SPEC® CINT2006 Result

Dell Inc.

PowerEdge C6420 (Intel Xeon Silver 4114, 2.20 GHz)

$SPECint®\_rate2006 =$ 857

$SPECint\_rate\_base2006 =$ 802

CPU2006 license: 55
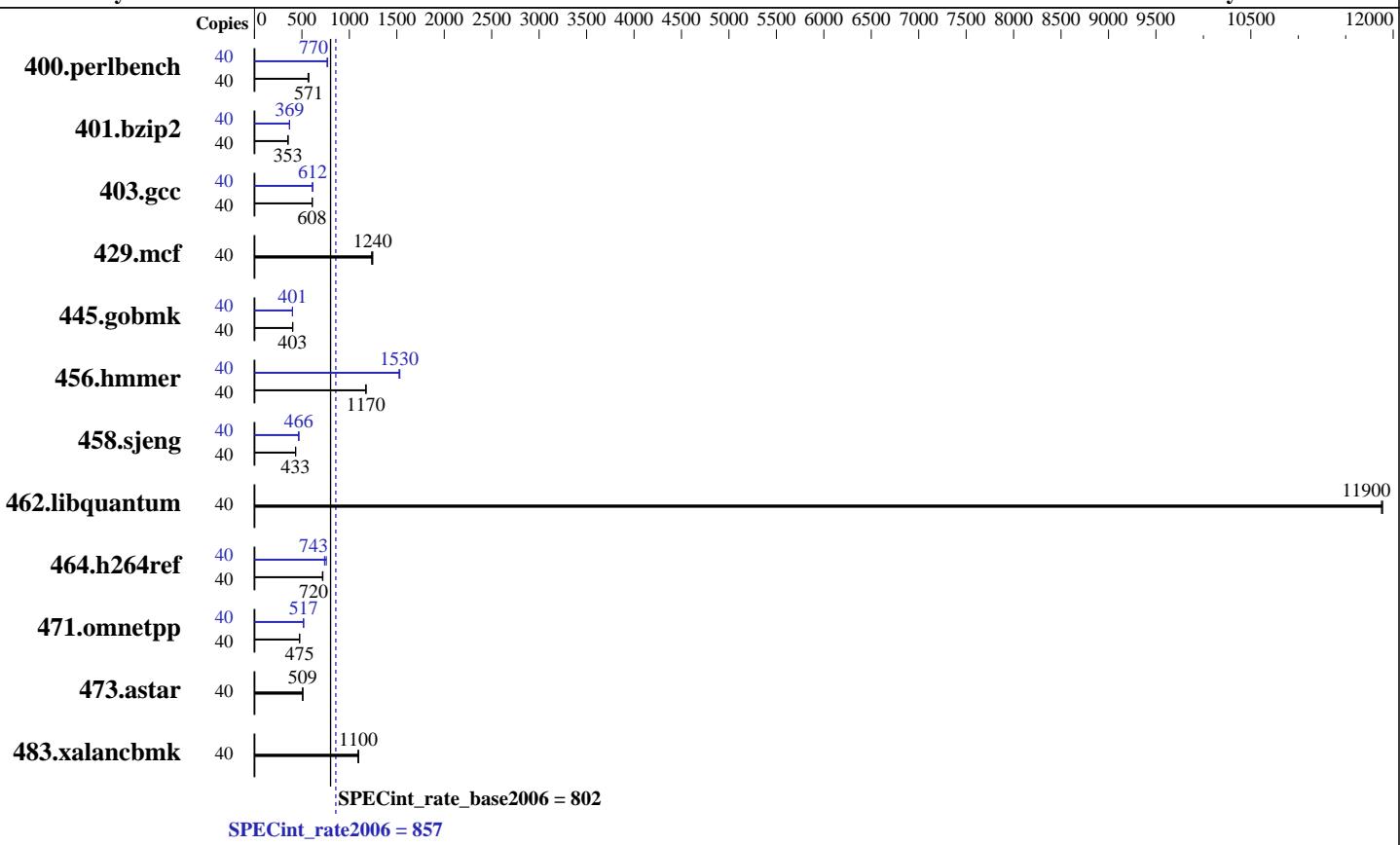**Test sponsor:** Dell Inc.
Tested by: Dell Inc.

