Cisco Systems
Cisco UCS B260 M4 (Intel Xeon E7-4820 v2, 2.00 GHz)

<table>
<thead>
<tr>
<th>SPECfp_rate2006</th>
<th>SPECfp_rate_base2006</th>
</tr>
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<tbody>
<tr>
<td>NC</td>
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</tr>
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</table>

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

Test date: Apr-2014
Hardware Availability: May-2014
Software Availability: Nov-2013

SPEC has determined that this result is not in compliance with the SPEC CPU2006 run and reporting rules. Specifically, the submitter has notified SPEC that the system was run with a BIOS which included a version of the Intel MRC (Memory Reference Code) that is not supported by Cisco or Intel.

<table>
<thead>
<tr>
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</tr>
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<tbody>
<tr>
<td>410.bwaves</td>
</tr>
<tr>
<td>416.gamess</td>
</tr>
<tr>
<td>433.milc</td>
</tr>
<tr>
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</tr>
<tr>
<td>435.gromacs</td>
</tr>
<tr>
<td>436.cactusADM</td>
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<tr>
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<tr>
<td>450.soplex</td>
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<td>453.povray</td>
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<td>459.GemsFDTD</td>
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Cisco UCS B260 M4 (Intel Xeon E7-4820 v2, 2.00 GHz)

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<table>
<thead>
<tr>
<th>Software</th>
<th>Hardware</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating System: Red Hat Enterprise Linux Server release 6.5 (Santiago)</td>
<td>CPU Name: Intel Xeon E7-4820 v2</td>
</tr>
<tr>
<td>Compiler: C/C++: Version 14.0.0.080 of Intel C++ Studio XE for Linux; Fortran: Version 14.0.0.080 of Intel Fortran Studio XE for Linux</td>
<td>CPU Characteristics: Intel Turbo Boost Technology up to 2.50 GHz</td>
</tr>
<tr>
<td>File System: ext4</td>
<td>CPU MHz: 2000</td>
</tr>
<tr>
<td>System State: Run level 3 (multi-user)</td>
<td>FPU: Integrated</td>
</tr>
<tr>
<td>Base Pointers: 32/64-bit</td>
<td>CPU(s) enabled: 16 cores, 2 chips, 8 cores/chip, 2 threads/core</td>
</tr>
<tr>
<td>Peak Pointers: 32/64-bit</td>
<td>CPU(s) orderable: 1.2 chip</td>
</tr>
<tr>
<td>Other Software: None</td>
<td>Primary Cache: 32 KB I + 32 KB D on chip per core</td>
</tr>
<tr>
<td></td>
<td>Secondary Cache: 256 KB I+D on chip per core</td>
</tr>
<tr>
<td></td>
<td>L3 Cache: 16 MB I+D on chip per chip</td>
</tr>
<tr>
<td></td>
<td>Other Cache: None</td>
</tr>
<tr>
<td></td>
<td>Memory: 256 GB (32 x 8 GB 2Rx4 PC3L-12800R-11, ECC, running at 1333 MHz and 1111)</td>
</tr>
<tr>
<td></td>
<td>Disk Subsystem: 1 X 300 GB 15000 RPM SAS</td>
</tr>
<tr>
<td></td>
<td>Other Hardware: None</td>
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</tbody>
</table>
Cisco Systems
Cisco UCS B260 M4 (Intel Xeon E7-4820 v2, 2.00 GHz)

CPU2006 license: 9019
Test sponsor: Cisco Systems
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Results Table

<table>
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<tr>
<th>Benchmark</th>
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<th>Ratio Base</th>
<th>Seconds Peak</th>
<th>Ratio Peak</th>
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<td>NC</td>
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<td>NC</td>
<td>NC</td>
</tr>
</tbody>
</table>

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"

SPEC CFP2006 Result
Copyright 2006-2014 Standard Performance Evaluation Corporation

Non-Compliant
SPEC CFP2006 Result

Cisco Systems
Cisco UCS B260 M4 (Intel Xeon E7-4820 v2, 2.00 GHz)

SPECfp_rate2006 = NC
SPECfp_rate_base2006 = NC

CPU2006 license: 9019
Test sponsor: Cisco Systems
Tested by: Cisco Systems
Test date: Apr-2014
Hardware Availability: May-2014
Software Availability: Nov-2013

