SPEC® CFP2006 Result
Copyright 2006-2017 Standard Performance Evaluation Corporation

Cisco Systems

Cisco UCS B420 M4 (Intel Xeon E5-4669 v4 2.20 GHz)

$SPECfp^®_rate2006 = $ 2160

SPECfp_rate_base2006 = 2110

CPU2006 license: 9019	**Test date:** Feb-2017
Test sponsor: Cisco Systems	**Hardware Availability:** Jun-2016
Tested by: Cisco Systems	**Software Availability:** Sep-2016

Copies 0 200 400 600 800 1000 1200 1400 1600 1800 2000 2200 2400 2600 2800 3000 3200 3400 3600 3800 4000 4200 4400 4700

- **410.bwaves** 176 / 176 — 1350 / 1350
- **416.gamess** 176 / 176 — 3100 / 2990
- **433.milc** 176 — 1300
- **434.zeusmp** 176 — 2310
- **435.gromacs** 176 / 176 — 3780 / 3670
- **436.cactusADM** 176 — 2640
- **437.leslie3d** 176 / 176 — 981 / 984
- **444.namd** 176 / 176 — 2480 / 2470
- **447.dealII** 176 — 4570
- **450.soplex** 176 / 176 — 1160 / 1060
- **453.povray** 176 / 176 — 4600 / 3860
- **454.calculix** 176 — 4530
- **459.GemsFDTD** 176 / 176 — 946 / 946
- **465.tonto** 176 / 176 — 2700 / 2560
- **470.lbm** 176 — 1900
- **481.wrf** 176 — 1630
- **482.sphinx3** 176 — 1870

SPECfp_rate_base2006 = 2110

SPECfp_rate2006 = 2160

Hardware

CPU Name:	Intel Xeon E5-4669 v4
CPU Characteristics:	Intel Turbo Boost Technology up to 3.00 GHz
CPU MHz:	2200
FPU:	Integrated
CPU(s) enabled:	88 cores, 4 chips, 22 cores/chip, 2 threads/core
CPU(s) orderable:	2,4 chips
Primary Cache:	32 KB I + 32 KB D on chip per core
Secondary Cache:	256 KB I+D on chip per core

Continued on next page

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:	No
File System:	xfs
System State:	Run level 3 (multi-user)

Continued on next page

SPEC CFP2006 Result
Copyright 2006-2017 Standard Performance Evaluation Corporation

Cisco Systems

Cisco UCS B420 M4 (Intel Xeon E5-4669 v4 2.20 GHz)

SPECfp_rate2006 = 2160
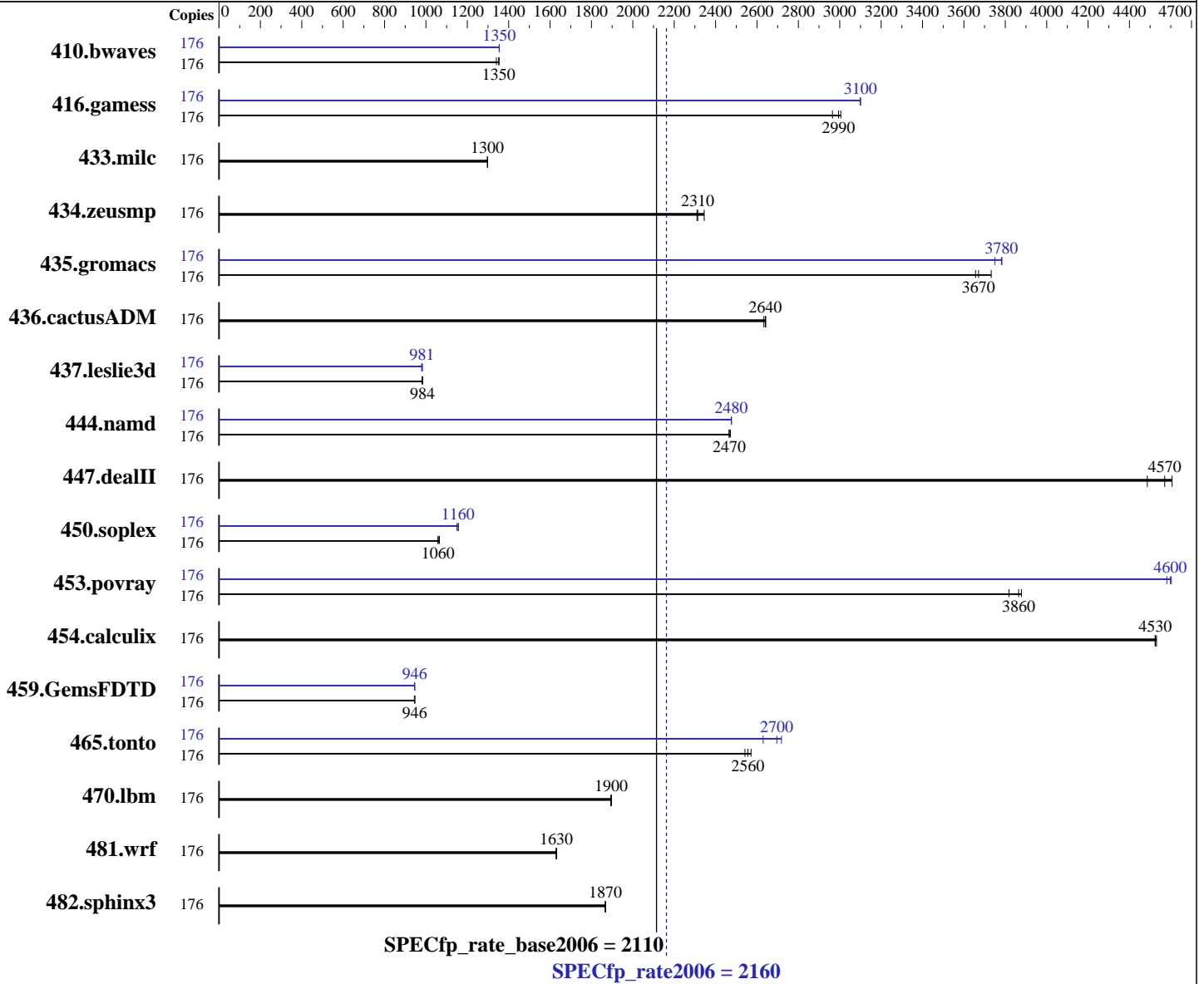
SPECfp_rate_base2006 = 2110

