## SPEC® CFP2006 Result

### Cisco Systems

Cisco UCS B200 M4 (Intel Xeon E5-2699A v4 2.40 GHz)

<table>
<thead>
<tr>
<th>SPECfpa2006</th>
<th>SPECfpa_base2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>127</td>
<td>120</td>
</tr>
</tbody>
</table>

**CPU2006 license:** 9019  
**Test date:** Feb-2017  
**Test sponsor:** Cisco Systems  
**Hardware Availability:** Apr-2016  
**Tested by:** Cisco Systems  
**Software Availability:** Dec-2015

### Software

- **Operating System:** SUSE Linux Enterprise Server 12 SP1 (x86_64) 3.12.49-11-default
- **Compiler:** C/C++: Version 17.0.0.098 of Intel C/C++ Compiler for Linux; Fortran: Version 17.0.0.098 of Intel Fortran Compiler for Linux
- **Auto Parallel:** Yes
- **File System:** xfs
- **System State:** Run level 3 (multi-user)

### Hardware

<table>
<thead>
<tr>
<th>Software</th>
<th>SPECfpa2006 = 127</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU Name</td>
<td>Intel Xeon E5-2699A v4</td>
</tr>
<tr>
<td>CPU Characteristics</td>
<td>Intel Turbo Boost Technology up to 3.60 GHz</td>
</tr>
<tr>
<td>CPU MHz</td>
<td>2400</td>
</tr>
<tr>
<td>FPU</td>
<td>Integrated</td>
</tr>
<tr>
<td>CPU(s) enabled</td>
<td>44 cores, 2 chips, 22 cores/chip</td>
</tr>
<tr>
<td>CPU(s) orderable</td>
<td>1.2 chips</td>
</tr>
<tr>
<td>Primary Cache</td>
<td>32 KB I + 32 KB D on chip per core</td>
</tr>
<tr>
<td>Secondary Cache</td>
<td>256 KB I+D on chip per core</td>
</tr>
</tbody>
</table>

### Benchmarks

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>SPECfp2006</th>
<th>SPECfpa_base2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>410.bwaves</td>
<td>46.7</td>
<td></td>
</tr>
<tr>
<td>416.gamess</td>
<td>42.1</td>
<td></td>
</tr>
<tr>
<td>433.milc</td>
<td>76.2</td>
<td></td>
</tr>
<tr>
<td>434.zeusmp</td>
<td>207</td>
<td></td>
</tr>
<tr>
<td>435.gromacs</td>
<td>48.0</td>
<td></td>
</tr>
<tr>
<td>436.cactusADM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>437.leslie3d</td>
<td>382</td>
<td></td>
</tr>
<tr>
<td>444.namd</td>
<td>32.4</td>
<td></td>
</tr>
<tr>
<td>447.dealII</td>
<td>67.3</td>
<td></td>
</tr>
<tr>
<td>450.soplex</td>
<td>51.0</td>
<td></td>
</tr>
<tr>
<td>453.povray</td>
<td>72.4</td>
<td></td>
</tr>
<tr>
<td>454.calculix</td>
<td>63.0, 63.8</td>
<td></td>
</tr>
<tr>
<td>459.GemsFDTD</td>
<td>266</td>
<td></td>
</tr>
<tr>
<td>465.tonto</td>
<td>59.6</td>
<td></td>
</tr>
<tr>
<td>470.lbm</td>
<td>43.0</td>
<td></td>
</tr>
<tr>
<td>481.wrf</td>
<td>125</td>
<td></td>
</tr>
<tr>
<td>482.sphinx3</td>
<td>72.3</td>
<td></td>
</tr>
</tbody>
</table>

---

**Continued on next page**
SPEC CFP2006 Result

Cisco Systems
Cisco UCS B200 M4 (Intel Xeon E5-2699A v4 2.40 GHz)

SPECfp2006 = 127
SPECfp_base2006 = 120

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

L3 Cache: 55 MB I+D on chip per chip
Other Cache: None
Memory: 256 GB (16 x 16 GB 2Rx4 PC4-2400T-R)
Disk Subsystem: 2 x 1.2 TB SAS HDD 10K RPM
Other Hardware: None

