



SPEC® CFP2006 Result

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Cisco Systems

Cisco UCS B200 M4 (Intel Xeon E5-2697A v4, 2.60 GHz)

SPECfp®2006 = **124**

SPECfp_base2006 = **118**

CPU2006 license: 9019

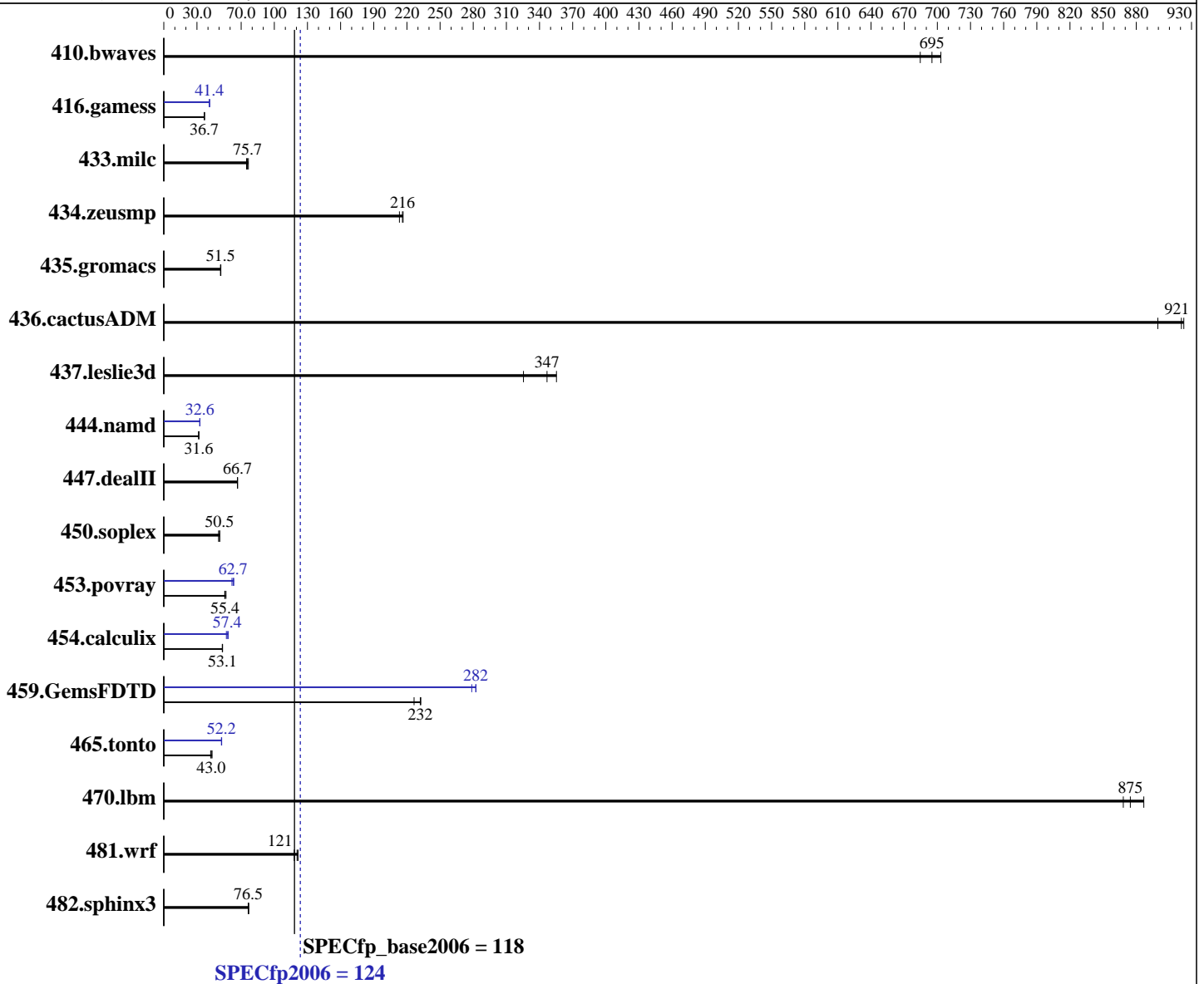
Test sponsor: Cisco Systems

Tested by: Cisco Systems

Test date: May-2016

Hardware Availability: Apr-2016

Software Availability: Dec-2015



Hardware		Software	
CPU Name:	Intel Xeon E5-2697A v4	Operating System:	SUSE Linux Enterprise Server 12 SP1 (x86_64) 3.12.49-11-default
CPU Characteristics:	Intel Turbo Boost Technology up to 3.60 GHz	Compiler:	C/C++: Version 16.0.0.101 of Intel C++ Studio XE for Linux; Fortran: Version 16.0.0.101 of Intel Fortran Studio XE for Linux
CPU MHz:	2600	Auto Parallel:	Yes
FPU:	Integrated	File System:	xfs
CPU(s) enabled:	32 cores, 2 chips, 16 cores/chip	System State:	Run level 3 (multi-user)
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		

