SPEC® CINT2006 Result

Dell Inc.

PowerEdge R920 (Intel Xeon E7-4830 v2, 2.20 GHz)

SPECint®_rate2006 =   1320

SPECint_rate_base2006 = 1260

CPU2006 license: 55	**Test date:**	Apr-2015
Test sponsor: Dell Inc.	**Hardware Availability:**	Mar-2014
Tested by: Dell Inc.	**Software Availability:**	Oct-2014

Copies 0 300 600 900 1300 1700 2100 2500 2900 3300 3700 4100 4500 4900 5300 5700 6100 6500 6900 7300 7700 8100 9000

Benchmark	Copies	Peak	Base
400.perlbench	80	1160	987
401.bzip2	80	634	621
403.gcc	80	1000	1000
429.mcf	80		1690
445.gobmk	80	991	980
456.hmmer	80	2210	1750
458.sjeng	80	999	973
462.libquantum	80		8970
464.h264ref	80	1690	1670
471.omnetpp	80	659	619
473.astar	80		737
483.xalancbmk	80		1350

SPECint_rate_base2006 = 1260
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Hardware

CPU Name:	Intel Xeon E7-4830 v2
CPU Characteristics:	Intel Turbo Boost Technology up to 2.70 GHz
CPU MHz:	2200
FPU:	Integrated
CPU(s) enabled:	40 cores, 4 chips, 10 cores/chip, 2 threads/core
CPU(s) orderable:	2,4 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:	20 MB I+D on chip per chip
Other Cache:	None
Memory:	1 TB (64 x 16 GB 2Rx4 PC3-12800R-11, ECC, running at 1066 MHz)
Disk Subsystem:	2 x 146 GB 15000 RPM SAS6, RAID0
Other Hardware:	None

Software

Operating System:	SUSE Linux Enterprise Server 12 3.12.28-4-default
Compiler:	C/C++: Version 15.0.0.090 of Intel C++ Studio XE for Linux
Auto Parallel:	No
File System:	ext4
System State:	Run level 3 (multi-user)
Base Pointers:	32-bit
Peak Pointers:	32/64-bit
Other Software:	Microquill SmartHeap V10.0