Base Pointers: 32/64-bit
Peak Pointers: 32/64-bit
Other Software: None

Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>410.bwaves</td>
<td>24.3</td>
<td>559</td>
<td>24.5</td>
<td>556</td>
<td>24.2</td>
<td>563</td>
<td>24.3</td>
<td>559</td>
<td>24.5</td>
<td>556</td>
</tr>
<tr>
<td>416.gamess</td>
<td>466</td>
<td>42.1</td>
<td>463</td>
<td>42.3</td>
<td>466</td>
<td>42.1</td>
<td>421</td>
<td>46.6</td>
<td>419</td>
<td>46.7</td>
</tr>
<tr>
<td>433.milc</td>
<td>121</td>
<td>76.2</td>
<td>118</td>
<td>77.8</td>
<td>121</td>
<td>75.9</td>
<td>121</td>
<td>76.2</td>
<td>118</td>
<td>77.8</td>
</tr>
<tr>
<td>434.zeusmp</td>
<td>43.9</td>
<td>207</td>
<td>43.9</td>
<td>207</td>
<td>44.3</td>
<td>206</td>
<td>43.9</td>
<td>207</td>
<td>43.9</td>
<td>207</td>
</tr>
<tr>
<td>435.gromacs</td>
<td>151</td>
<td>47.4</td>
<td>148</td>
<td>48.3</td>
<td>149</td>
<td>48.0</td>
<td>151</td>
<td>47.4</td>
<td>148</td>
<td>48.3</td>
</tr>
<tr>
<td>436.cactusADM</td>
<td>11.6</td>
<td>1030</td>
<td>11.6</td>
<td>1030</td>
<td>11.5</td>
<td>1030</td>
<td>11.6</td>
<td>1030</td>
<td>11.6</td>
<td>1030</td>
</tr>
<tr>
<td>437.leslie3d</td>
<td>24.6</td>
<td>382</td>
<td>24.6</td>
<td>381</td>
<td>22.7</td>
<td>414</td>
<td>24.6</td>
<td>382</td>
<td>24.6</td>
<td>381</td>
</tr>
<tr>
<td>444.namd</td>
<td>253</td>
<td>31.6</td>
<td>253</td>
<td>31.7</td>
<td>253</td>
<td>31.7</td>
<td>247</td>
<td>32.4</td>
<td>247</td>
<td>32.4</td>
</tr>
<tr>
<td>447.dealII</td>
<td>170</td>
<td>67.3</td>
<td>170</td>
<td>67.3</td>
<td>170</td>
<td>67.2</td>
<td>170</td>
<td>67.3</td>
<td>170</td>
<td>67.3</td>
</tr>
<tr>
<td>450.soplex</td>
<td>163</td>
<td>51.0</td>
<td>163</td>
<td>51.1</td>
<td>163</td>
<td>51.0</td>
<td>163</td>
<td>51.0</td>
<td>163</td>
<td>51.0</td>
</tr>
<tr>
<td>453.povray</td>
<td>85.2</td>
<td>62.5</td>
<td>84.5</td>
<td>63.0</td>
<td>84.2</td>
<td>63.2</td>
<td>73.5</td>
<td>72.4</td>
<td>73.3</td>
<td>72.5</td>
</tr>
<tr>
<td>454.calculix</td>
<td>139</td>
<td>59.3</td>
<td>139</td>
<td>59.3</td>
<td>139</td>
<td>59.2</td>
<td>129</td>
<td>63.8</td>
<td>130</td>
<td>63.6</td>
</tr>
<tr>
<td>459.GemsFDTD</td>
<td>47.7</td>
<td>222</td>
<td>50.7</td>
<td>209</td>
<td>47.7</td>
<td>223</td>
<td>40.0</td>
<td>265</td>
<td>39.8</td>
<td>267</td>
</tr>
<tr>
<td>465.tonto</td>
<td>228</td>
<td>43.2</td>
<td>237</td>
<td>41.6</td>
<td>229</td>
<td>43.0</td>
<td>165</td>
<td>59.6</td>
<td>165</td>
<td>59.6</td>
</tr>
<tr>
<td>470.lbm</td>
<td>14.5</td>
<td>951</td>
<td>14.4</td>
<td>953</td>
<td>14.4</td>
<td>952</td>
<td>14.5</td>
<td>951</td>
<td>14.4</td>
<td>953</td>
</tr>
<tr>
<td>481.wrf</td>
<td>89.0</td>
<td>125</td>
<td>88.8</td>
<td>126</td>
<td>90.5</td>
<td>123</td>
<td>89.0</td>
<td>125</td>
<td>88.8</td>
<td>126</td>
</tr>
<tr>
<td>482.sphinx3</td>
<td>269</td>
<td>72.3</td>
<td>270</td>
<td>72.3</td>
<td>270</td>
<td>72.2</td>
<td>269</td>
<td>72.3</td>
<td>270</td>
<td>72.3</td>
</tr>
</tbody>
</table>

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

Operating System Notes
Stack size set to unlimited using "ulimit –s unlimited"

Platform Notes

BIOS Settings:
Intel Hyper-Threading Technology option set to Disabled
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 Home Directory Snoop with OSB
Sysinfo program /opt/cpu2006-1.2/config/sysinfo.rev6993
Revision 6993 of 2015-11-06 (b5e8d4b4eb51ed28d7f98696cbe290c1)
Continued on next page
Cisco UCS B200 M4 (Intel Xeon E5-2699A v4 2.40 GHz)

**SPECfp2006** = 127
**SPECfp_base2006** = 120

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

Platform Notes (Continued)

running on linux-wvrl Wed Feb 15 11:13:39 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) CPU E5-2699A v4 @ 2.40GHz
  2 "physical id"s (chips)
  44 "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 : 22
  siblings : 22
  physical 0: cores 0 1 2 3 4 5 8 9 10 11 12 16 17 18 19 20 21 24 25 26 27 28
  physical 1: cores 0 1 2 3 4 5 8 9 10 11 12 16 17 18 19 20 21 24 25 26 27 28
  cache size : 56320 KB
```

From /proc/meminfo