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L3 Cache: 40 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 400 GB SSD SAS
Other Hardware: None

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

Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	<u>19.6</u>	<u>695</u>	19.9	685	19.3	703	<u>19.6</u>	<u>695</u>	19.9	685	19.3	703
416.gamess	533	36.7	<u>533</u>	<u>36.7</u>	532	36.8	473	41.4	<u>473</u>	<u>41.4</u>	474	41.3
433.milc	<u>121</u>	<u>75.7</u>	123	74.9	120	76.5	<u>121</u>	<u>75.7</u>	123	74.9	120	76.5
434.zeusmp	<u>42.1</u>	<u>216</u>	42.7	213	42.0	217	<u>42.1</u>	<u>216</u>	42.7	213	42.0	217
435.gromacs	138	51.6	139	51.3	<u>139</u>	<u>51.5</u>	138	51.6	139	51.3	<u>139</u>	<u>51.5</u>
436.cactusADM	12.9	923	<u>13.0</u>	<u>921</u>	13.3	900	12.9	923	<u>13.0</u>	<u>921</u>	13.3	900
437.leslie3d	28.9	325	26.5	355	<u>27.1</u>	<u>347</u>	28.9	325	26.5	355	<u>27.1</u>	<u>347</u>
444.namd	<u>253</u>	<u>31.6</u>	254	31.6	253	31.6	246	32.6	246	32.6	<u>246</u>	<u>32.6</u>
447.dealII	171	66.7	<u>172</u>	<u>66.7</u>	172	66.6	171	66.7	<u>172</u>	<u>66.7</u>	172	66.6
450.soplex	165	50.6	168	49.5	<u>165</u>	<u>50.5</u>	165	50.6	168	49.5	<u>165</u>	<u>50.5</u>
453.povray	96.5	55.1	94.5	56.3	<u>96.0</u>	<u>55.4</u>	84.0	63.4	<u>84.8</u>	<u>62.7</u>	86.3	61.7
454.calculix	<u>155</u>	<u>53.1</u>	156	52.9	155	53.1	<u>144</u>	<u>57.4</u>	146	56.6	141	58.4
459.GemsFDTD	45.6	233	<u>45.7</u>	<u>232</u>	46.9	226	37.6	283	<u>37.6</u>	<u>282</u>	38.1	279
465.tonto	232	42.4	225	43.7	<u>229</u>	<u>43.0</u>	<u>188</u>	<u>52.2</u>	188	52.4	189	52.2
470.lbm	<u>15.7</u>	<u>875</u>	15.8	868	15.5	887	<u>15.7</u>	<u>875</u>	15.8	868	15.5	887
481.wrf	91.9	121	94.6	118	<u>92.6</u>	<u>121</u>	91.9	121	94.6	118	<u>92.6</u>	<u>121</u>
482.sphinx3	<u>255</u>	<u>76.5</u>	253	76.9	255	76.4	<u>255</u>	<u>76.5</u>	253	76.9	255	76.4

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.rev6914

\$Rev: 6914 \$ \$Date:: 2014-06-25 # \$ e3fbb8667b5a285932ceab81e28219e1

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Platform Notes (Continued)

running on linux-volx Wed May 25 04:40:06 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 E5-2697A v4 @ 2.60GHz
 2 "physical id"s (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 : 16
  siblings  : 16
  physical 0: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
  physical 1: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
cache size : 40960 KB
```

```
From /proc/meminfo
MemTotal:      264567632 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-volx 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 May 24 23:45

```
SPEC is set to: /opt/cpu2006-1.2
Filesystem      Type  Size  Used Avail Use% Mounted on
/dev/sdb1       xfs   350G  12G  339G   4% /
Additional information from dmidecode:
```

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Platform Notes (Continued)

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. B200M4.3.1.1.11.110420151758 11/04/2015

Memory:

16x 0xAD00 HMA42GR7AFR4N-UH 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/sh"

OMP_NUM_THREADS = "32"

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

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

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Base Portability Flags (Continued)

```

437.leslie3d: -DSPEC_CPU_LP64
444.namd: -DSPEC_CPU_LP64
447.deall: -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 -opt-prefetch
-ansi-alias

```

C++ benchmarks:

```

-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch -ansi-alias

```

Fortran benchmarks:

```

-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -opt-prefetch

```

Benchmarks using both Fortran and C:

```

-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -opt-prefetch
-ansi-alias

```

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

```



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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: -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) -fno-alias
-auto-ilp32

447.dealIII: basepeak = yes

450.soplex: basepeak = yes

453.povray: -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
-ansi-alias

Fortran benchmarks:

410.bwaves: basepeak = yes

416.gamess: -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
-inline-level=0 -scalar-rep-

434.zeusmp: basepeak = yes

437.leslie3d: basepeak = yes

459.GemsFDTD: -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
-inline-level=0 -opt-prefetch -parallel

465.tonto: -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) -inline-calloc

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Peak Optimization Flags (Continued)

465.tonto (continued):

`-opt-malloc-options=3 -auto -unroll4`

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 -ansi-alias`

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-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>

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