# SPEC® CINT2006 Result
Copyright 2006-2016 Standard Performance Evaluation Corporation

## Cisco Systems

Cisco UCS C220 M4 (Intel Xeon E5-2660 v4, 2.00 GHz)

SPECint®_rate2006 = 1160
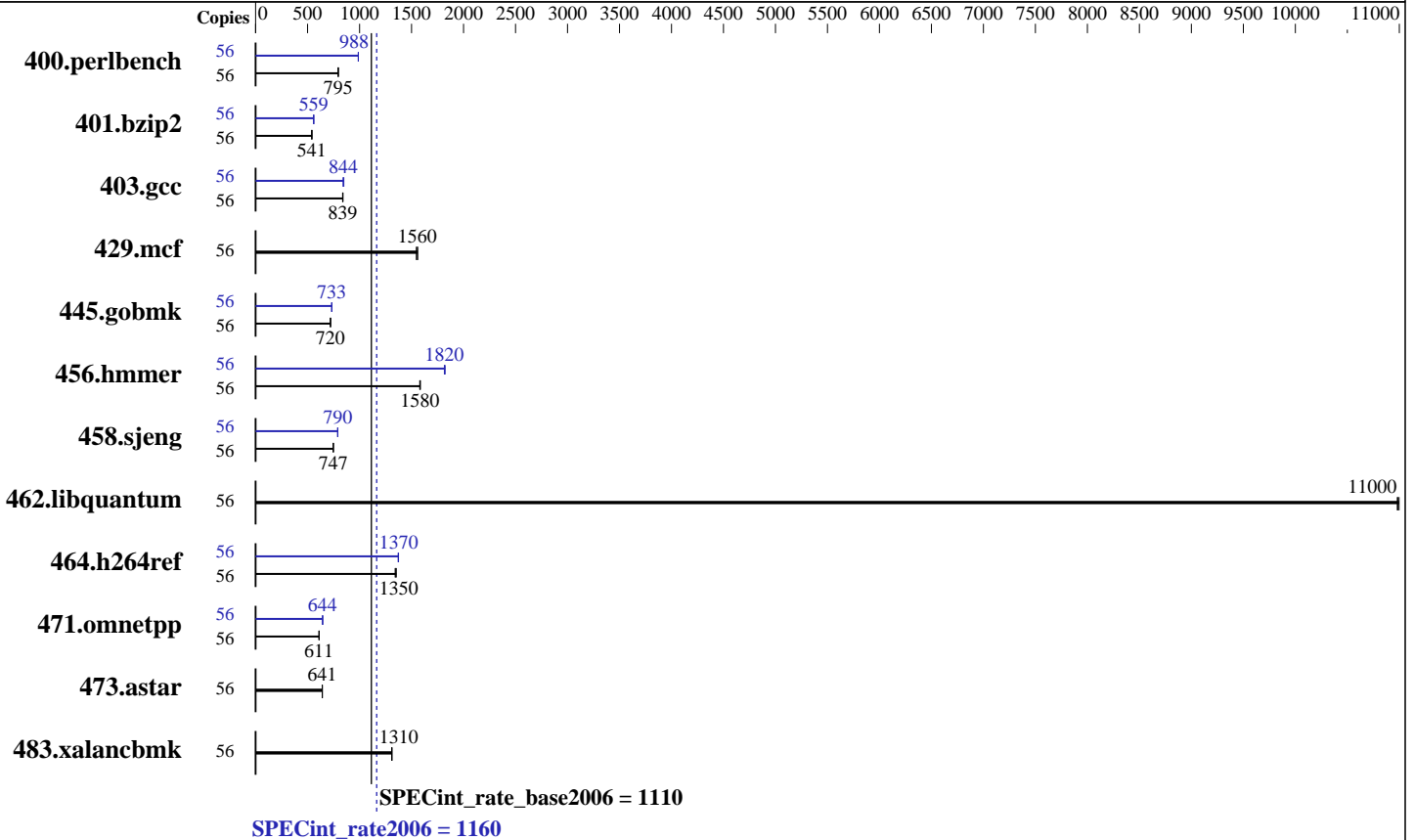
SPECint_rate_base2006 = 1110

