



SPEC® CINT2006 Result

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Cisco Systems

Cisco UCS C240 M5 (Intel Xeon Platinum 8164, 2.00GHz)

SPECint®2006 = 81.3

SPECint_base2006 = 78.3

CPU2006 license: 9019

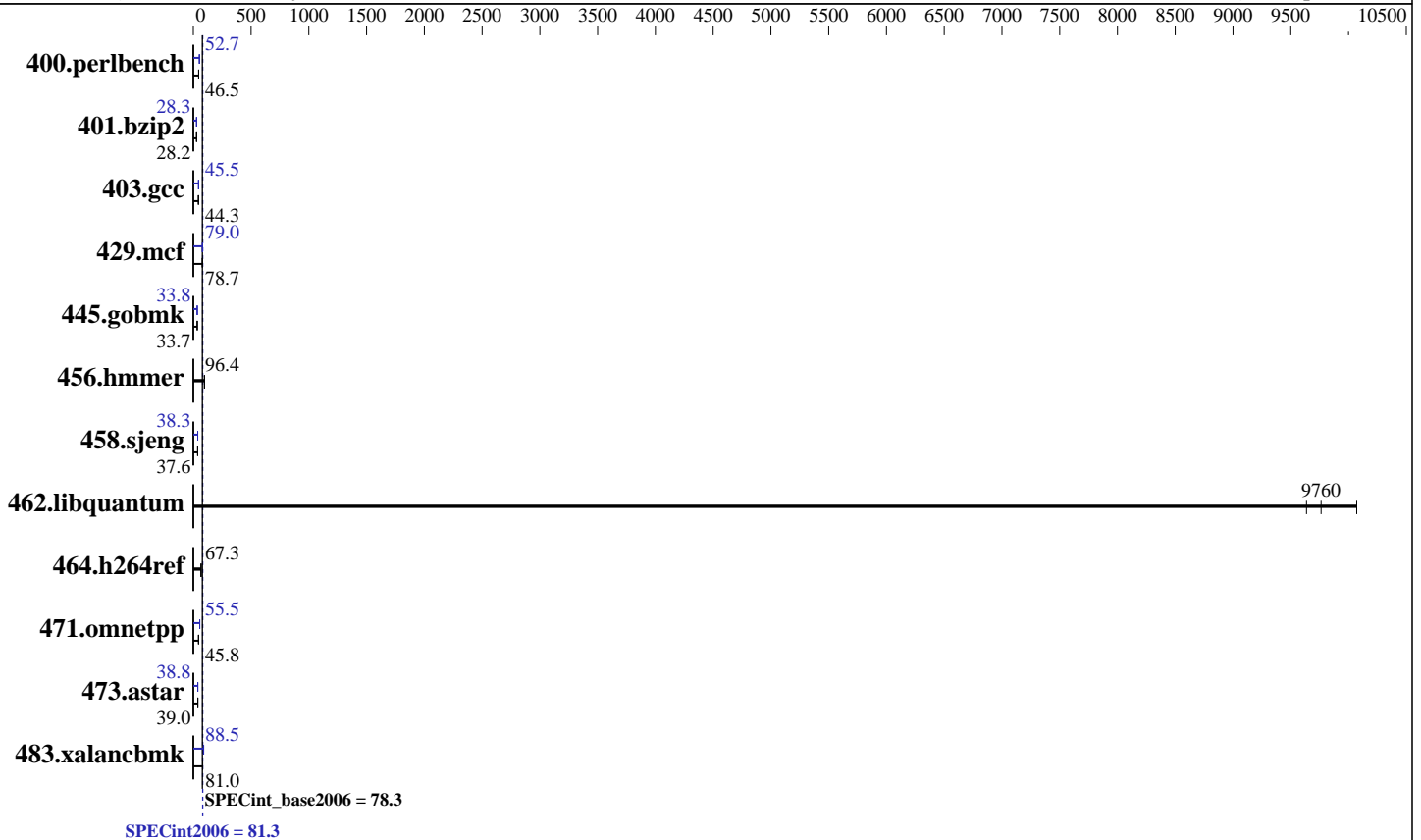
Test sponsor: Cisco Systems

Tested by: Cisco Systems

Test date: Aug-2017

Hardware Availability: Aug-2017

Software Availability: Apr-2017



Hardware

CPU Name: Intel Xeon Platinum 8164
CPU Characteristics: Intel Turbo Boost Technology up to 3.70 GHz
CPU MHz: 2000
FPU: Integrated
CPU(s) enabled: 52 cores, 2 chips, 26 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: 35.75 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 240 GB SSD SAS
Other Hardware: None