CPU2006 license: 9019

Test sponsor: Cisco Systems

Tested by: Cisco Systems

Test date: Feb-2017

Hardware Availability: Jun-2016

Software Availability: Sep-2016

L3 Cache:	55 MB I+D on chip per chip
Other Cache:	None
Memory:	1 TB (32 x 32 GB 2Rx4 PC4-2400T-R)
Disk Subsystem:	1 x 300 GB SAS, 15K RPM
Other Hardware:	None

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

Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	176	1784	1340	**1770**	**1350**	1767	1350	176	**1766**	**1350**	1767	1350	1766	1350
416.gamess	176	1162	2960	1147	3010	**1151**	**2990**	176	1111	3100	**1112**	**3100**	1112	3100
433.milc	176	**1245**	**1300**	1245	1300	1245	1300	176	**1245**	**1300**	1245	1300	1245	1300
434.zeusmp	176	**692**	**2310**	683	2350	693	2310	176	**692**	**2310**	683	2350	693	2310
435.gromacs	176	337	3730	344	3660	**342**	**3670**	176	335	3750	332	3780	**332**	**3780**
436.cactusADM	176	796	2640	799	2630	**797**	**2640**	176	796	2640	799	2630	**797**	**2640**
437.leslie3d	176	1681	984	1686	981	**1681**	**984**	176	1689	980	1683	983	**1686**	**981**
444.namd	176	573	2460	571	2470	**572**	**2470**	176	**570**	**2480**	570	2480	570	2480
447.dealII	176	**441**	**4570**	449	4490	437	4610	176	**441**	**4570**	449	4490	437	4610
450.soplex	176	1386	1060	**1386**	**1060**	1378	1070	176	1268	1160	**1270**	**1160**	1277	1150
453.povray	176	241	3880	245	3820	**242**	**3860**	176	**204**	**4600**	203	4600	204	4580
454.calculix	176	320	4530	321	4520	**321**	**4530**	176	320	4530	321	4520	**321**	**4530**
459.GemsFDTD	176	1977	945	1973	947	**1974**	**946**	176	1975	945	**1974**	**946**	1974	946
465.tonto	176	674	2570	**678**	**2560**	681	2540	176	637	2720	659	2630	**642**	**2700**
470.lbm	176	1277	1890	1275	1900	**1275**	**1900**	176	1277	1890	1275	1900	**1275**	**1900**
481.wrf	176	**1206**	**1630**	1205	1630	1207	1630	176	**1206**	**1630**	1205	1630	1207	1630
482.sphinx3	176	**1837**	**1870**	1838	1870	1837	1870	176	**1837**	**1870**	1838	1870	1837	1870

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

Continued on next page

Cisco Systems

Cisco UCS B420 M4 (Intel Xeon E5-4669 v4 2.20 GHz)

SPECfp_rate2006 =   2160

SPECfp_rate_base2006 =   2110

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

Test date: Feb-2017
Hardware Availability: Jun-2016
Software Availability: Sep-2016

Platform Notes (Continued)

```
  Energy Performance 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.rev6993
   Revision 6993 of 2015-11-06 (b5e8d4b4eb51ed28d7f98696cbe290c1)
   running on linux-1fno Thu Feb 23 10:03:56 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 E5-4669 v4 @ 2.20GHz
         4 "physical id"s (chips)
         176 "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  : 44
         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
         physical 2: cores 0 1 2 3 4 5 8 9 10 11 12 16 17 18 19 20 21 24 25 26 27
         28
         physical 3: 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 : 28160 KB

   From /proc/meminfo
      MemTotal:       1058682404 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"
```

SPEC CFP2006 Result
Copyright 2006-2017 Standard Performance Evaluation Corporation

