SPEC® CINT2006 Result

Cisco Systems

Cisco UCS C24 M3 (Intel Xeon E5-2420 v2, 2.20 GHz)

SPECint®_rate2006 = 440

SPECint_rate_base2006 = 423

CPU2006 license: 9019

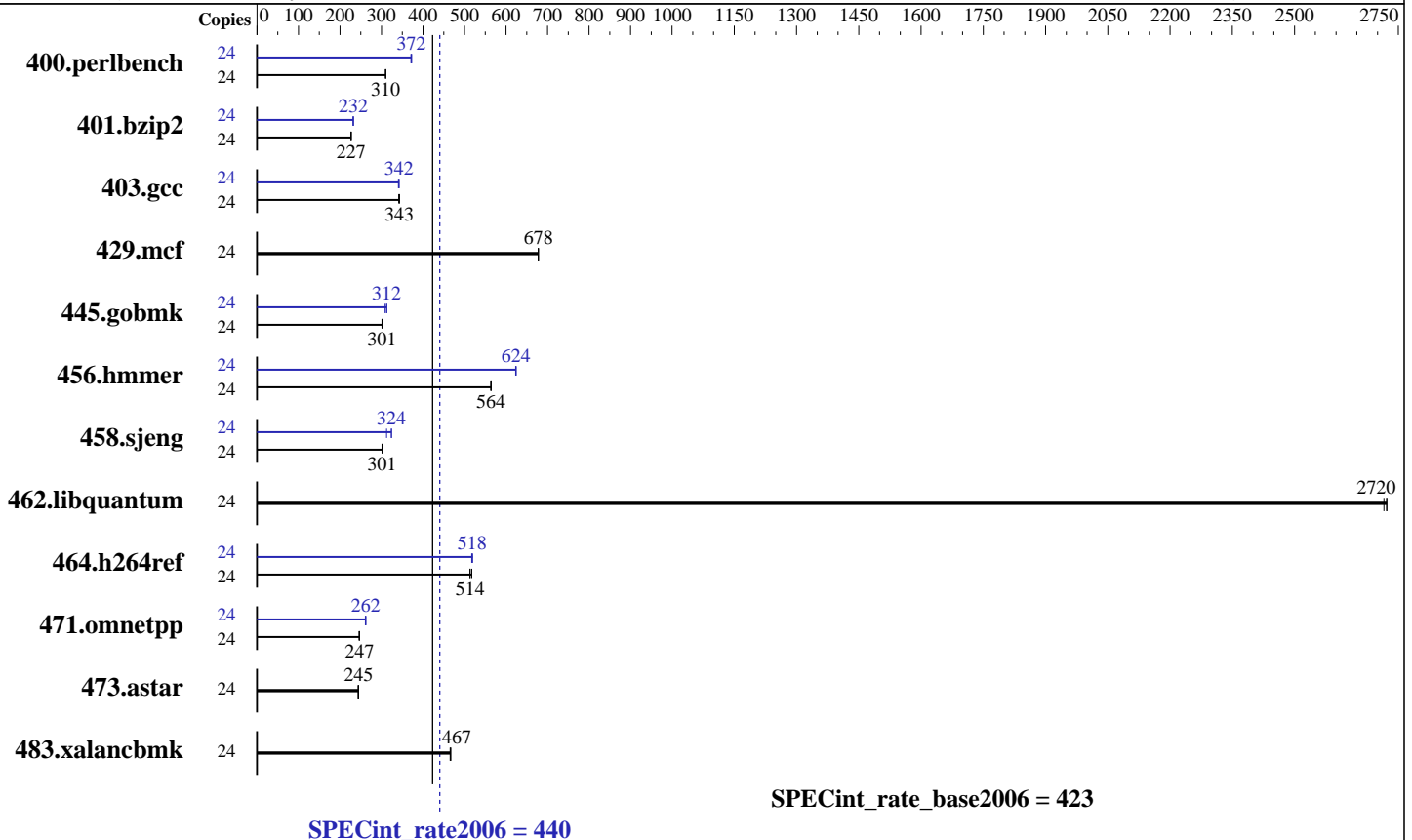**Test sponsor:** Cisco Systems

Tested by: Cisco Systems

Test date: May-2014

Hardware Availability: Feb-2014

Software Availability: Mar-2014

Benchmark	Copies	Base	Peak
400.perlbench	24	310	372
401.bzip2	24	227	232
403.gcc	24	343	342
429.mcf	24	678	
445.gobmk	24	301	312
456.hmmer	24	564	624
458.sjeng	24	301	324
462.libquantum	24	2720	
464.h264ref	24	514	518
471.omnetpp	24	247	262
473.astar	24	245	
483.xalancbmk	24	467	

