Cisco Systems
Cisco UCS C220 M5 (Intel Xeon Gold 6132, 2.60 GHz)

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

SPECint®2006 = 77.6
SPECint_base2006 = 74.1

CPU Name: Intel Xeon Gold 6132
CPU Characteristics: Intel Turbo Boost Technology up to 3.70 GHz
CPU(s) enabled: 28 cores, 2 chips, 14 cores/chip
Primary Cache: 32 KB I + 32 KB D on chip per core
Secondary Cache: 1 MB I+D on chip per core
L3 Cache: 19.25 MB I+D on chip per core
Memory: 384 GB (24 x 16 GB 2Rx4 PC4-2666V-R)
Disk Subsystem: 1 x 600 GB SAS HDD, 10K RPM
Other Hardware: None

Operating System: Red Hat Enterprise Linux Server release 7.3 (Maipo) 3.10.0-514.el7.x86_64
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

Hardware

Software
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<td>78.7</td>
<td>87.6</td>
<td>78.7</td>
</tr>
</tbody>
</table>

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 /home/cpu2006-1.2/config/sysinfo.rev6993
Revision 6993 of 2015-11-06 (b5e8d4b4e51ed28d7f98696cbe290c1)
running on rhe173-spec Fri Sep 1 14:23:39 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 6132 CPU @ 2.60GHz
- 2 "physical id"s (chips)
- 28 "processors"

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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 : 14  
siblings : 14  
physical 0: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14  
physical 1: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14  
cache size : 19712 KB  
```

From /proc/meminfo

```
MemTotal: 394677676 kB  
HugePages_Total: 0  
Hugepagesize: 2048 kB  
```

From /etc/*release* /etc/*version*

```
os-release:  
NAME="Red Hat Enterprise Linux Server"  
VERSION="7.3 (Maipo)"  
ID="rhel"  
ID_LIKE="fedora"  
VERSION_ID="7.3"  
PRETTY_NAME="Red Hat Enterprise Linux Server 7.3 (Maipo)"  
ANSI_COLOR="0;31"  
CPE_NAME="cpe:/o:redhat:enterprise_linux:7.3:GA:server"  
redhat-release: Red Hat Enterprise Linux Server release 7.3 (Maipo)  
system-release: Red Hat Enterprise Linux Server release 7.3 (Maipo)  
```

uname -a:

```
Linux rhel73-spec 3.10.0-514.el7.x86_64 #1 SMP Wed Oct 19 11:24:13 EDT 2016  
x86_64 x86_64 x86_64 GNU/Linux  
```

run-level 3 Sep 1 14:19

SPEC is set to: /home/cpu2006-1.2  

```
Filesystem Type Size Used Avail Use% Mounted on  
/dev/sdb5 xfs 503G 8.2G 495G 2% /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 06/15/2017Cisco Systems, Inc. C220M5.3.1.1d.0.0615170645 06/15/2017  
Memory:  
```
48x 0xCE00 M393A2G40EB2-CTD 16 GB 2 rank 2666 MHz  
```

(End of data from sysinfo program)

The correct amount of Memory installed is 384 GB (24 x 16 GB)  
and the dmidecode is reporting invalid number of DIMMs installed

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SPEC CINT2006 Result

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Platform Notes (Continued)

Installed Memory:
24x 0xCE00 M393A2G40EB2-CTD 16 GB 2 rank 2666 MHz

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/lib/ia32:/home/cpu2006-1.2/lib/intel64:/home/cpu2006-1.2/sh10.2"
OMP_NUM_THREADS = "28"

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/enable

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

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Base Optimization Flags (Continued)

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
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**SPEC int2006 Result**

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</thead>
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CPU2006 license: 9019
Tested by: Cisco Systems

**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**

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

Tested with SPEC CPU2006 v1.2.
Originally published on 19 September 2017.