Cisco Systems

Cisco UCS B420 M4 (Intel Xeon E5-4669 v4 2.20 GHz)

SPECfp_rate2006 = 2160

SPECfp_rate_base2006 = 2110

CPU2006 license:	9019	**Test date:**	Feb-2017
Test sponsor:	Cisco Systems	**Hardware Availability:**	Jun-2016
Tested by:	Cisco Systems	**Software Availability:**	Sep-2016

Platform Notes (Continued)

```
uname -a:
   Linux linux-1fno 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 Feb 22 20:58

SPEC is set to: /opt/cpu2006-1.2
   Filesystem      Type  Size  Used Avail Use% Mounted on
   /dev/sda1       xfs   280G   13G  267G   5% /
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. B420M4.3.1.2.0.052320161053 05/23/2016
  Memory:
  32x 0xCE00 M393A4K40BB1-CRC 32 GB 2 rank 2400 MHz
  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/cpu2006-1.2/libs/32:/opt/cpu2006-1.2/libs/64:/opt/cpu2006-1.2/sh10.2"

 Binaries compiled on a system with 1x Intel Core i7-4790K CPU + 32GB RAM
 memory using Redhat Enterprise Linux 7.2
 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 -m64

C++ benchmarks:
    icpc -m64

Fortran benchmarks:
    ifort -m64

Continued on next page

SPEC CFP2006 Result
Copyright 2006-2017 Standard Performance Evaluation Corporation

Cisco Systems

Cisco UCS B420 M4 (Intel Xeon E5-4669 v4 2.20 GHz)

SPECfp_rate2006 = 2160

SPECfp_rate_base2006 = 2110

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

Test date: Feb-2017
Hardware Availability: Jun-2016
Software Availability: Sep-2016

Base Compiler Invocation (Continued)

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
      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 -qopt-prefetch -auto-p32
-qopt-mem-layout-trans=3
```

C++ benchmarks:
```
-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -auto-p32
-qopt-mem-layout-trans=3
```

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

Benchmarks using both Fortran and C:
```
-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -auto-p32
-qopt-mem-layout-trans=3
```

Peak Compiler Invocation

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

Cisco Systems

Cisco UCS B420 M4 (Intel Xeon E5-4669 v4 2.20 GHz)

SPECfp_rate2006 =   2160

SPECfp_rate_base2006 = 2110

CPU2006 license: 9019		**Test date:**	Feb-2017
Test sponsor:	Cisco Systems	**Hardware Availability:**	Jun-2016
Tested by:	Cisco Systems	**Software Availability:**	Sep-2016

Peak Compiler Invocation (Continued)

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

```
450.soplex: icpc -m32 -L/opt/intel/compilers_and_libraries_2017/linux/lib/ia32
```

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
  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
  444.namd: -DSPEC_CPU_LP64
 447.dealII: -DSPEC_CPU_LP64
 450.soplex: -D_FILE_OFFSET_BITS=64
 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
```

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)
         -par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)
         -no-prec-div(pass 2) -fno-alias -auto-ilp32
         -qopt-mem-layout-trans=3
```

Continued on next page

SPEC CFP2006 Result
Copyright 2006-2017 Standard Performance Evaluation Corporation

Cisco Systems

Cisco UCS B420 M4 (Intel Xeon E5-4669 v4 2.20 GHz)

SPECfp_rate2006 =   2160

SPECfp_rate_base2006 = 2110

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

Test date: Feb-2017
Hardware Availability: Jun-2016
Software Availability: Sep-2016

Peak Optimization Flags (Continued)

447.dealII: basepeak = yes

450.soplex: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2(pass 2)
-par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -qopt-malloc-options=3
-qopt-mem-layout-trans=3

453.povray: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2(pass 2)
-par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -unroll4 -qopt-mem-layout-trans=3

Fortran benchmarks:

410.bwaves: -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch

416.gamess: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2(pass 2)
-par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -unroll2 -inline-level=0 -scalar-rep-

434.zeusmp: basepeak = yes

437.leslie3d: Same as 410.bwaves

459.GemsFDTD: Same as 410.bwaves

465.tonto: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2(pass 2)
-par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -unroll4 -auto -inline-calloc
-qopt-malloc-options=3

Benchmarks using both Fortran and C:

435.gromacs: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2(pass 2)
-par-num-threads=1(pass 1) -qopt-prefetch -auto-ilp32
-qopt-mem-layout-trans=3

436.cactusADM: basepeak = yes

454.calculix: basepeak = yes

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-revD.20170404.html

SPEC CFP2006 Result
Copyright 2006-2017 Standard Performance Evaluation Corporation

Cisco Systems

Cisco UCS B420 M4 (Intel Xeon E5-4669 v4 2.20 GHz)

$SPECfp_rate2006 = $ 2160

$SPECfp_rate_base2006 = $ 2110

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

Test date: Feb-2017
Hardware Availability: Jun-2016
Software Availability: Sep-2016

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-revD.20170404.xml

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 Thu Apr 20 12:02:19 2017 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 20 April 2017.