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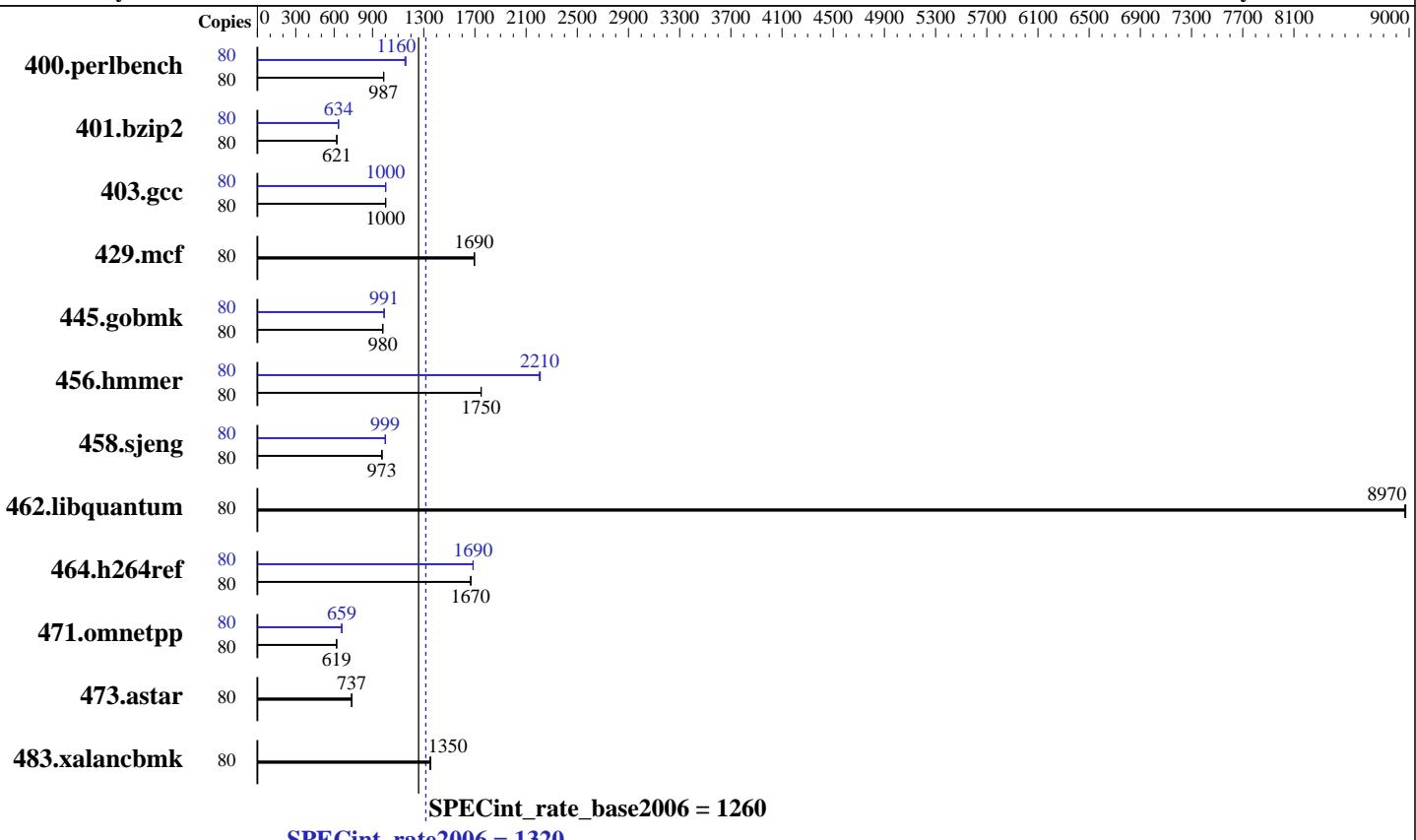SPECint_rate_base2006 = 1260

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Results Table

Benchmark	Base Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Peak Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
400.perlbench	80	791	988	792	986	**792**	**987**	80	678	1150	674	1160	**674**	**1160**
401.bzip2	80	1244	621	**1244**	**621**	1244	621	80	**1218**	**634**	1217	634	1219	633
403.gcc	80	643	1000	**643**	**1000**	642	1000	80	**643**	**1000**	643	1000	641	1000
429.mcf	80	430	1700	**431**	**1690**	431	1690	80	430	1700	**431**	**1690**	431	1690
445.gobmk	80	856	980	**856**	**980**	857	979	80	**847**	**991**	849	989	847	991
456.hmmer	80	**427**	**1750**	427	1750	427	1750	80	**338**	**2210**	339	2200	338	2210
458.sjeng	80	993	975	996	972	**995**	**973**	80	**969**	**999**	966	1000	969	999
462.libquantum	80	185	8970	**185**	**8970**	185	8970	80	185	8970	**185**	**8970**	185	8970
464.h264ref	80	1061	1670	1063	1670	**1062**	**1670**	80	1051	1690	1050	1690	**1050**	**1690**
471.omnetpp	80	**807**	**619**	809	618	807	620	80	**759**	**659**	759	659	759	659
473.astar	80	762	737	762	737	**762**	**737**	80	762	737	762	737	**762**	**737**
483.xalancbmk	80	**408**	**1350**	408	1350	409	1350	80	**408**	**1350**	408	1350	409	1350

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:
      Virtualization Technology disabled
      Execute Disable disabled
      System Profile set to Performance
      Sysinfo program /root/cpu2006-1.2/config/sysinfo.rev6914
      $Rev: 6914 $ $Date:: 2014-06-25 #$ e3fbb8667b5a285932ceab81e28219e1
      running on linux-uj5l Sun Apr 19 05:42:20 2015

      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 E7-4830 v2 @ 2.20GHz
            4 "physical id"s (chips)
            80 "processors"
         cores, siblings (Caution: counting these is hw and system dependent. The

