SPEC® CINT2006 Result
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Dell Inc.

PowerEdge T320 (Intel Xeon E5-2403 v2, 1.80 GHz)

$SPECint^®2006 =$ 28.0

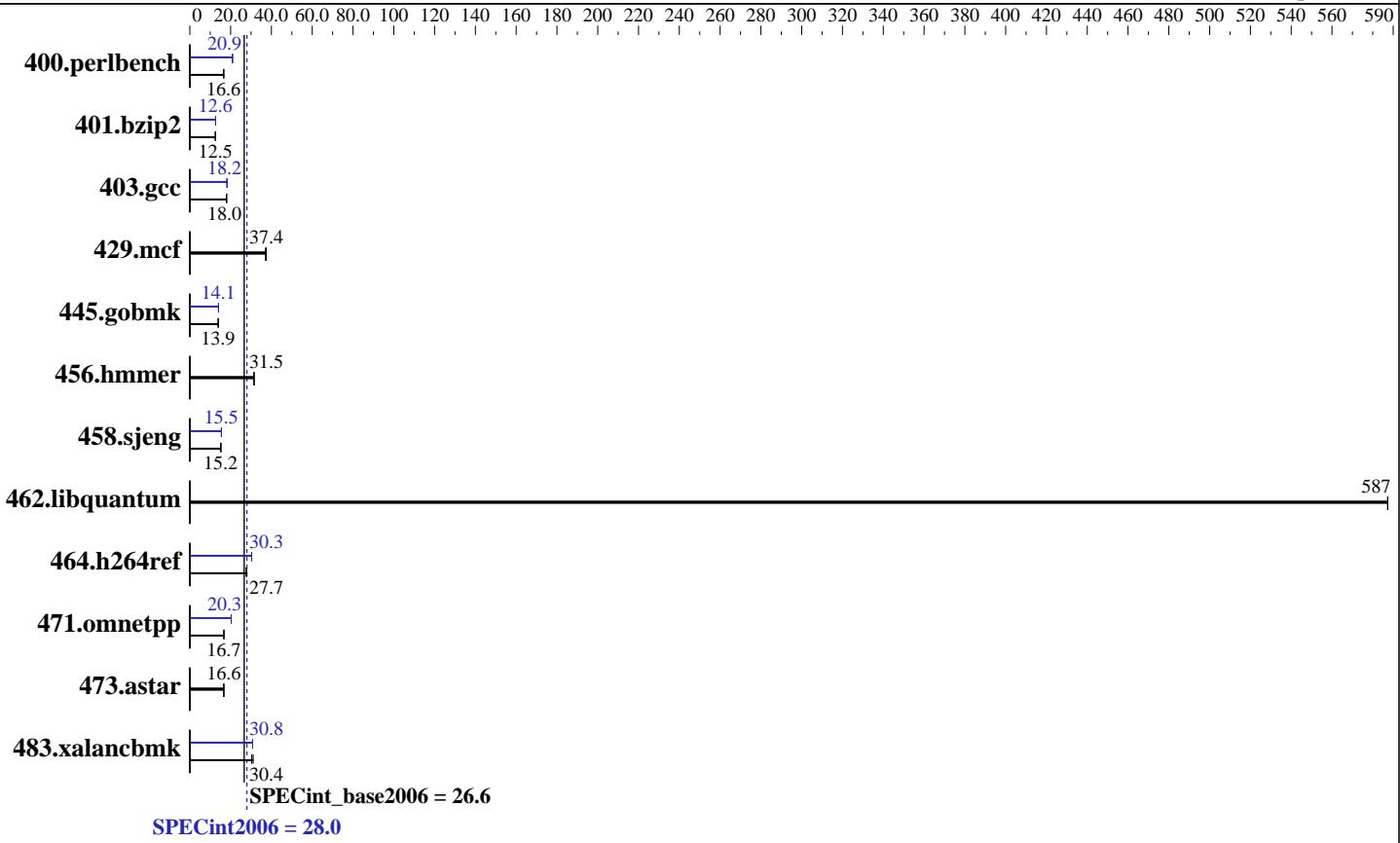$SPECint\_base2006 =$ 26.6

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

Test date: Nov-2013
Hardware Availability: Jan-2014
Software Availability: Sep-2013

0 20.0 40.0 60.0 80.0 100 120 140 160 180 200 220 240 260 280 300 320 340 360 380 400 420 440 460 480 500 520 540 560 590