**CPU2006 license:** 9019
**Test sponsor:** Cisco Systems
**Tested by:** Cisco Systems

**Test date:** Jun-2016
**Hardware Availability:** Apr-2016
**Software Availability:** Dec-2015



| Benchmark | Copies | Base | Peak |
|---|---|---|---|
| 400.perlbench | 56 | 795 | 988 |
| 401.bzip2 | 56 | 541 | 559 |
| 403.gcc | 56 | 839 | 844 |
| 429.mcf | 56 | 1560 | |
| 445.gobmk | 56 | 720 | 733 |
| 456.hmmer | 56 | 1580 | 1820 |
| 458.sjeng | 56 | 747 | 790 |
| 462.libquantum | 56 | 11000 | |
| 464.h264ref | 56 | 1350 | 1370 |
| 471.omnetpp | 56 | 611 | 644 |
| 473.astar | 56 | 641 | |
| 483.xalancbmk | 56 | 1310 | |

SPECint_rate_base2006 = 1110

SPECint_rate2006 = 1160

## Hardware

| | |
|---|---|
| CPU Name: | Intel Xeon E5-2660 v4 |
| CPU Characteristics: | Intel Turbo Boost Technology up to 3.20 GHz |
| CPU MHz: | 2000 |
| FPU: | Integrated |
| CPU(s) enabled: | 28 cores, 2 chips, 14 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: | 256 KB I+D on chip per core |
| L3 Cache: | 35 MB I+D on chip per chip |
| Other Cache: | None |
| Memory: | 256 GB (16 x 16 GB 2Rx4 PC4-2400T-R) |
| Disk Subsystem: | 1 x 960 GB SAS HDD |
| Other Hardware: | None |

## Software

| | |
|---|---|
| Operating System: | SUSE Linux Enterprise Server 12 SP1 (x86_64) 3.12.49-11-default |
| Compiler: | C/C++: Version 16.0.0.101 of Intel C++ Studio XE for Linux |
| Auto Parallel: | No |
| 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 |

# SPEC CINT2006 Result

## Cisco Systems

Cisco UCS C220 M4 (Intel Xeon E5-2660 v4, 2.00 GHz)

SPECint_rate2006 =     1160

SPECint_rate_base2006 =  1110

## Results Table

| Benchmark | Base | | | | | | | Peak | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Copies | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Copies | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio |
| 400.perlbench | 56 | **688** | **795** | 687 | 796 | 690 | 793 | 56 | **554** | **988** | 554 | 987 | 553 | 989 |
| 401.bzip2 | 56 | 1002 | 540 | 996 | 542 | **999** | **541** | 56 | 968 | 558 | 966 | 560 | **967** | **559** |
| 403.gcc | 56 | 539 | 837 | 536 | 840 | **537** | **839** | 56 | 531 | 849 | **534** | **844** | 535 | 842 |
| 429.mcf | 56 | 330 | 1550 | 328 | 1560 | **328** | **1560** | 56 | 330 | 1550 | 328 | 1560 | **328** | **1560** |
| 445.gobmk | 56 | 815 | 721 | **815** | **720** | 816 | 720 | 56 | 801 | 733 | 803 | 732 | **801** | **733** |
| 456.hmmer | 56 | 331 | 1580 | 330 | 1590 | **330** | **1580** | 56 | **288** | **1820** | 287 | 1820 | 288 | 1820 |
| 458.sjeng | 56 | **907** | **747** | 907 | 747 | 906 | 748 | 56 | **858** | **790** | 858 | 790 | 858 | 790 |
| 462.libquantum | 56 | **106** | **11000** | 106 | 11000 | 106 | 11000 | 56 | **106** | **11000** | 106 | 11000 | 106 | 11000 |
| 464.h264ref | 56 | 916 | 1350 | 923 | 1340 | **919** | **1350** | 56 | 903 | 1370 | **903** | **1370** | 902 | 1370 |
| 471.omnetpp | 56 | 574 | 610 | **573** | **611** | 573 | 611 | 56 | 542 | 645 | **543** | **644** | 543 | 644 |
| 473.astar | 56 | 614 | 641 | 612 | 642 | **613** | **641** | 56 | 614 | 641 | 612 | 642 | **613** | **641** |
| 483.xalancbmk | 56 | 295 | 1310 | **295** | **1310** | 295 | 1310 | 56 | 295 | 1310 | **295** | **1310** | 295 | 1310 |

