



# SPEC® CINT2006 Result

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## Cisco Systems

Cisco UCS C240 M5 (Intel Xeon Platinum 8180, 2.50 GHz)

**SPECint®\_rate2006 = 3010**

**SPECint\_rate\_base2006 = 2890**

**CPU2006 license:** 9019

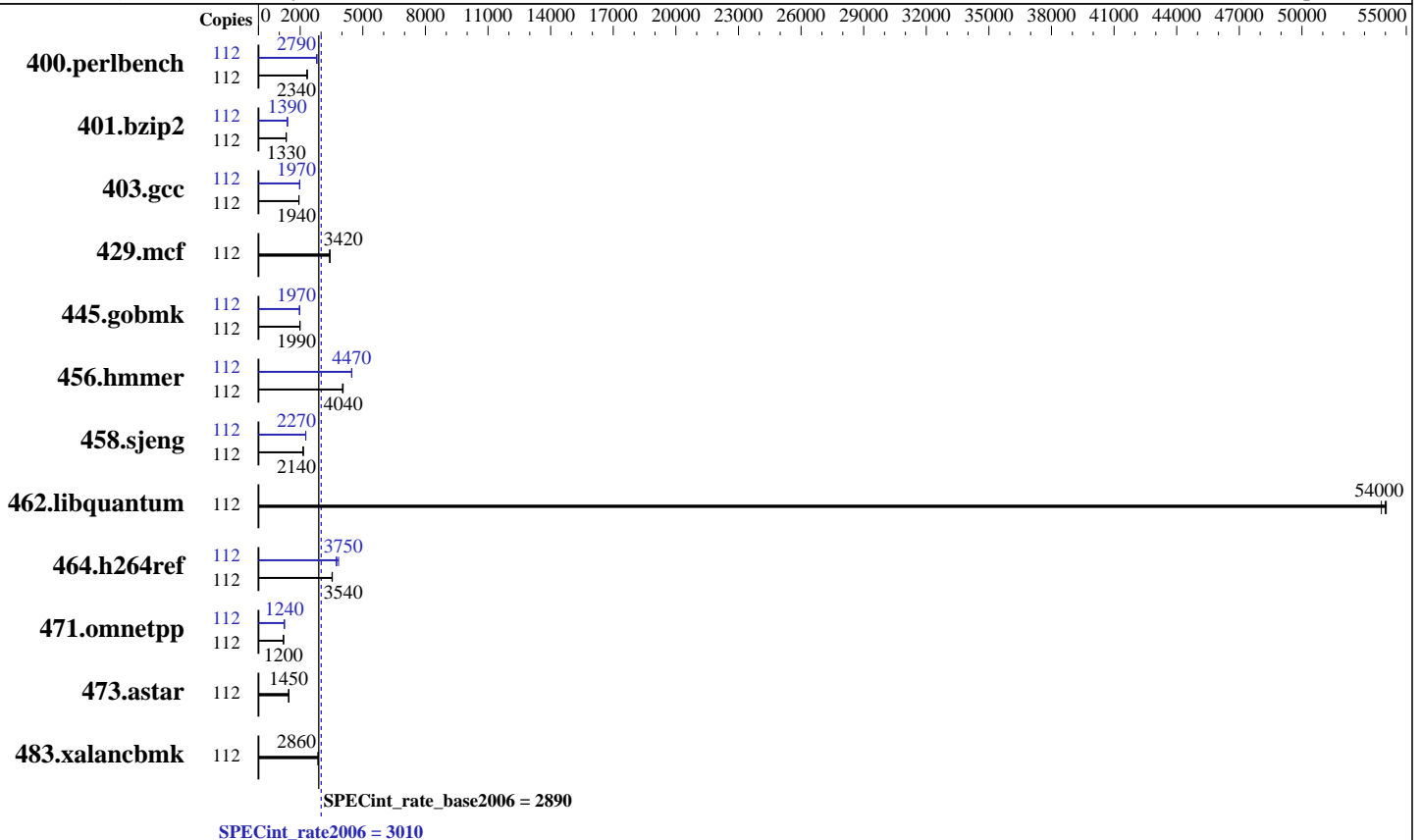
**Test sponsor:** Cisco Systems

**Tested by:** Cisco Systems

**Test date:** Sep-2017

**Hardware Availability:** Aug-2017

**Software Availability:** Apr-2017



### Hardware

**CPU Name:** Intel Xeon Platinum 8180  
**CPU Characteristics:** Intel Turbo Boost Technology up to 3.80 GHz  
**CPU MHz:** 2500  
**FPU:** Integrated  
**CPU(s) enabled:** 56 cores, 2 chips, 28 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:** 38.5 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 18.0.0.128 of Intel C/C++ Compiler for Linux;  
 Fortran: Version 18.0.0.128 of Intel Fortran  
**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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## Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
400.perlbench	112	472	2320	<b><u>469</u></b>	<b><u>2340</u></b>	468	2340	112	390	2800	393	2780	<b><u>392</u></b>	<b><u>2790</u></b>
401.bzip2	112	811	1330	<b><u>812</u></b>	<b><u>1330</u></b>	816	1320	112	<b><u>777</u></b>	<b><u>1390</u></b>	785	1380	776	1390
403.gcc	112	465	1940	<b><u>465</u></b>	<b><u>1940</u></b>	466	1940	112	<b><u>457</u></b>	<b><u>1970</u></b>	457	1970	456	1980
429.mcf	112	298	3420	299	3410	<b><u>299</u></b>	<b><u>3420</u></b>	112	298	3420	299	3410	<b><u>299</u></b>	<b><u>3420</u></b>
445.gobmk	112	591	1990	<b><u>591</u></b>	<b><u>1990</u></b>	591	1990	112	596	1970	<b><u>597</u></b>	<b><u>1970</u></b>	597	1970
456.hammer	112	260	4030	<b><u>258</u></b>	<b><u>4040</u></b>	257	4060	112	<b><u>234</u></b>	<b><u>4470</u></b>	233	4480	234	4460
458.sjeng	112	632	2140	632	2140	<b><u>632</u></b>	<b><u>2140</u></b>	112	<b><u>598</u></b>	<b><u>2270</u></b>	598	2270	598	2270
462.libquantum	112	42.9	54000	43.1	53800	<b><u>43.0</u></b>	<b><u>54000</u></b>	112	42.9	54000	43.1	53800	<b><u>43.0</u></b>	<b><u>54000</u></b>
464.h264ref	112	703	3520	701	3540	<b><u>701</u></b>	<b><u>3540</u></b>	112	<b><u>661</u></b>	<b><u>3750</u></b>	646	3840	666	3720
471.omnetpp	112	585	1200	583	1200	<b><u>584</u></b>	<b><u>1200</u></b>	112	565	1240	<b><u>564</u></b>	<b><u>1240</u></b>	564	1240
