



# SPEC<sup>®</sup> CINT2006 Result

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Dell Inc.

SPECint<sup>®</sup>2006 = 57.6

PowerEdge R220 (Intel Xeon E3-1220 v3, 3.10 GHz)

SPECint\_base2006 = 55.4

CPU2006 license: 55

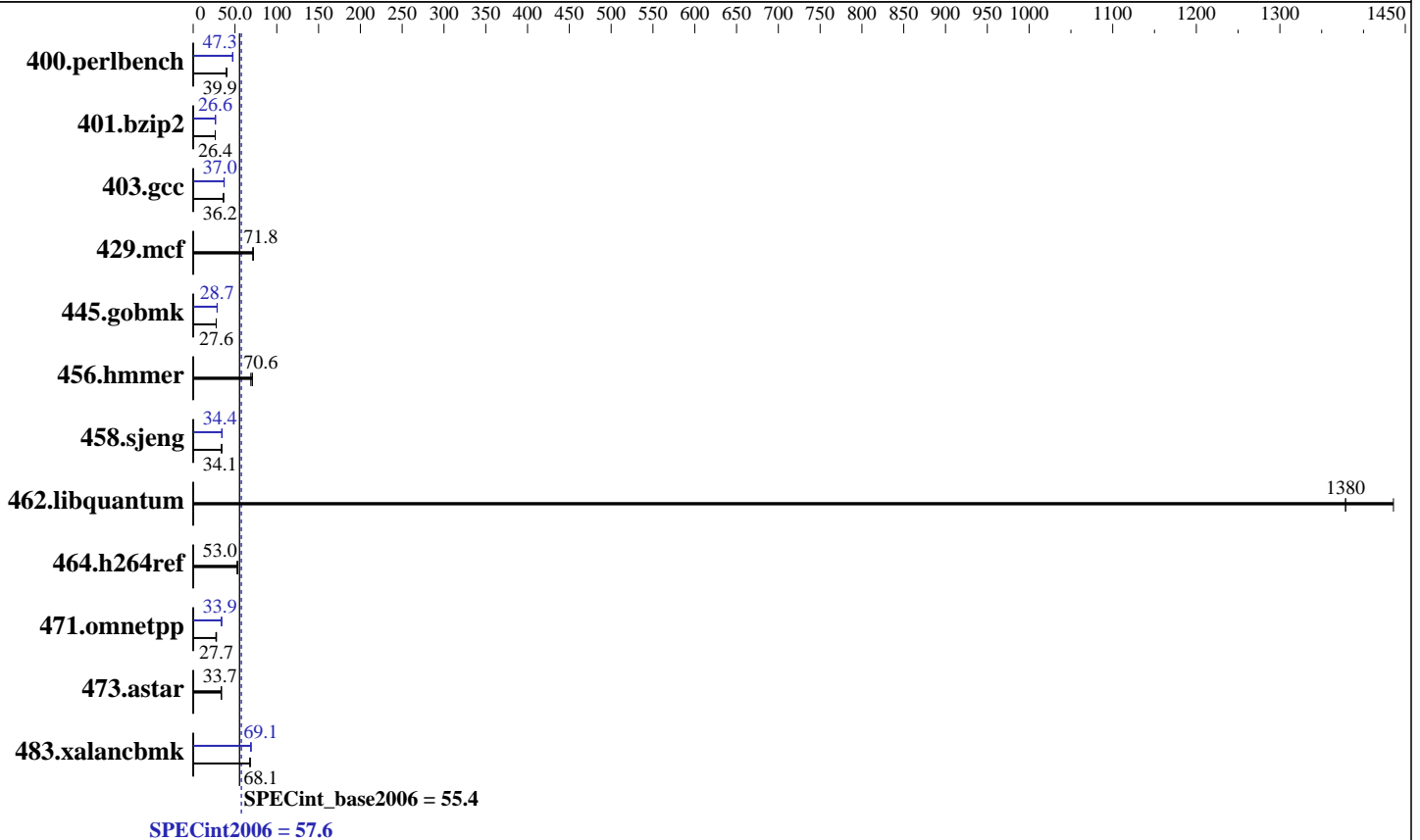
Test date: Mar-2014

Test sponsor: Dell Inc.

Hardware Availability: Mar-2014

Tested by: Dell Inc.

Software Availability: Feb-2014



## Hardware

CPU Name: Intel Xeon E3-1220 v3  
 CPU Characteristics: Intel Turbo Boost Technology up to 3.50 GHz  
 CPU MHz: 3100  
 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: 8 MB I+D on chip per chip  
 Other Cache: None  
 Memory: 32 GB (4 x 8 GB 2Rx8 PC3L-12800E-11, ECC)  
 Disk Subsystem: 2 x 300 GB 10000 RPM SAS  
 Other Hardware: None