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Platform Notes (Continued)

```
    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
       physical 2: cores 0 1 2 3 4 8 9 10 11 12
       physical 3: cores 0 1 2 3 4 8 9 10 11 12
    cache size : 20480 KB

 From /proc/meminfo
    MemTotal:       1058917700 kB
    HugePages_Total:        0
    Hugepagesize:        2048 kB

 /usr/bin/lsb_release -d
    SUSE Linux Enterprise Server 12

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

 uname -a:
    Linux linux-uj5l 3.12.28-4-default #1 SMP Thu Sep 25 17:02:34 UTC 2014
    (9879bd4) x86_64 x86_64 x86_64 GNU/Linux

 run-level 3 Apr 17 09:35 last=5

 SPEC is set to: /root/cpu2006-1.2
    Filesystem     Type   Size  Used Avail Use% Mounted on
    /dev/sda2      ext4   260G  8.9G  251G   4% /
 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 Dell Inc. 1.4.2 02/05/2015
```

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Platform Notes (Continued)

```
    Memory:
     32x 00CE00B300CE M393B2G70BH0-YK0 16 GB 2 rank 1600 MHz, configured at 1066
     MHz
     32x 00CE04B300CE M393B2G70QH0-YK0 16 GB 2 rank 1600 MHz, configured at 1066
     MHz

  (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"

 Binaries compiled on a system with 1x Core i5-4670K CPU + 16GB
 memory using RedHat EL 7.0
 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 -m32 -L/opt/intel/composer_xe_2015/lib/ia32
```

C++ benchmarks:
```
     icpc -m32 -L/opt/intel/composer_xe_2015/lib/ia32
```

Base Portability Flags

```
     400.perlbench: -DSPEC_CPU_LINUX_IA32
     462.libquantum: -DSPEC_CPU_LINUX
     483.xalancbmk: -DSPEC_CPU_LINUX
```

Base Optimization Flags

C benchmarks:
```
     -xAVX -ipo -O3 -no-prec-div -opt-prefetch -opt-mem-layout-trans=3
```

C++ benchmarks:
```
     -xAVX -ipo -O3 -no-prec-div -opt-prefetch -opt-mem-layout-trans=3
     -Wl,-z,muldefs -L/sh -lsmartheap
```

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Base Other Flags

C benchmarks:

    403.gcc: -Dalloca=_alloca

Peak Compiler Invocation

C benchmarks (except as noted below):
    icc -m32 -L/opt/intel/composer_xe_2015/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/composer_xe_2015/lib/ia32

Peak Portability Flags

    400.perlbench: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX_X64
      401.bzip2: -DSPEC_CPU_LP64
    456.hmmer: -DSPEC_CPU_LP64
      458.sjeng: -DSPEC_CPU_LP64
    462.libquantum: -DSPEC_CPU_LINUX
    483.xalancbmk: -DSPEC_CPU_LINUX

Peak Optimization Flags

C benchmarks:

    400.perlbench: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
                -no-prec-div(pass 2) -prof-use(pass 2) -auto-ilp32

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

      403.gcc: -xAVX -ipo -O3 -no-prec-div

      429.mcf: basepeak = yes

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Peak Optimization Flags (Continued)

```
  445.gobmk: -xAVX(pass 2) -prof-gen(pass 1) -prof-use(pass 2)
             -ansi-alias -opt-mem-layout-trans=3

  456.hmmer: -xAVX -ipo -O3 -no-prec-div -unroll2 -auto-ilp32

  458.sjeng: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
             -no-prec-div(pass 2) -prof-use(pass 2) -unroll4
             -auto-ilp32
```

462.libquantum: basepeak = yes

```
 464.h264ref: -xAVX(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: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
             -no-prec-div(pass 2) -prof-use(pass 2) -ansi-alias
             -opt-ra-region-strategy=block -Wl,-z,muldefs
             -L/sh -lsmartheap
```

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-ic15.0-official-linux64.html
http://www.spec.org/cpu2006/flags/Dell-Platform-Settings-V1.2-revE.20150421.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic15.0-official-linux64.xml
http://www.spec.org/cpu2006/flags/Dell-Platform-Settings-V1.2-revE.20150421.xml

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