473.astar	112	542	1450	<b><u>542</u></b>	<b><u>1450</u></b>	543	1450	112	542	1450	<b><u>542</u></b>	<b><u>1450</u></b>	543	1450
483.xalancbmk	112	<b><u>270</u></b>	<b><u>2860</u></b>	270	2860	270	2860	112	<b><u>270</u></b>	<b><u>2860</u></b>	270	2860	270	2860

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-nsv2 Thu Sep 14 10:32:45 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 8180 CPU @ 2.50GHz  
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### Platform Notes (Continued)

```

2 "physical id"s (chips)
112 "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 : 28
siblings : 56
physical 0: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14 16 17 18 19 20 21 22 24
25 26 27 28 29 30
physical 1: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14 16 17 18 19 20 21 22 24
25 26 27 28 29 30
cache size : 39424 KB

From /proc/meminfo
MemTotal:      394864972 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-nsv2 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 Sep 14 10:30

SPEC is set to: /home/cpu2006-1.2
Filesystem      Type  Size  Used Avail Use% Mounted on
/dev/sda3       xfs   517G  140G  378G  27% /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

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### Platform Notes (Continued)

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

BIOS Cisco Systems, Inc. C240M5.3.1.1a.0.0607170937 06/07/2017

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/compilers_and_libraries_2018.0.128/linux/compiler/lib/ia32:/opt/intel/compilers_and_libraries_2018.0.128/linux/compiler/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_2018.0.128/linux/lib/ia32`

C++ benchmarks:

`icpc -m32 -L/opt/intel/compilers_and_libraries_2018.0.128/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`



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## 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/compilers\_and\_libraries\_2018.0.128/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\_2018.0.128/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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For other inquiries, please contact [webmaster@spec.org](mailto:webmaster@spec.org).

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