Test date: Jun-2017
Hardware Availability: Jul-2017
Software Availability: Nov-2016

	Copies	Result (blue = peak, black = base)
400.perlbench	40 / 40	770 / 571
401.bzip2	40 / 40	369 / 353
403.gcc	40 / 40	612 / 608
429.mcf	40	1240
445.gobmk	40 / 40	401 / 403
456.hmmer	40 / 40	1530 / 1170
458.sjeng	40 / 40	466 / 433
462.libquantum	40	11900
464.h264ref	40 / 40	743 / 720
471.omnetpp	40 / 40	517 / 475
473.astar	40	509
483.xalancbmk	40	1100

SPECint_rate_base2006 = 802
SPECint_rate2006 = 857

Hardware

CPU Name: Intel Xeon Silver 4114
CPU Characteristics: Intel Turbo Boost Technology up to 3.00 GHz
CPU MHz: 2200
FPU: Integrated
CPU(s) enabled: 20 cores, 2 chips, 10 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: 1 MB I+D on chip per core
L3 Cache: 13.75 MB I+D on chip per chip
Other Cache: None
Memory: 192 GB (12 x 16 GB 2Rx8 PC4-2666V-R, running at 2400 MT/s)
Disk Subsystem: 1 x 960 GB SATA SSD
Other Hardware: None

Software

Operating System: SUSE Linux Enterprise Server 12 SP2 (x86_64) 4.4.21-69-default
Compiler: C/C++: Version 17.0.3.191 of Intel C/C++ Compiler for Linux
Auto Parallel: Yes
File System: ext4
System State: Run level 3 (multi-user)
Base Pointers: 32-bit
Peak Pointers: 32/64-bit
Other Software: Microquill SmartHeap V10.2

SPEC CINT2006 Result
Copyright 2006-2017 Standard Performance Evaluation Corporation

Dell Inc.

PowerEdge C6420 (Intel Xeon Silver 4114, 2.20 GHz)

SPECint_rate2006 =   857

SPECint_rate_base2006 = 802

CPU2006 license: 55
Test sponsor: Dell Inc.
Tested by: Dell Inc.

Test date: Jun-2017
Hardware Availability: Jul-2017
Software Availability: Nov-2016

Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
400.perlbench	40	684	571	692	564	**685**	**571**	40	511	765	**508**	**770**	507	771
401.bzip2	40	1092	354	**1092**	**353**	1093	353	40	**1045**	**369**	1047	369	1043	370
403.gcc	40	530	607	**529**	**608**	528	610	40	526	612	525	613	**526**	**612**
429.mcf	40	**293**	**1240**	296	1230	293	1250	40	**293**	**1240**	296	1230	293	1250
445.gobmk	40	1041	403	1044	402	**1041**	**403**	40	1047	401	**1048**	**401**	1048	400
456.hmmer	40	318	1170	317	1180	**318**	**1170**	40	**244**	**1530**	245	1520	244	1530
458.sjeng	40	**1117**	**433**	1117	433	1116	434	40	1038	466	1037	467	**1038**	**466**
462.libquantum	40	69.7	11900	**69.7**	**11900**	69.8	11900	40	69.7	11900	**69.7**	**11900**	69.8	11900
464.h264ref	40	1227	721	**1230**	**720**	1237	716	40	1199	738	**1192**	**743**	1168	758
471.omnetpp	40	528	474	**526**	**475**	525	476	40	484	516	483	518	**484**	**517**
473.astar	40	552	509	**552**	**509**	553	508	40	552	509	**552**	**509**	553	508
483.xalancbmk	40	252	1100	253	1090	**252**	**1100**	40	252	1100	253	1090	**252**	**1100**

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:
    Sub NUMA Cluster enabled
    Virtualization Technology disabled
    System Profile set to Custom
    CPU Performance set to Maximum Performance
    C States set to autonomous
    C1E disabled
    Uncore Frequency set to Dynamic
    Energy Efficiency Policy set to Performance
    Memory Patrol Scrub disabled
    Logical Processor enabled
    CPU Interconnect Bus Link Power Management disabled
    PCI ASPM L1 Link Power Management disabled
    Sysinfo program /root/cpu2006-1.2_ic17u3/config/sysinfo.rev6993
    Revision 6993 of 2015-11-06 (b5e8d4b4eb51ed28d7f98696cbe290c1)
    running on linux-38mh Thu Jun 1 03:50:36 2017

Dell Inc.