400.perlbench 20.9 / 16.6
401.bzip2 12.6 / 12.5
403.gcc 18.2 / 18.0
429.mcf 37.4
445.gobmk 14.1 / 13.9
456.hmmer 31.5
458.sjeng 15.5 / 15.2
462.libquantum 587
464.h264ref 30.3 / 27.7
471.omnetpp 20.3 / 16.7
473.astar 16.6
483.xalancbmk 30.8 / 30.4

SPECint_base2006 = 26.6
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Hardware

CPU Name: Intel Xeon E5-2403 v2
CPU Characteristics:
CPU MHz: 1800
FPU: Integrated
CPU(s) enabled: 4 cores, 1 chip, 4 cores/chip
CPU(s) orderable: 1 chip
Primary Cache: 32 KB I + 32 KB D on chip per core
Secondary Cache: 256 KB I+D on chip per core
L3 Cache: 10 MB I+D on chip per chip
Other Cache: None
Memory: 96 GB (6 x 16 GB 2Rx4 PC3L-12800R-11, ECC)
Disk Subsystem: 300 GB 15000 RPM SAS
Other Hardware: None

Software

Operating System: Red Hat Enterprise Linux Server release 6.4
2.6.32-358.el6.x86_64
Compiler: C/C++: Version 14.0.0.080 of Intel C++ Studio XE
for Linux
Auto Parallel: Yes
File System: ext4
System State: Run level 3 (multi-user)
Base Pointers: 32/64-bit
Peak Pointers: 32/64-bit
Other Software: Microquill SmartHeap V10.0

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Results Table

Benchmark	Base Seconds	Base Ratio	Base Seconds	Base Ratio	Base Seconds	Base Ratio	Peak Seconds	Peak Ratio	Peak Seconds	Peak Ratio	Peak Seconds	Peak Ratio
400.perlbench	589	16.6	**588**	**16.6**	587	16.6	**467**	**20.9**	467	20.9	468	20.9
401.bzip2	**771**	**12.5**	771	12.5	771	12.5	764	12.6	764	12.6	**764**	**12.6**
403.gcc	447	18.0	446	18.0	**447**	**18.0**	442	18.2	441	18.2	**442**	**18.2**
429.mcf	244	37.4	246	37.1	**244**	**37.4**	244	37.4	246	37.1	**244**	**37.4**
445.gobmk	**754**	**13.9**	754	13.9	755	13.9	**747**	**14.1**	746	14.1	747	14.1
456.hmmer	**296**	**31.5**	296	31.5	297	31.4	**296**	**31.5**	296	31.5	297	31.4
458.sjeng	796	15.2	797	15.2	**797**	**15.2**	782	15.5	781	15.5	**782**	**15.5**
462.libquantum	35.3	587	35.3	587	**35.3**	**587**	35.3	587	35.3	587	**35.3**	**587**
464.h264ref	799	27.7	795	27.8	**799**	**27.7**	**730**	**30.3**	730	30.3	731	30.3
471.omnetpp	374	16.7	**374**	**16.7**	375	16.7	308	20.3	**308**	**20.3**	308	20.3
473.astar	422	16.6	421	16.7	**422**	**16.6**	422	16.6	421	16.7	**422**	**16.6**
483.xalancbmk	222	31.1	**227**	**30.4**	227	30.4	224	30.8	224	30.8	**224**	**30.8**

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:
        Virtualization Technology disabled
        Execute Disable disabled
        System Profile set to Performance
        Sysinfo program /root/cpu2006-1.2/config/sysinfo.rev6818
        $Rev: 6818 $ $Date:: 2012-07-17 #$ e86d102572650a6e4d596a3cee98f191
        running on root Thu Nov  7 09:59:43 2013

        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 E5-2403 v2 @ 1.80GHz
              1 "physical id"s (chips)
              4 "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 : 4
              siblings  : 4
              physical 0: cores 0 1 2 3
           cache size : 10240 KB
```

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Platform Notes (Continued)

```
From /proc/meminfo
   MemTotal:       98991332 kB
   HugePages_Total:       0
   Hugepagesize:       2048 kB

/usr/bin/lsb_release -d
   Red Hat Enterprise Linux Server release 6.4 (Santiago)