## Software

Operating System: SUSE Linux Enterprise Server 11 (x86\_64)  
 3.0.76-0.11-default  
 Compiler: C/C++: Version 14.0.0.080 of Intel C++ Studio XE for Linux  
 Auto Parallel: Yes  
 File System: ext2  
 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						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
400.perlbench	<b>245</b>	<b>39.9</b>	244	40.0	245	39.9	207	47.2	<b>207</b>	<b>47.3</b>	206	47.4
401.bzip2	<b>365</b>	<b>26.4</b>	366	26.4	365	26.4	363	26.6	363	26.6	<b>363</b>	<b>26.6</b>
403.gcc	222	36.2	222	36.3	<b>222</b>	<b>36.2</b>	219	36.8	217	37.1	<b>217</b>	<b>37.0</b>
429.mcf	128	71.3	<b>127</b>	<b>71.8</b>	127	71.9	128	71.3	<b>127</b>	<b>71.8</b>	127	71.9
445.gobmk	<b>380</b>	<b>27.6</b>	380	27.6	382	27.5	366	28.7	<b>366</b>	<b>28.7</b>	366	28.6
456.hammer	132	70.8	135	68.9	<b>132</b>	<b>70.6</b>	132	70.8	135	68.9	<b>132</b>	<b>70.6</b>
458.sjeng	355	34.1	<b>355</b>	<b>34.1</b>	356	34.0	352	34.4	<b>352</b>	<b>34.4</b>	352	34.4
462.libquantum	<b>15.0</b>	<b>1380</b>	15.0	1380	14.4	1440	<b>15.0</b>	<b>1380</b>	15.0	1380	14.4	1440
464.h264ref	416	53.2	421	52.6	<b>418</b>	<b>53.0</b>	416	53.2	421	52.6	<b>418</b>	<b>53.0</b>
471.omnetpp	230	27.2	224	27.8	<b>226</b>	<b>27.7</b>	184	34.0	<b>184</b>	<b>33.9</b>	185	33.8
473.astar	<b>208</b>	<b>33.7</b>	210	33.5	207	33.9	<b>208</b>	<b>33.7</b>	210	33.5	207	33.9
483.xalancbmk	<b>101</b>	<b>68.1</b>	101	68.3	102	67.7	99.6	69.3	100	68.9	<b>99.9</b>	<b>69.1</b>

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

## Submit Notes

The config file option 'submit' was used.

## Operating System Notes

Stack size set to unlimited using "ulimit -s unlimited"

## Platform Notes

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 linux Wed Mar 19 09:21:07 2014

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 E3-1220 v3 @ 3.10GHz  
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

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## Platform Notes (Continued)

```
siblings : 4
physical 0: cores 0 1 2 3
cache size : 8192 KB
```

```
From /proc/meminfo
MemTotal:      32809896 kB
HugePages_Total: 0
Hugepagesize:  2048 kB
```

```
/usr/bin/lsb_release -d
SUSE Linux Enterprise Server 11 (x86_64)
```

```
From /etc/*release* /etc/*version*
SuSE-release:
SUSE Linux Enterprise Server 11 (x86_64)
VERSION = 11
PATCHLEVEL = 3
```

```
uname -a:
Linux linux 3.0.76-0.11-default #1 SMP Fri Jun 14 08:21:43 UTC 2013 (ccab990)
x86_64 x86_64 x86_64 GNU/Linux
```

```
run-level 3 Mar 19 09:17 last=S
```

```
SPEC is set to: /root/cpu2006-1.2
Filesystem      Type  Size  Used Avail Use% Mounted on
/dev/sda2       ext2  542G  7.8G  533G   2% /
```

```
Additional information from dmidecode:
BIOS Dell Inc. 1.0.2 03/02/2014
Memory:
4x Samsung M391B1G73BH0-YK0 8 GB 1600 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"  
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/transparent\_hugepage/enabled  
runspec command invoked through numactl i.e.:  
numactl --interleave=all runspec <etc>



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## Base Compiler Invocation

C benchmarks:

icc -m64

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:

-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -opt-prefetch -auto-p32

C++ benchmarks:

-xCORE-AVX2 -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

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## Peak Compiler Invocation (Continued)

400.perlbench: `icc -m32`

445.gobmk: `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`  
 464.h264ref: `-DSPEC_CPU_LP64`  
 473.astar: `-DSPEC_CPU_LP64`  
 483.xalancbmk: `-DSPEC_CPU_LINUX`

## Peak Optimization Flags

C benchmarks:

400.perlbench: `-xCORE-AVX2(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: `-xCORE-AVX2(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: `-xCORE-AVX2 -ipo -O3 -no-prec-div -inline-calloc -opt-malloc-options=3 -auto-ilp32`

429.mcf: `basepeak = yes`

445.gobmk: `-xCORE-AVX2(pass 2) -prof-gen(pass 1) -prof-use(pass 2) -ansi-alias`

456.hmmer: `basepeak = yes`

458.sjeng: `-xCORE-AVX2(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: basepeak = yes

C++ benchmarks:

471.omnetpp: -xCORE-AVX2(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: -xCORE-AVX2 -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-revC.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-revC.xml>

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For questions about this result, please contact the tester.  
For other inquiries, please contact [webmaster@spec.org](mailto:webmaster@spec.org).

Tested with SPEC CPU2006 v1.2.  
Report generated on Thu Jul 24 23:23:01 2014 by SPEC CPU2006 PS/PDF formatter v6932.  
Originally published on 22 April 2014.