PowerEdge C6420 (Intel Xeon Silver 4114, 2.20 GHz)

SPECint_rate2006 =   857

SPECint_rate_base2006 = 802

CPU2006 license: 55   **Test date:**   Jun-2017
Test sponsor: Dell Inc.   **Hardware Availability:** Jul-2017
Tested by: Dell Inc.   **Software Availability:** Nov-2016

Platform Notes (Continued)

```
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) Silver 4114 CPU @ 2.20GHz
      2 "physical id"s (chips)
      40 "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 : 10
      siblings  : 20
      physical 0: cores 0 1 2 3 4 8 9 10 11 12
      physical 1: cores 0 1 2 3 4 8 9 10 11 12
   cache size : 14080 KB

From /proc/meminfo
   MemTotal:       196687624 kB
   HugePages_Total:        0
   Hugepagesize:        2048 kB

From /etc/*release* /etc/*version*
   SuSE-release:
      SUSE Linux Enterprise Server 12 (x86_64)
      VERSION = 12
      PATCHLEVEL = 2
      # 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-SP2"
      VERSION_ID="12.2"
      PRETTY_NAME="SUSE Linux Enterprise Server 12 SP2"
      ID="sles"
      ANSI_COLOR="0;32"
      CPE_NAME="cpe:/o:suse:sles:12:sp2"

uname -a:
   Linux linux-38mh 4.4.21-69-default #1 SMP Tue Oct 25 10:58:20 UTC 2016
   (9464f67) x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Jun 1 03:50

SPEC is set to: /root/cpu2006-1.2_ic17u3
   Filesystem     Type  Size  Used Avail Use% Mounted on
   /dev/sda2      ext4  915G  8.3G  906G   1% /
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
```

SPEC CINT2006 Result
Copyright 2006-2017 Standard Performance Evaluation Corporation

Dell Inc.

PowerEdge C6420 (Intel Xeon Silver 4114, 2.20 GHz)

SPECint_rate2006 = 857

SPECint_rate_base2006 = 802

CPU2006 license: 55
Test sponsor: Dell Inc.
Tested by: Dell Inc.

Test date: Jun-2017
Hardware Availability: Jul-2017
Software Availability: Nov-2016

Platform Notes (Continued)

    determined", but the intent may not be met, as there are frequent changes to
    hardware, firmware, and the "DMTF SMBIOS" standard.

    BIOS Dell Inc. 1.0.2 05/31/2017
    Memory:
    12x 002C00B3002C 18ASF2G72PDZ-2G6D1 16 GB 2 rank 2666 MHz, configured at 2400
    MHz
    4x Not Specified Not Specified

  (End of data from sysinfo program)

General Notes

 Environment variables set by runspec before the start of the run:
 LD_LIBRARY_PATH = "/root/cpu2006-1.2_ic17u3/lib/ia32:/root/cpu2006-1.2_ic17u3/lib/intel64:/root/cpu2006-1.2_ic17u3/sh10.2"

 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 by default
 Filesystem page cache cleared with:
 shell invocation of 'sync; echo 3 > /proc/sys/vm/drop_caches' prior to run
 runspec command invoked through numactl i.e.:
 numactl --interleave=all runspec <etc>

Base Compiler Invocation

C benchmarks:
     icc -m32 -L/opt/intel/compilers_and_libraries_2017/linux/lib/ia32

C++ benchmarks:
     icpc -m32 -L/opt/intel/compilers_and_libraries_2017/linux/lib/ia32

Base Portability Flags

     400.perlbench: -D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LINUX_IA32
         401.bzip2: -D_FILE_OFFSET_BITS=64
           403.gcc: -D_FILE_OFFSET_BITS=64
           429.mcf: -D_FILE_OFFSET_BITS=64
         445.gobmk: -D_FILE_OFFSET_BITS=64
         456.hmmer: -D_FILE_OFFSET_BITS=64
         458.sjeng: -D_FILE_OFFSET_BITS=64
     462.libquantum: -D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LINUX
        464.h264ref: -D_FILE_OFFSET_BITS=64
        471.omnetpp: -D_FILE_OFFSET_BITS=64
          473.astar: -D_FILE_OFFSET_BITS=64
     483.xalancbmk: -D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LINUX

SPEC CINT2006 Result
Copyright 2006-2017 Standard Performance Evaluation Corporation

Dell Inc.

PowerEdge C6420 (Intel Xeon Silver 4114, 2.20 GHz)

SPECint_rate2006 =   857

SPECint_rate_base2006 = 802

CPU2006 license: 55
Test sponsor: Dell Inc.
Tested by: Dell Inc.