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Platform Notes

Intel HT Technology = Enabled
CPU performance set to HPC
Power Technology set to Custom
CPU Power State C6 set to Disabled
CPU Power State C1 Enhanced set to Disable
Memory RAS configuration set to Maximum Performance
DRAM Clock Throttling Set to Performance
Sysinfo program /opt/cpu2006-1.4/config/sysinfo.rev6818
$Rev: 6818 $ $Date:: 2012-07-17 #$ e86d102572650a6e4d596a3cee98f191
running on yos Tue Apr 22 15:32:00 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
model name : Intel(R) Xeon(R) CPU E7-4820 v2 @ 2.00GHz
  2 "physical id" (chips)
  32 "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 :
siblings :
physical 0: cores 0 1 2 3 4 5 6 7
physical 1: cores 0 1 2 3 4 5 6 7
cache size : 16384 KB

From /proc/meminfo
MemTotal: 263971504 kB
SwapTotal: 0
SwapFree: 0

From /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)

continued on next page
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Platform Notes (Continued)

```
uname -a:
   Linux yos 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 Apr 22 00:25

SPEC is set to: /opt/cpu2006-1.4
Filesystem Type Size  Used Avail Use% Mounted on
/dev/sda1      ext4  275G   12G  249G   5% /

Additional information from dmidecode:
   BIOS Cisco Systems, Inc. XM4-1.2.2.1.15.022020141613 02/20/2014
   Memory:
      32x   8 GB
      32x 0xCE00 M393B1K70QB0-YK0 8 GB 1333 MHz 2 rank
      16x 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/cpu2006-1.4/libs/32:/opt/cpu2006-1.4/libs/64:/opt/cpu2006-1.4/sh"

Binaries compiled on a system with 1x Core i7-860 CPU + 8GB memory using RedHat EL 6.4
Transparent Huge Pages enabled with:
   /sys/kernel/mm/redhat_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>

Submitted by: "Sheshgiri I (shei)" <shei@cisco.com>
Submitted: Wed May 28 03:16:44 EDT 2014
Submission: cpu2006-20140505-29483.sub
Cisco Systems
Cisco UCS B260 M4 (Intel Xeon E7-4820 v2, 2.00 GHz)

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### Base Compiler Invocation

- **C benchmarks:**
  - `icc -m64`

- **C++ benchmarks:**
  - `icpc -m64`

- **Fortran benchmarks:**
  - `ifort -m64`

- **Benchmarks using both Fortran and C:**
  - `icc -m64 ifort -m64`

### Base Portability Flags

- `410.bwaves` -DSPEC_CPU_LP64
- `416.gamess` -DSPEC_CPU_LP64
- `433.milc` -DSPEC_CPU_LP64
- `434.zeusmp` -DSPEC_CPU_LP64
- `435.gromacs` -DSPEC_CPU_LP64 -nofor_main
- `436.cactusADM` -DSPEC_CPU_LP64 -nofor_main
- `437.leslie3d` -DSPEC_CPU_LP64
- `443.namc` -DSPEC_CPU_LP64 -nofor_main
- `444.namd` -DSPEC_CPU_LP64 -nofor_main
- `447.dealII` -DSPEC_CPU_LP64
- `450.soplex` -DSPEC_CPU_LP64
- `453.povray` -DSPEC_CPU_LP64
- `454.calculix` -DSPEC_CPU_LP64 -nofor_main
- `459.GemsFDTD` -DSPEC_CPU_LP64
- `465.tonto` -DSPEC_CPU_LP64
- `470.lbm` -DSPEC_CPU_LP64
- `481.wrf` -DSPEC_CPU_LP64 -DSPEC_CPU_CASE_FLAG -DSPEC_CPU_LINUX
- `482.sphinx3` -DSPEC_CPU_LP64

### Base Optimization Flags

- **C benchmarks:**
  - `-xAVX` `-ipo -03 -no-prec-div -opt-prefetch -auto-p32 -ansi-alias`
  - `-opt-mem-layout-trans=3`

Continued on next page
SPEC has determined that this result is not in compliance with the SPEC CPU2006 run and reporting rules. Specifically, the submitter has notified SPEC that the system was run with a BIOS which included a version of the Intel MRC (Memory Reference Code) that is not supported by Cisco or Intel.

**Base Optimization Flags (Continued)**

C++ benchmarks:
- -xAVX -ipo -O3 -no-prec-div -opt-prefetch -auto-p32 -ansi-alias
- -opt-mem-layout-trans=3

Fortran benchmarks:
- -xAVX -ipo -O3 -no-prec-div -opt-prefetch

Benchmarks using both Fortran and C:
- -xAVX -ipo -O3 -no-prec-div -opt-prefetch -auto-p32 -ansi-alias
- -opt-mem-layout-trans=3

**Peak Compiler Invocation**

C benchmarks (except as noted below):
- icc -m64

482.sphinx3: icc -m32

C++ benchmarks (except as noted below):
- icpc -m64

450.soplex: icpc -m32

Fortran benchmarks:
- ifort -m64

Benchmarks using both Fortran and C:
- icc -m64 ifort -m64

**Peak Portability Flags**

410.bwaves: -DSPEC_CPU_LP64
416.gamess: -DSPEC_CPU_LP64
Cisco Systems
Cisco UCS B260 M4 (Intel Xeon E7-4820 v2, 2.00 GHz)

SPEC fp_rate2006 = NC
SPEC fp_rate_base2006 = NC

CPU2006 license: 9019
Test date: Apr-2014
Test sponsor: Cisco Systems
Tested by: Cisco Systems
Hardware Availability: May-2014
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Peak Portability Flags (Continued)

433.milc: -DSPEC_CPU_LP64
434.zeusmp: -DSPEC_CPU_LP64
435.gromacs: -DSPEC_CPU_LP64 -nofor_main
436.cactusADM: -DSPEC_CPU_LP64
437.lesh3d: -DSPEC_CPU_LP64
444.namd: -DSPEC_CPU_LP64 -nofor_main
447.dealII: -DSPEC_CPU_LP64
453.povray: -DSPEC_CPU_LP64
454.calculix: -DSPEC_CPU_LP64 -nofor_main
459.GemsFDTD: -DSPEC_CPU_LP64
465.tonto: -DSPEC_CPU_LP64
470.lbm: -DSPEC_CPU_LP64
481.wrf: -DSPEC_CPU_LP64 -DPHASE_CASE_FLAG -DSPEC_CPU_LINUX

Peak Optimization Flags

C benchmarks:
433.milc: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
434.zeusmp: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -opt-mem-layout-trans=3(pass 2)
435.gromacs: -xAVX(pass 2) -nofor_main -opt-mem-layout-trans=3(pass 2)
436.cactusADM: -xAVX(pass 2) -prof-use(pass 2) -auto-ilp32
437.lesh3d: -xAVX(pass 2) -prof-use(pass 2) -auto-ilp32
444.namd: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
447.dealII: -xAVX(pass 2) -prof-use(pass 2) -auto-ilp32
453.povray: -xAVX(pass 2) -prof-use(pass 2) -auto-ilp32
459.GemsFDTD: -xAVX(pass 2) -prof-use(pass 2) -auto-ilp32
465.tonto: -xAVX(pass 2) -prof-use(pass 2) -auto-ilp32
470.lbm: -xAVX(pass 2) -prof-use(pass 2) -auto-ilp32
481.wrf: -xAVX(pass 2) -prof-use(pass 2) -auto-ilp32

C++ benchmarks:
444.namd: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
447.dealII: -xAVX(pass 2) -prof-use(pass 2) -auto-ilp32
450.soplex: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
459.GemsFDTD: -xAVX(pass 2) -prof-use(pass 2) -auto-ilp32
465.tonto: -xAVX(pass 2) -prof-use(pass 2) -auto-ilp32
470.lbm: -xAVX(pass 2) -prof-use(pass 2) -auto-ilp32
482.sphinx3: -xAVX -ipo -O3 -no-prec-div -opt-mem-layout-trans=3 -unroll2

Non-Compliant

Continued on next page
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Peak Optimization Flags (Continued)

453.povray: -xAVX(pass 2) -prof-gen(pass 1) -ip0(pass 2) -O3(pass 2) -no-prec-div(pass 2) -opt-mem-layout-trans=3(pass 2) -prof-use(pass 2) -unroll4 -ansi-alias

Fortran benchmarks:

410.bwaves: basepeak = yes
416.gamess: -xAVX(pass 2) -prof-gen(pass 1) -ip0(pass 2) -O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2) -unroll2 -inline-level= -scalar-reg=
434.zeusmp: basepeak = yes
437.leslie3d: -xAVX -ipo -O3 -no-prec-div -opt-prefetch

459.GemsFDTD: basepeak = yes
465.tonto: -xAVX(pass 2) -prof-gen(pass 1) -ip0(pass 2) -O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2) -unroll4 -auto -inline-calloc -opt-malloc-options=3

Benchmarks using both Fortran and C:

433.gromacs: -xAVX(pass 2) -prof-gen(pass 1) -ip0(pass 2) -O3(pass 2) -no-prec-div(pass 2) -opt-mem-layout-trans=3(pass 2) -prof-use(pass 2) -opt-prefetch -auto-ilp32

454.calculix: basepeak = yes
436.cactusADM: basepeak = yes
481.wrf: -xAVX -ipo -O3 -no-prec-div -auto-ilp32

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
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