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Hardware

CPU Name: Intel Xeon E5-2420 v2

CPU Characteristics: Intel Turbo Boost Technology up to 2.70 GHz

CPU MHz: 2200

FPU: Integrated

CPU(s) enabled: 12 cores, 2 chips, 6 cores/chip, 2 threads/core

CPU(s) orderable: 1,2 chip

Primary Cache: 32 KB I + 32 KB D on chip per core

Secondary Cache: 256 KB I+D on chip per core

L3 Cache: 15 MB I+D on chip per chip

Other Cache: None

Memory: 96 GB (12 x 8 GB 2Rx4 PC3L-12800R-11, ECC)

Disk Subsystem: 1 X 600 GB 10000 RPM SAS

Other Hardware: None

Software

Operating System: Red Hat Enterprise Linux Server release 6.5 (Santiago)
2.6.32-431.el6.x86_64

Compiler: C/C++: Version 14.0.0.080 of Intel C++ Studio XE for Linux

Auto Parallel: No

File System: ext4

System State: Run level 3 (multi-user)

Base Pointers: 32-bit

Peak Pointers: 32/64-bit

Other Software: Microquill SmartHeap V10.0

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Results Table

Benchmark	Base Copies	Base Seconds	Base Ratio	Base Seconds	Base Ratio	Base Seconds	Base Ratio	Peak Copies	Peak Seconds	Peak Ratio	Peak Seconds	Peak Ratio	Peak Seconds	Peak Ratio
400.perlbench	24	757	310	**757**	**310**	757	310	24	629	373	**630**	**372**	632	371
401.bzip2	24	1022	227	1020	227	**1022**	**227**	24	998	232	**999**	**232**	1000	232
403.gcc	24	**563**	**343**	566	342	563	343	24	565	342	567	341	**565**	**342**
429.mcf	24	**323**	**678**	323	678	323	678	24	**323**	**678**	323	678	323	678
445.gobmk	24	834	302	836	301	**836**	**301**	24	805	313	816	309	**807**	**312**
456.hmmer	24	**397**	**564**	398	563	397	564	24	359	624	**359**	**624**	359	623
458.sjeng	24	964	301	963	302	**964**	**301**	24	930	312	**897**	**324**	897	324
462.libquantum	24	183	2720	183	2720	**183**	**2720**	24	183	2720	183	2720	**183**	**2720**
464.h264ref	24	1035	513	**1034**	**514**	1026	518	24	1023	519	**1025**	**518**	1027	517
471.omnetpp	24	608	247	**608**	**247**	610	246	24	574	261	572	262	**573**	**262**
473.astar	24	689	245	692	243	**689**	**245**	24	689	245	692	243	**689**	**245**
483.xalancbmk	24	**355**	**467**	355	467	356	465	24	**355**	**467**	355	467	356	465

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

    CPU performance set to HPC
    Power Technology set to Custom
    CPU Power State C6 set to Enabled
    CPU Power State C1 Enhanced set to Disabled
    Memory RAS configuration set to Maximum Performance
    DRAM Clock Throttling Set to Performance
    LV DDR Mode set to Performance-mode
    DRAM Refresh Rate Set to 1x
     Sysinfo program /opt/cpu2006-1.2/config/sysinfo.rev6818
     $Rev: 6818 $ $Date:: 2012-07-17 #$ e86d102572650a6e4d596a3cee98f191
     running on SPEC-RHEL6.5 Wed May 28 18:40:16 2014

