CPU + 32GB RAM
memory using Redhat Enterprise Linux 7.2
Transparent Huge Pages enabled with:
echo always > /sys/kernel/mm/transparent_hugepage/enabled
Filesystem page cache cleared with:
shell invocation of 'sync; echo 3 > /proc/sys/vm/drop_caches' prior to run
runspec command invoked through numactl i.e.:
numactl --interleave=all runspec <etc>

No: The test sponsor attests, as of date of publication, that CVE-2017-5754 (Meltdown) is mitigated in the system as tested and documented.
No: The test sponsor attests, as of date of publication, that CVE-2017-5753 (Spectre variant 1) is mitigated in the system as tested and documented.
No: The test sponsor attests, as of date of publication, that CVE-2017-5715 (Spectre variant 2) is mitigated in the system as tested and documented.

This benchmark result is intended to provide perspective on past performance using the historical hardware and/or software described on this result page.

The system as described on this result page was formerly generally available. At the time of this publication, it may not be shipping, and/or may not be supported, and/or may fail to meet other tests of General Availability described in the SPEC OSG Policy document, http://www.spec.org/osg/policy.html

This measured result may not be representative of the result that would be measured were this benchmark run with hardware and software available as of the publication date.

Base Compiler Invocation

C benchmarks:
icc -m32 -L/opt/intel/lib/ia32

C++ benchmarks:
icpc -m32 -L/opt/intel/lib/ia32

Base Portability Flags

400.perlbench: -D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LINUX_IA32
401.bzip2: -D_FILE_OFFSETBITS=64
403.gcc: -D_FILE_OFFSETBITS=64
429.mcf: -D_FILE_OFFSET_BITS=64
445.gobmk: -D_FILE_OFFSET_BITS=64
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Base Portability Flags (Continued)

456.hmmer: -D_FILE_OFFSET_BITS=64
458.sjeng: -D_FILE_OFFSET_BITS=64
462.libquantum: -D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LINUX
464.h264ref: -D_FILE_OFFSET_BITS=64
471.omnetpp: -D_FILE_OFFSET_BITS=64
473.astar: -D_FILE_OFFSET_BITS=64
483.xalancbmk: -D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LINUX

Base Optimization Flags

C benchmarks:
-xHOST -ipo -O3 -no-prec-div -qopt-prefetch -qopt-mem-layout-trans=3

C++ benchmarks:
-xHOST -ipo -O3 -no-prec-div -qopt-prefetch -qopt-mem-layout-trans=3
-Wl,-z,muldefs -L/home/cpu2006-1.2/sh10.2 -lsmartheap

Base Other Flags

C benchmarks:
403.gcc: -Dalloca=_alloca

Peak Compiler Invocation

C benchmarks (except as noted below):
icc -m32 -L/opt/intel/lib/ia32
400.perlbench: icc -m64
401.bzip2: icc -m64
456.hmmer: icc -m64
458.sjeng: icc -m64

C++ benchmarks:
icpc -m32 -L/opt/intel/lib/ia32
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Peak Portability Flags

400.perlbench: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX_X64
401.bzip2: -DSPEC_CPU_LP64
403.gcc: -D_FILE_OFFSET_BITS=64
429.mcf: -D_FILE_OFFSET_BITS=64
445.gobmk: -D_FILE_OFFSET_BITS=64
456.hmmer: -DSPEC_CPU_LP64
458.sjeng: -DSPEC_CPU_LP64
462.libquantum: -D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LINUX
464.h264ref: -D_FILE_OFFSET_BITS=64
471.omnetpp: -D_FILE_OFFSET_BITS=64
473.astar: -D_FILE_OFFSET_BITS=64
483.xalancbmk: -D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LINUX

Peak Optimization Flags

C benchmarks:
400.perlbench: -prof-gen(pass 1) -prof-use(pass 2) -xHOST(pass 2)
-par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -auto-ilp32 -qopt-mem-layout-trans=3

401.bzip2: -prof-gen(pass 1) -prof-use(pass 2) -xHOST(pass 2)
-par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -qopt-prefetch -auto-ilp32
-qopt-mem-layout-trans=3

403.gcc: -xHOST -ipo -O3 -no-prec-div -qopt-mem-layout-trans=3

429.mcf: basepeak = yes

445.gobmk: -prof-gen(pass 1) -prof-use(pass 2) -xHOST(pass 2)
-par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -qopt-mem-layout-trans=3

456.hmmer: -xHOST -ipo -O3 -no-prec-div -unroll2 -auto-ilp32
-qopt-mem-layout-trans=3

458.sjeng: -prof-gen(pass 1) -prof-use(pass 2) -xHOST(pass 2)
-par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -unroll4 -auto-ilp32
-qopt-mem-layout-trans=3

462.libquantum: basepeak = yes

464.h264ref: -prof-gen(pass 1) -prof-use(pass 2) -xHOST(pass 2)
-par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -unroll2 -qopt-mem-layout-trans=3

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Peak Optimization Flags (Continued)

C++ benchmarks:

471.omnetpp: -prof-gen(pass 1) -prof-use(pass 2) -xHOST(pass 2)
-par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2)
-qopt-ra-region-strategy=block
-qopt-mem-layout-trans=3 -Wl,-z,muldefs
-L/home/cpu2006-1.2/sh10.2 -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-ic17.0-official-linux64-revF.html
http://www.spec.org/cpu2006/flags/Cisco-Platform-Settings-V1.2-revH.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-revF.xml
http://www.spec.org/cpu2006/flags/Cisco-Platform-Settings-V1.2-revH.xml

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For questions about this result, please contact the tester.
For other inquiries, please contact webmaster@spec.org.

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