From /etc/*release* /etc/*version*
   redhat-release: Red Hat Enterprise Linux Server release 6.4 (Santiago)
   system-release: Red Hat Enterprise Linux Server release 6.4 (Santiago)
   system-release-cpe: cpe:/o:redhat:enterprise_linux:6server:ga:server

uname -a:
   Linux root 2.6.32-358.el6.x86_64 #1 SMP Tue Jan 29 11:47:41 EST 2013 x86_64
   x86_64 x86_64 GNU/Linux

run-level 3 Nov 7 09:59

SPEC is set to: /root/cpu2006-1.2
   Filesystem     Type     Size  Used Avail Use% Mounted on
   /dev/sda2      ext4     271G  9.5G  248G   4% /

Additional information from dmidecode:
  BIOS Dell Inc. 2.0.21 09/23/2013
  Memory:
   6x 00AD00B300AD HMT42GR7MFR4A-PB 16 GB 1333 MHz 2 rank

(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/libs/32:/root/cpu2006-1.2/libs/64:/root/cpu2006-1.2/sh"
OMP_NUM_THREADS = "4"

 Binaries compiled on a system with 1x Core i7-860 CPU + 8GB
 memory using RedHat EL 6.4
 Transparent Huge Pages enabled with:
 echo always > /sys/kernel/mm/redhat_transparent_hugepage/enabled
 Filesystem page cache cleared with:
 echo 1>        /proc/sys/vm/drop_caches
```

Base Compiler Invocation

C benchmarks:
   icc   -m64

Continued on next page

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Base Compiler Invocation (Continued)

C++ benchmarks:
    icpc -m64

Base Portability Flags

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

Base Optimization Flags

C benchmarks:
    -xSSE4.2 -ipo -O3 -no-prec-div -parallel -opt-prefetch -auto-p32

C++ benchmarks:
    -xSSE4.2 -ipo -O3 -no-prec-div -opt-prefetch -auto-p32
    -Wl,-z,muldefs -L/sh -lsmartheap64

Base Other Flags

C benchmarks:

        403.gcc: -Dalloca=_alloca

Peak Compiler Invocation

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

    400.perlbench: icc -m32

      445.gobmk: icc -m32

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Peak Compiler Invocation (Continued)

464.h264ref: `icc -m32`

C++ benchmarks (except as noted below):
`icpc -m32`

473.astar: `icpc -m64`

Peak Portability Flags

400.perlbench: `-DSPEC_CPU_LINUX_IA32`
401.bzip2: `-DSPEC_CPU_LP64`
403.gcc: `-DSPEC_CPU_LP64`
429.mcf: `-DSPEC_CPU_LP64`
456.hmmer: `-DSPEC_CPU_LP64`
458.sjeng: `-DSPEC_CPU_LP64`
462.libquantum: `-DSPEC_CPU_LP64 -DSPEC_CPU_LINUX`
473.astar: `-DSPEC_CPU_LP64`
483.xalancbmk: `-DSPEC_CPU_LINUX`

Peak Optimization Flags

C benchmarks:

400.perlbench: `-xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2)`
`-O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)`
`-opt-prefetch -ansi-alias`

401.bzip2: `-xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2)`
`-O3(pass 2) -no-prec-div -prof-use(pass 2) -auto-ilp32`
`-opt-prefetch -ansi-alias`

403.gcc: `-xSSE4.2 -ipo -O3 -no-prec-div -inline-calloc`
`-opt-malloc-options=3 -auto-ilp32`

429.mcf: `basepeak = yes`

445.gobmk: `-xSSE4.2(pass 2) -prof-gen(pass 1) -prof-use(pass 2)`
`-ansi-alias`

456.hmmer: `basepeak = yes`

458.sjeng: `-xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2)`
`-O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)`
`-unroll4`

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Peak Optimization Flags (Continued)

462.libquantum: basepeak = yes

464.h264ref: `-xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2)`
`-O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)`
`-unroll2 -ansi-alias`

C++ benchmarks:

471.omnetpp: `-xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2)`
`-O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)`
`-opt-ra-region-strategy=block       -ansi-alias`
`-Wl,-z,muldefs -L/sh -lsmartheap`

473.astar: basepeak = yes

483.xalancbmk: `-xSSE4.2 -ipo -O3 -no-prec-div -opt-prefetch -ansi-alias`
`-Wl,-z,muldefs -L/sh -lsmartheap`

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-ic14.0-official-linux64.20140128.html
http://www.spec.org/cpu2006/flags/Dell-Platform-Settings-V1.2-revB.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic14.0-official-linux64.20140128.xml
http://www.spec.org/cpu2006/flags/Dell-Platform-Settings-V1.2-revB.xml

For questions about this result, please contact the tester.
For other inquiries, please contact webmaster@spec.org.

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