SPEC® CINT2006 Result
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Cisco Systems

Cisco UCS C220 M5 (Intel Xeon Gold 6142M, 2.60GHz)

SPECint®_rate2006 =   1930

SPECint_rate_base2006 = 1830

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

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Hardware

CPU Name:	Intel Xeon Gold 6142M
CPU Characteristics:	Intel Turbo Boost Technology up to 3.70 GHz
CPU MHz:	2600
FPU:	Integrated
CPU(s) enabled:	32 cores, 2 chips, 16 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:	22 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 480 GB SAS SSD
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
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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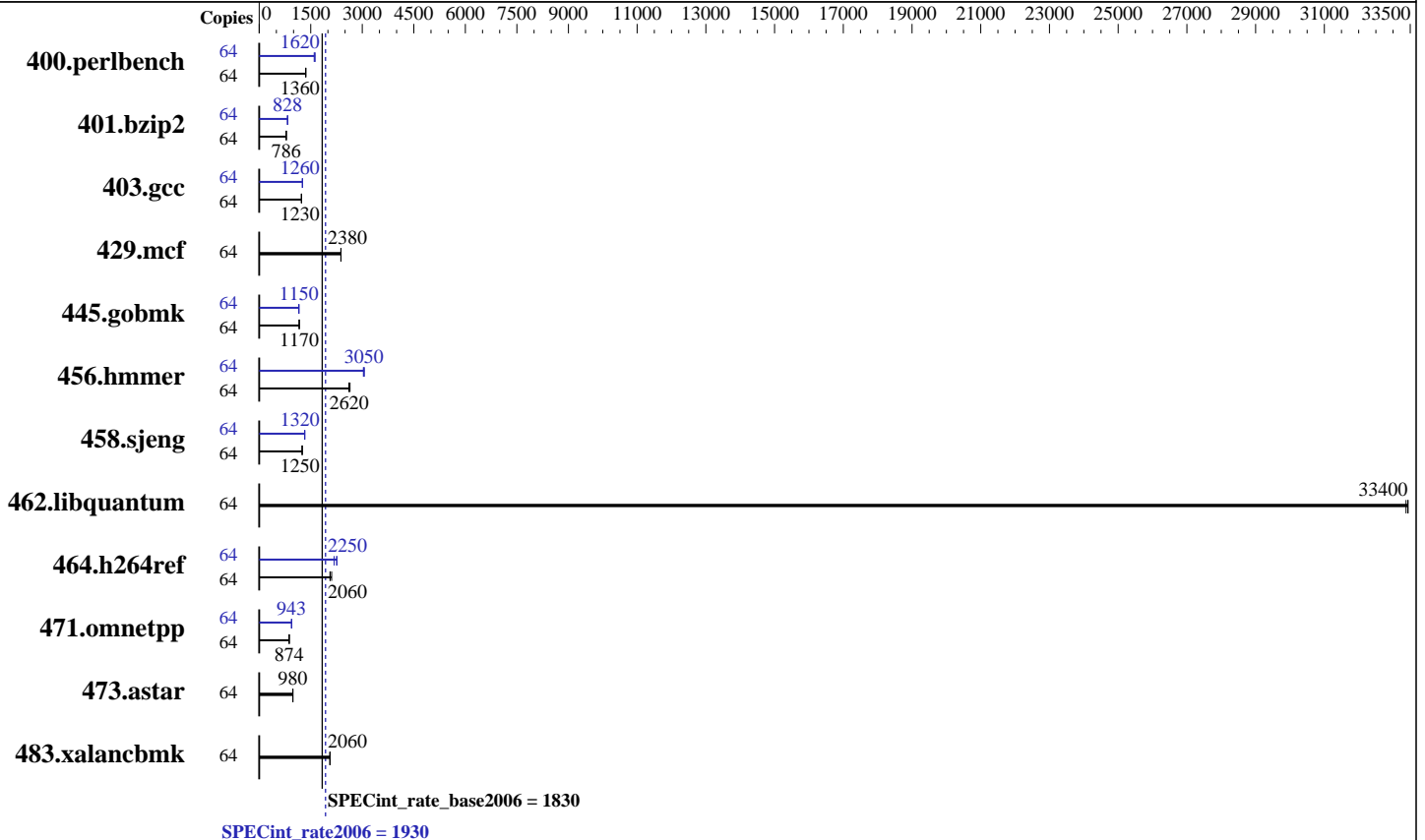
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Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
400.perlbench	64	462	1350	461	1360	**461**	**1360**	64	**386**	**1620**	391	1600	385	1620
401.bzip2	64	781	790	**785**	**786**	786	785	64	**746**	**828**	752	821	745	829
403.gcc	64	**419**	**1230**	417	1230	420	1230	64	410	1260	**410**	**1260**	408	1260
429.mcf	64	245	2380	**245**	**2380**	246	2380	64	245	2380	**245**	**2380**	246	2380
445.gobmk	64	576	1170	**576**	**1170**	577	1160	64	581	1150	582	1150	**582**	**1150**
456.hmmer	64	229	2610	226	2640	**228**	**2620**	64	197	3030	**196**	**3050**	195	3060
458.sjeng	64	**619**	**1250**	618	1250	620	1250	64	585	1320	**585**	**1320**	583	1330
462.libquantum	64	39.7	33400	39.7	33400	**39.7**	**33400**	64	39.7	33400	39.7	33400	**39.7**	**33400**
464.h264ref	64	**686**	**2060**	672	2110	687	2060	64	**629**	**2250**	650	2180	626	2260
471.omnetpp	64	459	872	458	874	**458**	**874**	64	424	944	424	943	**424**	**943**
473.astar	64	**459**	**980**	459	978	458	981	64	**459**	**980**	459	978	458	981
483.xalancbmk	64	214	2070	**214**	**2060**	215	2050	64	214	2070	**214**	**2060**	215	2050

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
    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-79ix Fri Nov 10 00:59:06 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) Gold 6142M CPU @ 2.60GHz

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Platform Notes (Continued)

```
     2 "physical id"s (chips)
    64 "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 : 16
    siblings  : 32
    physical 0: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
    physical 1: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
  cache size : 22528 KB

From /proc/meminfo
  MemTotal:       394653200 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-79ix 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 Nov 10 00:31

SPEC is set to: /home/cpu2006-1.2
   Filesystem      Type  Size  Used Avail Use% Mounted on
   /dev/sdb7       xfs   416G   26G  391G   7% /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.

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

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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:
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>
```

Base Compiler Invocation

C benchmarks:

```
icc -m32 -L/opt/intel/compilers_and_libraries_2018/linux/lib/ia32
```

C++ benchmarks:

```
icpc -m32 -L/opt/intel/compilers_and_libraries_2018/linux/lib/ia32
```

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
```

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Base Optimization Flags (Continued)

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/compilers_and_libraries_2018/linux/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/compilers_and_libraries_2018/linux/lib/ia32
```

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`

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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`

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

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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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Tested with SPEC CPU2006 v1.2.
Report generated on Mon Dec 11 11:12:26 2017 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 9 December 2017.