SPEC® CINT2006 Result

Cisco Systems

Cisco UCS B200 M5 (Intel Xeon Gold 6150, 2.70GHz)

SPECint®2006 =   78.1

SPECint_base2006 =   74.6

CPU2006 license: 9019
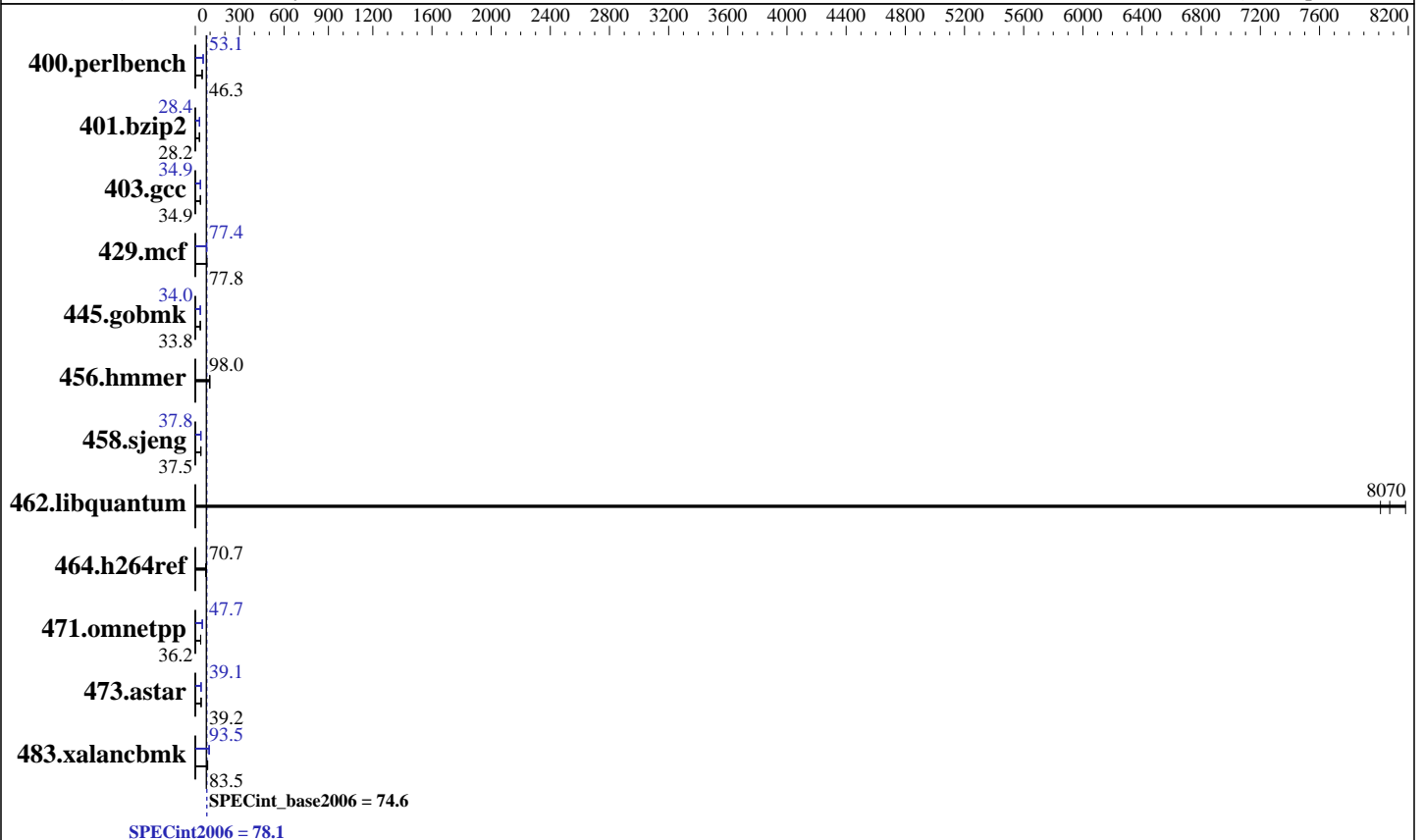
Test sponsor: Cisco Systems

Tested by: Cisco Systems

Test date: Sep-2017

Hardware Availability: Aug-2017

Software Availability: Apr-2017

Result benchmark chart with scale 0 to 8200:

- 400.perlbench: 53.1 / 46.3
- 401.bzip2: 28.4 / 28.2
- 403.gcc: 34.9 / 34.9
- 429.mcf: 77.4 / 77.8
- 445.gobmk: 34.0 / 33.8
- 456.hmmer: 98.0
- 458.sjeng: 37.8 / 37.5
- 462.libquantum: 8070
- 464.h264ref: 70.7
- 471.omnetpp: 47.7 / 36.2
- 473.astar: 39.1 / 39.2
- 483.xalancbmk: 93.5 / 83.5

