SPEC® CINT2006 Result
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Cisco Systems

Cisco UCS C220 M5 (Intel Xeon Gold 6152, 2.10 GHz)

SPECint®_rate2006 = 2210

SPECint_rate_base2006 = 2110

CPU2006 license:	9019	**Test date:**	Dec-2017
Test sponsor:	Cisco Systems	**Hardware Availability:**	Aug-2017
Tested by:	Cisco Systems	**Software Availability:**	Jun-2017

Copies 0 1500 3500 5500 7500 9500 11500 13500 15500 17500 19500 21500 23500 25500 27500 29500 31500 33500 38000

- 400.perlbench — 88 / 88 / 88 — 1870 / 1550
- 401.bzip2 — 88 / 88 / 88 — 994 / 943
- 403.gcc — 88 / 88 / 88 — 1470 / 1440
- 429.mcf — 88 — 2780
- 445.gobmk — 88 / 88 / 88 — 1340 / 1340
- 456.hmmer — 88 / 88 / 88 — 3300 / 2930
- 458.sjeng — 88 / 88 / 88 — 1510 / 1430
- 462.libquantum — 88 — 37500
- 464.h264ref — 88 / 88 / 88 — 2500 / 2380
- 471.omnetpp — 88 / 88 / 88 — 1120 / 1060
- 473.astar — 88 — 1120
- 483.xalancbmk — 88 — 2260

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Hardware

CPU Name:	Intel Xeon Gold 6152
CPU Characteristics:	Intel Turbo Boost Technology up to 3.70 GHz
CPU MHz:	2100
FPU:	Integrated
CPU(s) enabled:	44 cores, 2 chips, 22 cores/chip, 2 threads/core
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:	30.25 MB I+D on chip per chip
Other Cache:	None
Memory:	384 GB (24 x 16 GB 2Rx4 PC4-2666V-R)
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 17.0.3.191 of Intel C/C++ Compiler for Linux
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

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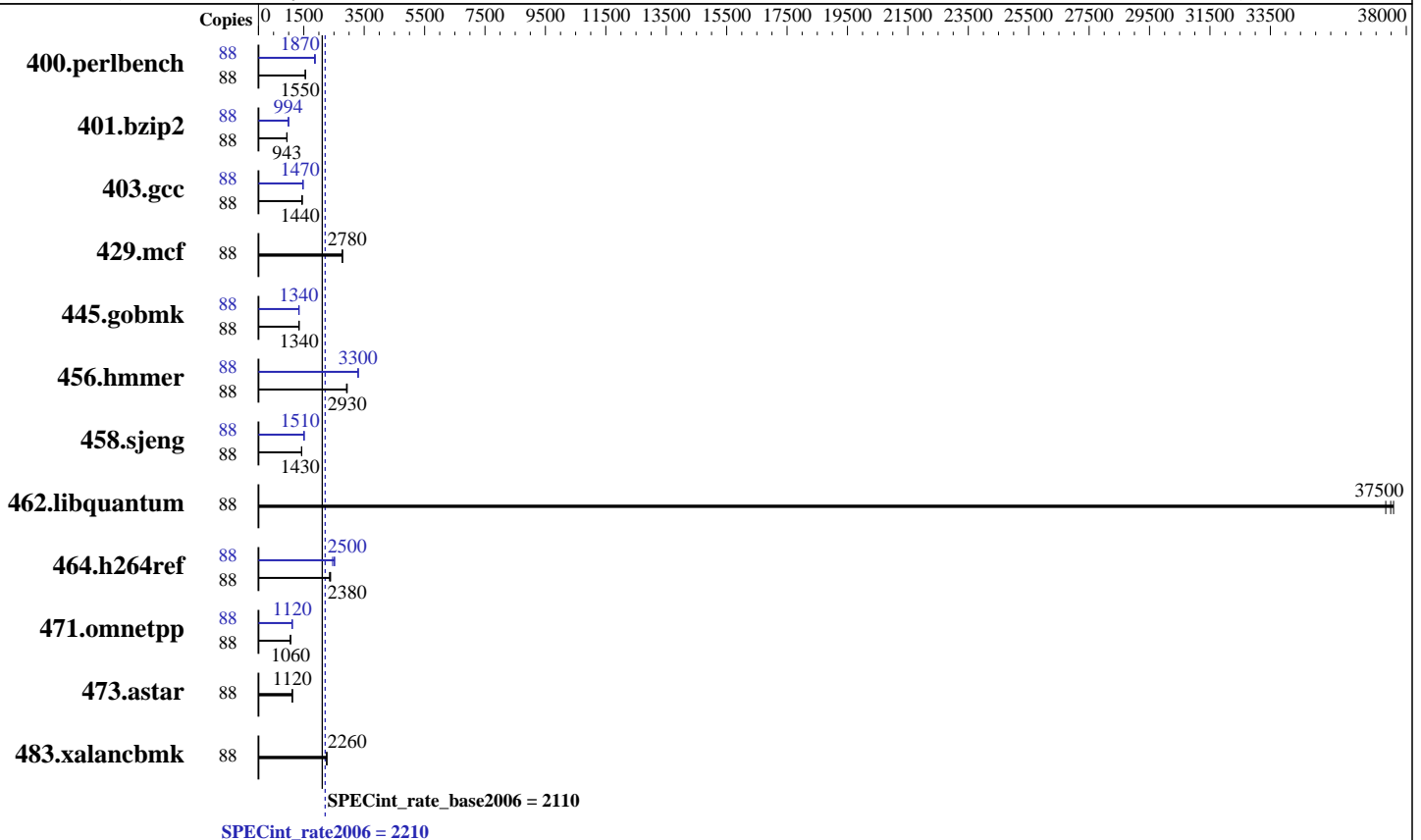
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Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
400.perlbench	88	553	1560	**554**	**1550**	555	1550	88	463	1860	458	1880	**459**	**1870**
401.bzip2	88	896	948	**901**	**943**	906	937	88	**855**	**994**	857	991	853	996
403.gcc	88	**492**	**1440**	492	1440	488	1450	88	479	1480	**481**	**1470**	481	1470
429.mcf	88	288	2780	**289**	**2780**	289	2770	88	288	2780	**289**	**2780**	289	2770
445.gobmk	88	687	1340	**687**	**1340**	689	1340	88	689	1340	689	1340	**689**	**1340**
456.hmmer	88	**280**	**2930**	280	2940	282	2910	88	249	3300	**249**	**3300**	249	3300
458.sjeng	88	**745**	**1430**	743	1430	746	1430	88	705	1510	707	1510	**706**	**1510**
462.libquantum	88	**48.6**	**37500**	48.5	37600	48.9	37300	88	**48.6**	**37500**	48.5	37600	48.9	37300
464.h264ref	88	**819**	**2380**	828	2350	815	2390	88	**779**	**2500**	794	2450	771	2520
471.omnetpp	88	520	1060	**519**	**1060**	517	1060	88	493	1120	**492**	**1120**	492	1120
473.astar	88	550	1120	**551**	**1120**	551	1120	88	550	1120	**551**	**1120**	551	1120
483.xalancbmk	88	268	2260	**269**	**2260**	269	2260	88	268	2260	**269**	**2260**	269	2260