```
MemTotal:       264404096 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:
    (8d714a0) x86_64 x86_64 x86_64 GNU/Linux
run-level 3 Feb 15 11:12

SPEC is set to: /opt/cpu2006-1.2
```

Filesystem     Type  Size  Used Avail Use% Mounted on
/dev/sda1      xfs  2.2T  19G  2.2T  1% /
Cisco Systems
Cisco UCS B200 M4 (Intel Xeon E5-2699A v4 2.40 GHz)

SPECfp2006 = 127
SPECfp_base2006 = 120

CPU2006 license: 9019
Test date: Feb-2017
Test sponsor: Cisco Systems
Software Availability: Dec-2015
Tested by: Cisco Systems
Hardware Availability: Apr-2016

Platform Notes (Continued)

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. B200M4.3.1.3f.0.110320162243 11/03/2016
Memory:
16x 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:
KMP_AFFINITY = "granularity=fine,compact"
LD_LIBRARY_PATH = "/opt/cpu2006-1.2/libs/32:/opt/cpu2006-1.2/libs/64:/opt/cpu2006-1.2/sh10.2"
OMP_NUM_THREADS = "44"

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

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

Continued on next page
Cisco Systems
Cisco UCS B200 M4 (Intel Xeon E5-2699A v4 2.40 GHz)

SPECfp2006 = 127
SPECfp_base2006 = 120

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

Test date: Feb-2017
Hardware Availability: Apr-2016
Software Availability: Dec-2015

Base Portability Flags (Continued)

435.gromacs: -DSPEC_CPU_LP64 -nofor_main
436.cactusADM: -DSPEC_CPU_LP64 -nofor_main
437.leslie3d: -DSPEC_CPU_LP64
444.namd: -DSPEC_CPU_LP64
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:
-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -qopt-prefetch

C++ benchmarks:
-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch

Fortran benchmarks:
-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -qopt-prefetch

Benchmarks using both Fortran and C:
-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -qopt-prefetch

Peak Compiler Invocation

C benchmarks:
icc -m64

C++ benchmarks:
icpc -m64

Fortran benchmarks:
ifort -m64

Benchmarks using both Fortran and C:
icc -m64 ifort -m64
Cisco Systems
Cisco UCS B200 M4 (Intel Xeon E5-2699A v4 2.40 GHz)

SPECf2006 = 127
SPECfp_base2006 = 120

CPU2006 license: 9019
Test date: Feb-2017
Test sponsor: Cisco Systems
Hardware Availability: Apr-2016
Tested by: Cisco Systems
Software Availability: Dec-2015

Peak Portability Flags

Same as Base Portability Flags

Peak Optimization Flags

C benchmarks:
433.milc: basepeak = yes
470.lbm: basepeak = yes
482.sphinx3: basepeak = yes

C++ benchmarks:
444.namd: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2(pass 2)
-para-num-threads=1(pass 1) -ipo(pass 2) -03(pass 2)
-no-prec-div(pass 2) -fno-alias -auto-ilp32
447.dealII: basepeak = yes
450.soplex: basepeak = yes
453.povray: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2(pass 2)
-para-num-threads=1(pass 1) -ipo(pass 2) -03(pass 2)
-no-prec-div(pass 2) -unroll4 -ansi-alias

Fortran benchmarks:
410.bwaves: basepeak = yes
416.gamess: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2(pass 2)
-para-num-threads=1(pass 1) -ipo(pass 2) -03(pass 2)
-no-prec-div(pass 2) -unroll2 -inline-level=0 -scalar-rep-
434.zeusmp: basepeak = yes
437.leslie3d: basepeak = yes
459.GemsFDTD: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2(pass 2)
-para-num-threads=1(pass 1) -ipo(pass 2) -03(pass 2)
-no-prec-div(pass 2) -unroll2 -inline-level=0 -qopt-prefetch -parallel
465.tonto: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2(pass 2)
-para-num-threads=1(pass 1) -ipo(pass 2) -03(pass 2)
-no-prec-div(pass 2) -inline-calloc -qopt-malloc-options=3
-auto -unroll4

Continued on next page
Cisco Systems  
Cisco UCS B200 M4 (Intel Xeon E5-2699A v4 2.40 GHz)  

<table>
<thead>
<tr>
<th>SPECfp2006</th>
<th>127</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECfp_base2006</td>
<td>120</td>
</tr>
</tbody>
</table>

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

Test date: Feb-2017  
Hardware Availability: Apr-2016  
Software Availability: Dec-2015

Peak Optimization Flags (Continued)

Benchmarks using both Fortran and C:

- 435.gromacs: basepeak = yes
- 436.cactusADM: basepeak = yes
- 454.calculix: -xCORE-AVX2 -ipo -O3 -no-prec-div -auto-ilp32  
- 481.wrf: basepeak = yes

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.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-ic17.0-official-linux64.xml  
http://www.spec.org/cpu2006/flags/Cisco-Platform-Settings-V1.2-revE.xml

SPEC and SPECfp 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 Tue Mar 7 16:14:59 2017 by SPEC CPU2006 PS/PDF formatter v6932.  
Originally published on 7 March 2017.