SPECint_base2006 = 74.6

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Hardware

CPU Name:	Intel Xeon Gold 6150
CPU Characteristics:	Intel Turbo Boost Technology up to 3.70 GHz
CPU MHz:	2700
FPU:	Integrated
CPU(s) enabled:	36 cores, 2 chips, 18 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:	24.75 MB I+D on chip per chip
Other Cache:	None
Memory:	768 GB (24 x 32 GB 2Rx4 PC4-2666V-R)
Disk Subsystem:	1 x 300 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 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:	32/64-bit
Peak Pointers:	32/64-bit
Other Software:	Microquill SmartHeap V10.2

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Results Table

Benchmark	Base						Peak					
	Seconds	**Ratio**	**Seconds**	**Ratio**	**Seconds**	**Ratio**	**Seconds**	**Ratio**	**Seconds**	**Ratio**	**Seconds**	**Ratio**
400.perlbench	212	46.1	211	46.3	**211**	**46.3**	**184**	**53.1**	184	53.1	183	53.3
401.bzip2	**342**	**28.2**	343	28.1	341	28.3	339	28.4	**340**	**28.4**	340	28.4
403.gcc	230	34.9	**231**	**34.9**	232	34.7	230	35.0	**230**	**34.9**	235	34.2
429.mcf	**117**	**77.8**	118	77.6	117	77.9	118	77.6	121	75.6	**118**	**77.4**
445.gobmk	309	33.9	**310**	**33.8**	311	33.8	309	33.9	308	34.0	**309**	**34.0**
456.hmmer	96.1	97.1	**95.2**	**98.0**	95.2	98.0	96.1	97.1	**95.2**	**98.0**	95.2	98.0
458.sjeng	322	37.5	**322**	**37.5**	322	37.6	320	37.8	**320**	**37.8**	320	37.8
462.libquantum	**2.57**	**8070**	2.59	8010	2.53	8180	**2.57**	**8070**	2.59	8010	2.53	8180
464.h264ref	314	70.5	311	71.1	**313**	**70.7**	314	70.5	311	71.1	**313**	**70.7**
471.omnetpp	**172**	**36.2**	170	36.8	173	36.1	135	46.4	**131**	**47.7**	130	48.0
473.astar	180	39.0	**179**	**39.2**	178	39.4	179	39.1	180	38.9	**180**	**39.1**
483.xalancbmk	83.7	82.4	**82.7**	**83.5**	82.6	83.5	**73.8**	**93.5**	73.6	93.8	73.8	93.5

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 HyperThreading Technology set to Disabled
CPU performance set to Enterprise
Power Performance Tuning set to OS
SNC set to Disabled
IMC Interleaving set to Auto
Patrol Scrub set to Disabled
 Sysinfo program /opt/cpu2006-1.2/config/sysinfo.rev6993
 Revision 6993 of 2015-11-06 (b5e8d4b4eb51ed28d7f98696cbe290c1)
 running on linux Wed Sep 27 11:10:23 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 6150 CPU @ 2.70GHz
      2 "physical id"s (chips)
      36 "processors"
```

Continued on next page

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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 : 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
    cache size : 25344 KB

From /proc/meminfo
    MemTotal:       791029236 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 9 21:13

SPEC is set to: /opt/cpu2006-1.2
    Filesystem      Type  Size  Used Avail Use% Mounted on
    /dev/sda1       xfs   280G   42G  239G  15% /
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 M393A4K40BB2-CTD 32 GB 2 rank 2666 MHz

(End of data from sysinfo program)
```

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General Notes

Environment variables set by runspec before the start of the run:
KMP_AFFINITY = "granularity=fine,compact"
LD_LIBRARY_PATH = "/opt/intel/compilers_and_libraries_2018.0.128/linux/compiler/lib/ia32:/opt/intel/compilers_and_libraries_2018.0.128/linux/compiler/lib/intel64:/opt/cpu2006-1.2/sh10.2"
OMP_NUM_THREADS = "36"

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

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 -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/opt/cpu2006-1.2/sh10.2 -lsmartheap64

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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_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

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

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Peak Optimization Flags (Continued)

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/opt/cpu2006-1.2/sh10.2 -lsmartheap`

473.astar: `-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -auto-p32 -Wl,-z,muldefs -L/opt/cpu2006-1.2/sh10.2 -lsmartheap64`

483.xalancbmk: `-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -Wl,-z,muldefs -L/opt/cpu2006-1.2/sh10.2 -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-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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