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:
    CPU performance set to Enterprise
    Power Technology set to Energy Efficient
    Energy Performance BIAS setting set to Balanced Performance
    Memory RAS configuration set to Maximum Performance
    Memory Power Saving Mode set to Disabled
    QPI Snoop Mode set to Cluster-on-Die
     Sysinfo program /opt/cpu2006-1.2/config/sysinfo.rev6914
     $Rev: 6914 $ $Date:: 2014-06-25 #$ e3fbb8667b5a285932ceab81e28219e1
     running on linux-40jf Wed Jun 15 08:32:42 2016

     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) CPU E5-2660 v4@ 2.00GHz

## Cisco Systems

Cisco UCS C220 M4 (Intel Xeon E5-2660 v4, 2.00 GHz)

SPECint_rate2006 =      1160

SPECint_rate_base2006 =  1110

**CPU2006 license:** 9019
**Test sponsor:** Cisco Systems
**Tested by:** Cisco Systems

**Test date:** Jun-2016
**Hardware Availability:** Apr-2016
**Software Availability:** Dec-2015

## Platform Notes (Continued)

```
      2 "physical id"s (chips)
     56 "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 : 14
      siblings  : 28
      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 : 17920 KB

From /proc/meminfo
   MemTotal:       264564576 kB
   HugePages_Total:        0
   Hugepagesize:        2048 kB

From /etc/*release* /etc/*version*
   SuSE-release:
      SUSE Linux Enterprise Server 12 (x86_64)
      VERSION = 12
      PATCHLEVEL = 1
      # 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-SP1"
      VERSION_ID="12.1"
      PRETTY_NAME="SUSE Linux Enterprise Server 12 SP1"
      ID="sles"
      ANSI_COLOR="0;32"
      CPE_NAME="cpe:/o:suse:sles:12:sp1"

uname -a:
   Linux linux-40jf 3.12.49-11-default #1 SMP Wed Nov 11 20:52:43 UTC 2015
   (8d714a0) x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Jun 15 08:28

SPEC is set to: /opt/cpu2006-1.2
   Filesystem      Type  Size  Used Avail Use% Mounted on
   /dev/sda1       xfs   893G   10G  883G   2% /
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. C220M4.2.0.10c.0.032320160810 03/23/2016
   Memory:
      8x 0xCE00 M393A2G40DB1-CRC 16 GB 2 rank 2400 MHz
```

## Cisco Systems

Cisco UCS C220 M4 (Intel Xeon E5-2660 v4, 2.00 GHz)

SPECint_rate2006 =     1160

SPECint_rate_base2006 =  1110

| | | | |
|---|---|---|---|
| **CPU2006 license:** 9019 | | **Test date:** | Jun-2016 |
| **Test sponsor:** Cisco Systems | | **Hardware Availability:** | Apr-2016 |
| **Tested by:** Cisco Systems | | **Software Availability:** | Dec-2015 |

### Platform Notes (Continued)

```
     8x 0xCE00 M393A2G40EB1-CRC 16 GB 2 rank 2400 MHz
     8x NO DIMM NO DIMM

   (End of data from sysinfo program)
```

### General Notes

```
Environment variables set by runspec before the start of the run:
LD_LIBRARY_PATH = "/opt/cpu2006-1.2/libs/32:/opt/cpu2006-1.2/libs/64:/opt/cpu2006-1.2/sh"

 Binaries compiled on a system with 1x Intel Core i5-4670K CPU + 32GB
 memory using RedHat EL 7.1
 Transparent Huge Pages enabled with:
 echo always > /sys/kernel/mm/transparent_hugepage/enabled
 Filesystem page cache cleared with:
 echo 1>        /proc/sys/vm/drop_caches
 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_2016/linux/compiler/lib/ia32_lin
```

C++ benchmarks:
```
    icpc -m32 -L/opt/intel/compilers_and_libraries_2016/linux/compiler/lib/ia32_lin
```