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

    BIOS Settings:
    Intel HyperThreading Technology set to Enabled
    CPU performance set to Enterprise
    Power Performance Tuning set to OS Controls
    SNC set to Enabled
    IMC Interleaving set to 1-way Interleave
    Patrol Scrub set to Disabled
     Sysinfo program /home/cpu2006-1.2/config/sysinfo.rev6993
     Revision 6993 of 2015-11-06 (b5e8d4b4eb51ed28d7f98696cbe290c1)
     running on linux-ox2h Mon Dec 18 20:22:14 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) Gold 6152 CPU @ 2.10GHz

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Platform Notes (Continued)

```
    2 "physical id"s (chips)
    88 "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 : 22
    siblings  : 44
    physical 0: cores 0 1 2 3 4 5 8 9 10 11 12 16 17 18 19 20 21 24 25 26 27
    28
    physical 1: cores 0 1 2 3 4 5 8 9 10 11 12 16 17 18 19 20 21 24 25 26 27
    28
 cache size : 30976 KB

From /proc/meminfo
   MemTotal:       394653104 kB
   HugePages_Total:       0
   Hugepagesize:       2048 kB

/usr/bin/lsb_release -d
   SUSE Linux Enterprise Server 12 SP2

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-ox2h 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 Dec 18 20:36

SPEC is set to: /home/cpu2006-1.2
   Filesystem      Type  Size  Used Avail Use% Mounted on
   /dev/sdb5       xfs   317G   98G  220G  31% /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
```

Continued on next page

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Platform Notes (Continued)

```
   hardware, firmware, and the "DMTF SMBIOS" standard.

  BIOS Cisco Systems, Inc. C220M5.3.1.1d.0.0615170645 06/15/2017
  Memory:
   24x 0xCE00 M393A2G40EB2-CTD 16 GB 2 rank 2666 MHz

 (End of data from sysinfo program)
```

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
```

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Base Portability Flags

```
    400.perlbench: -D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LINUX_IA32
      401.bzip2: -D_FILE_OFFSET_BITS=64
        403.gcc: -D_FILE_OFFSET_BITS=64
        429.mcf: -D_FILE_OFFSET_BITS=64
     445.gobmk: -D_FILE_OFFSET_BITS=64
     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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Tested by: Cisco Systems		**Software Availability:**	Jun-2017

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

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

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