     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

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Platform Notes (Continued)

```
   model name : Intel(R) Xeon(R) CPU E5-2420 v2 @ 2.20GHz
      2 "physical id"s (chips)
      24 "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 : 6
      siblings  : 12
      physical 0: cores 0 1 2 3 4 5
      physical 1: cores 0 1 2 3 4 5
   cache size : 15360 KB

From /proc/meminfo
   MemTotal:       98988712 kB
   HugePages_Total:       0
   Hugepagesize:       2048 kB

/usr/bin/lsb_release -d
   Red Hat Enterprise Linux Server release 6.5 (Santiago)

From /etc/*release* /etc/*version*
   redhat-release: Red Hat Enterprise Linux Server release 6.5 (Santiago)
   system-release: Red Hat Enterprise Linux Server release 6.5 (Santiago)
   system-release-cpe: cpe:/o:redhat:enterprise_linux:6server:ga:server

uname -a:
   Linux SPEC-RHEL6.5 2.6.32-431.el6.x86_64 #1 SMP Sun Nov 10 22:19:54 EST 2013
   x86_64 x86_64 x86_64 GNU/Linux

run-level 3 May 28 18:26

SPEC is set to: /opt/cpu2006-1.2
   Filesystem      Type   Size  Used Avail Use% Mounted on
   /dev/sda2       ext4   549G   19G  503G   4% /

Additional information from dmidecode:
  BIOS Cisco Systems, Inc. C22M3.1.5.7.0.042820140508 04/28/2014
  Memory:
   12x 0xCE00 M393B1K70DH0-YK0 8 GB 1600 MHz 2 rank

(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 Core i7-860 CPU + 8GB
 memory using RedHat EL 6.4
 Transparent Huge Pages enabled with:
 echo always > /sys/kernel/mm/redhat_transparent_hugepage/enabled
```

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General Notes (Continued)

```
 Filesystem page cache cleared with:
 echo 1>        /proc/sys/vm/drop_caches
 runspec command invoked through numactl i.e.:
 numactl --interleave=all runspec <etc>

 Submitted_by: "Vijay Durairaj (vijd)" <vijd@cisco.com>
 Submitted: Thu May 29 17:11:15 EDT 2014
 Submission: cpu2006-20140529-29692.sub
```

Base Compiler Invocation

C benchmarks:
```
     icc  -m32
```

C++ benchmarks:
```
     icpc -m32
```

Base Portability Flags

```
     400.perlbench: -DSPEC_CPU_LINUX_IA32
     462.libquantum: -DSPEC_CPU_LINUX
     483.xalancbmk: -DSPEC_CPU_LINUX
```

Base Optimization Flags

C benchmarks:
```
     -xSSE4.2 -ipo -O3 -no-prec-div -opt-prefetch -opt-mem-layout-trans=3
```

C++ benchmarks:
```
     -xSSE4.2 -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
```

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Peak Compiler Invocation (Continued)

400.perlbench: `icc -m64`

401.bzip2: `icc -m64`

456.hmmer: `icc -m64`

458.sjeng: `icc -m64`

C++ benchmarks:
`icpc -m32`

Peak Portability Flags

400.perlbench: `-DSPEC_CPU_LP64 -DSPEC_CPU_LINUX_X64`
401.bzip2: `-DSPEC_CPU_LP64`
456.hmmer: `-DSPEC_CPU_LP64`
458.sjeng: `-DSPEC_CPU_LP64`
462.libquantum: `-DSPEC_CPU_LINUX`
483.xalancbmk: `-DSPEC_CPU_LINUX`

Peak Optimization Flags

C benchmarks:

400.perlbench: `-xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2)`
`-O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)`
`-auto-ilp32`

401.bzip2: `-xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2)`
`-O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)`
`-opt-prefetch -auto-ilp32 -ansi-alias`

403.gcc: `-xSSE4.2 -ipo -O3 -no-prec-div`

429.mcf: `basepeak = yes`

445.gobmk: `-xSSE4.2(pass 2) -prof-gen(pass 1) -prof-use(pass 2)`
`-ansi-alias -opt-mem-layout-trans=3`

456.hmmer: `-xSSE4.2 -ipo -O3 -no-prec-div -unroll2 -auto-ilp32`

458.sjeng: `-xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2)`
`-O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)`
`-unroll4 -auto-ilp32`

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Peak Optimization Flags (Continued)

462.libquantum: basepeak = yes

464.h264ref: `-xSSE4.2(pass 2)` `-prof-gen(pass 1)` `-ipo(pass 2)`
`-O3(pass 2)` `-no-prec-div(pass 2)` `-prof-use(pass 2)`
`-unroll2` `-ansi-alias`

C++ benchmarks:

471.omnetpp: `-xSSE4.2(pass 2)` `-prof-gen(pass 1)` `-ipo(pass 2)`
`-O3(pass 2)` `-no-prec-div(pass 2)` `-prof-use(pass 2)`
`-ansi-alias` `-opt-ra-region-strategy=block` `-Wl,-z,muldefs`
`-L/sh` `-lsmartheap`

473.astar: basepeak = yes

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-ic14.0-official-linux64.20140128.html
http://www.spec.org/cpu2006/flags/Cisco-Platform-Settings-V1.2-revB.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic14.0-official-linux64.20140128.xml
http://www.spec.org/cpu2006/flags/Cisco-Platform-Settings-V1.2-revB.xml

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

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