## 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
```

# SPEC CINT2006 Result
Copyright 2006-2016 Standard Performance Evaluation Corporation

## Cisco Systems

Cisco UCS C220 M4 (Intel Xeon E5-2660 v4, 2.00 GHz)

SPECint_rate2006 = 1160

SPECint_rate_base2006 = 1110

**CPU2006 license:** 9019
**Test sponsor:** Cisco Systems
**Tested by:** Cisco Systems

**Test date:** Jun-2016
**Hardware Availability:** Apr-2016
**Software Availability:** Dec-2015

## Base Optimization Flags

C benchmarks:

```
-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch
-opt-mem-layout-trans=3
```

C++ benchmarks:

```
-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch
-opt-mem-layout-trans=3 -Wl,-z,muldefs -L/sh -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_2016/linux/compiler/lib/ia32_lin
```

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_2016/linux/compiler/lib/ia32_lin
```

## Peak Portability Flags

```
400.perlbench: -D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX_X64
  401.bzip2: -D_FILE_OFFSET_BITS=64 -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: -D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LP64
   458.sjeng: -D_FILE_OFFSET_BITS=64 -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
```

## Cisco Systems

Cisco UCS C220 M4 (Intel Xeon E5-2660 v4, 2.00 GHz)

SPECint_rate2006 =     1160

SPECint_rate_base2006 =  1110

**CPU2006 license:** 9019
**Test sponsor:** Cisco Systems
**Tested by:** Cisco Systems

**Test date:** Jun-2016
**Hardware Availability:** Apr-2016
**Software Availability:** Dec-2015

# Peak Portability Flags (Continued)

483.xalancbmk: `-D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LINUX`

# Peak Optimization Flags

C benchmarks:

400.perlbench: `-xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)`
`-ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2)`
`-par-num-threads=1(pass 1) -prof-use(pass 2) -auto-ilp32`

401.bzip2: `-xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)`
`-ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2)`
`-par-num-threads=1(pass 1) -prof-use(pass 2) -opt-prefetch`
`-auto-ilp32 -ansi-alias`

403.gcc: `-xCORE-AVX2 -ipo -O3 -no-prec-div`

429.mcf: `basepeak = yes`

445.gobmk: `-xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)`
`-prof-use(pass 2) -par-num-threads=1(pass 1) -ansi-alias`
`-opt-mem-layout-trans=3`

456.hmmer: `-xCORE-AVX2 -ipo -O3 -no-prec-div -unroll2 -auto-ilp32`

458.sjeng: `-xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)`
`-ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2)`
`-par-num-threads=1(pass 1) -prof-use(pass 2) -unroll4`
`-auto-ilp32`

462.libquantum: `basepeak = yes`

464.h264ref: `-xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)`
`-ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2)`
`-par-num-threads=1(pass 1) -prof-use(pass 2) -unroll2`
`-ansi-alias`

C++ benchmarks:

471.omnetpp: `-xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)`
`-ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2)`
`-par-num-threads=1(pass 1) -prof-use(pass 2) -ansi-alias`
`-opt-ra-region-strategy=block -Wl,-z,muldefs`
`-L/sh -lsmartheap`

473.astar: `basepeak = yes`

# SPEC CINT2006 Result

## Cisco Systems

Cisco UCS C220 M4 (Intel Xeon E5-2660 v4, 2.00 GHz)

SPECint_rate2006 =      1160

SPECint_rate_base2006 =  1110

**CPU2006 license:** 9019
**Test sponsor:** Cisco Systems
**Tested by:** Cisco Systems

**Test date:** Jun-2016
**Hardware Availability:** Apr-2016
**Software Availability:** Dec-2015

## Peak Optimization Flags (Continued)

483.xalancbmk: basepeak = yes

## 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-ic16.0-official-linux64.html
http://www.spec.org/cpu2006/flags/Cisco-Platform-Settings-V1.2-revE.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic16.0-official-linux64.xml
http://www.spec.org/cpu2006/flags/Cisco-Platform-Settings-V1.2-revE.xml

SPEC and SPECint are registered trademarks of the Standard Performance
Evaluation Corporation. All other brand and product names appearing in
this result are trademarks or registered trademarks of their respective
holders.

For questions about this result, please contact the tester.
For other inquiries, please contact webmaster@spec.org.

Tested with SPEC CPU2006 v1.2.
Report generated on Wed Aug 24 13:15:13 2016 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 23 August 2016.