Software

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



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Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
400.perlbench	212	46.2	<u>210</u>	<u>46.5</u>	210	46.5	185	52.9	185	52.7	<u>185</u>	<u>52.7</u>
401.bzip2	342	28.2	345	28.0	<u>342</u>	<u>28.2</u>	<u>341</u>	<u>28.3</u>	341	28.3	341	28.3
403.gcc	<u>182</u>	<u>44.3</u>	182	44.3	182	44.2	177	45.6	177	45.5	<u>177</u>	<u>45.5</u>
429.mcf	<u>116</u>	<u>78.7</u>	115	79.2	117	78.1	116	78.7	115	79.5	<u>115</u>	<u>79.0</u>
445.gobmk	<u>311</u>	<u>33.7</u>	311	33.7	311	33.7	311	33.8	<u>311</u>	<u>33.8</u>	311	33.8
456.hmmr	<u>96.8</u>	<u>96.4</u>	96.6	96.6	96.9	96.3	<u>96.8</u>	<u>96.4</u>	96.6	96.6	96.9	96.3
458.sjeng	322	37.6	322	37.6	<u>322</u>	<u>37.6</u>	<u>316</u>	<u>38.3</u>	316	38.3	316	38.3
462.libquantum	<u>2.12</u>	<u>9760</u>	2.06	10100	2.15	9640	<u>2.12</u>	<u>9760</u>	2.06	10100	2.15	9640
464.h264ref	<u>329</u>	<u>67.3</u>	329	67.4	332	66.6	<u>329</u>	<u>67.3</u>	329	67.4	332	66.6
471.omnetpp	<u>137</u>	<u>45.8</u>	140	44.7	136	45.8	<u>113</u>	<u>55.5</u>	113	55.4	112	55.9
473.astar	180	39.1	<u>180</u>	<u>39.0</u>	180	38.9	181	38.7	181	38.9	<u>181</u>	<u>38.8</u>
483.xalancbmk	<u>85.2</u>	<u>81.0</u>	85.3	80.9	85.1	81.0	78.1	88.3	<u>78.0</u>	<u>88.5</u>	76.7	89.9

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 /home/cpu2006-1.2/config/sysinfo.rev6993
Revision 6993 of 2015-11-06 (b5e8d4b4eb51ed28d7f98696cbe290c1)
running on C240-RHEL73 Fri Aug 11 06:13:17 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) Platinum 8164 CPU @ 2.00GHz
2 "physical id"s (chips)
52 "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 : 26

siblings : 26

physical 0: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 16 17 18 19 20 21 22 24 25
26 27 28 29

physical 1: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 16 17 18 19 20 21 22 24 25
26 27 28 29

cache size : 36608 KB

From /proc/meminfo

MemTotal: 394867372 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="Storage"

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)

system-release-cpe: cpe:/o:redhat:enterprise_linux:7.3:ga:server

uname -a:

Linux C240-RHEL73 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 Aug 11 06:06

SPEC is set to: /home/cpu2006-1.2

Filesystem Type Size Used Avail Use% Mounted on
/dev/sdb5 xfs 169G 17G 153G 10% /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. C240M5.3.1.1d.0.0615170707 06/15/2017 Cisco Systems, Inc. C240M5.3.1.1d.0.0615170707 06/15/2017

Memory:

48x 0xCE00 M393A2G40EB2-CTD 16 GB 2 rank 2666 MHz

(End of data from sysinfo program)

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Platform Notes (Continued)

The correct amount of Memory installed is 384 GB (24 x 16 GB) and the dmidecode is reporting invalid number of DIMMs installed
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 = "52"

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

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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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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 -lsmarheap
- 473.astar: -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch
-auto-p32 -Wl,-z,muldefs -L/sh10.2 -lsmarheap64
- 483.xalancbmk: -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch
-Wl,-z,muldefs -L/sh10.2 -lsmarheap

Peak Other Flags

C benchmarks:

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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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