Test date: Jun-2017
Hardware Availability: Jul-2017
Software Availability: Nov-2016

Base Optimization Flags

C benchmarks:

```
-xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch
-qopt-mem-layout-trans=3
```

C++ benchmarks:

```
-xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch
-qopt-mem-layout-trans=3 -Wl,-z,muldefs -L/sh10.2 -lsmartheap
```

Base Other Flags

C benchmarks:

    403.gcc: -Dalloca=_alloca

Peak Compiler Invocation

C benchmarks (except as noted below):
```
icc -m32 -L/opt/intel/compilers_and_libraries_2017/linux/lib/ia32
```

400.perlbench: `icc -m64`

401.bzip2: `icc -m64`

456.hmmer: `icc -m64`

458.sjeng: `icc -m64`

C++ benchmarks:
```
icpc -m32 -L/opt/intel/compilers_and_libraries_2017/linux/lib/ia32
```

Peak Portability Flags

400.perlbench: `-DSPEC_CPU_LP64 -DSPEC_CPU_LINUX_X64`
401.bzip2: `-DSPEC_CPU_LP64`
403.gcc: `-D_FILE_OFFSET_BITS=64`
429.mcf: `-D_FILE_OFFSET_BITS=64`
445.gobmk: `-D_FILE_OFFSET_BITS=64`
456.hmmer: `-DSPEC_CPU_LP64`
458.sjeng: `-DSPEC_CPU_LP64`
462.libquantum: `-D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LINUX`
464.h264ref: `-D_FILE_OFFSET_BITS=64`
471.omnetpp: `-D_FILE_OFFSET_BITS=64`
473.astar: `-D_FILE_OFFSET_BITS=64`

SPEC CINT2006 Result

Dell Inc.

PowerEdge C6420 (Intel Xeon Silver 4114, 2.20 GHz)

SPECint_rate2006 =   857

SPECint_rate_base2006 = 802

CPU2006 license: 55
Test sponsor: Dell Inc.
Tested by: Dell Inc.

Test date: Jun-2017
Hardware Availability: Jul-2017
Software Availability: Nov-2016

Peak Portability Flags (Continued)

483.xalancbmk: `-D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LINUX`

Peak Optimization Flags

C benchmarks:

400.perlbench: `-prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX512(pass 2)`
`-par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)`
`-no-prec-div(pass 2) -auto-ilp32 -qopt-mem-layout-trans=3`

401.bzip2: `-prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX512(pass 2)`
`-par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)`
`-no-prec-div(pass 2) -qopt-prefetch -auto-ilp32`
`-qopt-mem-layout-trans=3`

403.gcc: `-xCORE-AVX512 -ipo -O3 -no-prec-div`
`-qopt-mem-layout-trans=3`

429.mcf: `basepeak = yes`

445.gobmk: `-prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX512(pass 2)`
`-par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)`
`-no-prec-div(pass 2) -qopt-mem-layout-trans=3`

456.hmmer: `-xCORE-AVX512 -ipo -O3 -no-prec-div -unroll2 -auto-ilp32`
`-qopt-mem-layout-trans=3`

458.sjeng: `-prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX512(pass 2)`
`-par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)`
`-no-prec-div(pass 2) -unroll4 -auto-ilp32`
`-qopt-mem-layout-trans=3`

462.libquantum: `basepeak = yes`

464.h264ref: `-prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX512(pass 2)`
`-par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)`
`-no-prec-div(pass 2) -unroll2 -qopt-mem-layout-trans=3`

C++ benchmarks:

471.omnetpp: `-prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX512(pass 2)`
`-par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)`
`-no-prec-div(pass 2)`
`-qopt-ra-region-strategy=block`
`-qopt-mem-layout-trans=3 -Wl,-z,muldefs`
`-L/sh10.2 -lsmartheap`

SPEC CINT2006 Result
Copyright 2006-2017 Standard Performance Evaluation Corporation

Dell Inc.

PowerEdge C6420 (Intel Xeon Silver 4114, 2.20 GHz)

SPECint_rate2006 =　857

SPECint_rate_base2006 =　802

CPU2006 license: 55
Test sponsor: Dell Inc.
Tested by: Dell Inc.

Test date: Jun-2017
Hardware Availability: Jul-2017
Software Availability: Nov-2016

Peak Optimization Flags (Continued)

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-ic17.0-official-linux64-revF.html
http://www.spec.org/cpu2006/flags/Dell-Platform-Flags-PowerEdge14G-revC.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-revF.xml
http://www.spec.org/cpu2006/flags/Dell-Platform-Flags-PowerEdge14G-revC.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 Tue Aug 8 15:42:28 2017 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 8 August 2017.