SPEC® CINT2006 Result
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IBM Corporation

IBM System x iDataPlex dx360 M4 (Intel Xeon E5-2630)

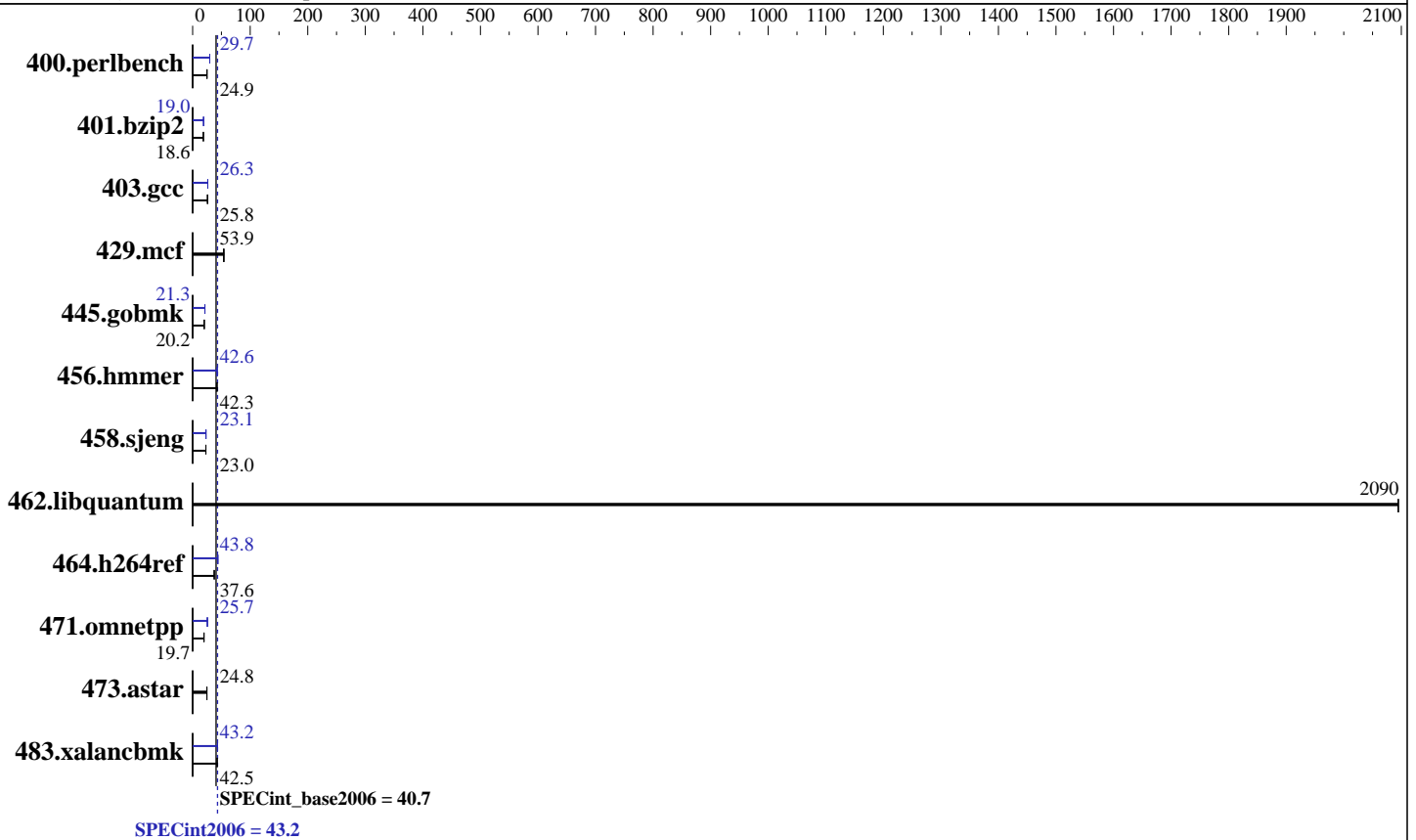$SPECint^{®}2006 =$ 43.2

$SPECint\_base2006 =$ 40.7

CPU2006 license: 11	**Test date:** May-2012
Test sponsor: IBM Corporation	**Hardware Availability:** Mar-2012
Tested by: IBM Corporation	**Software Availability:** Dec-2011

400.perlbench 29.7 / 24.9
401.bzip2 19.0 / 18.6
403.gcc 26.3 / 25.8
429.mcf 53.9
445.gobmk 21.3 / 20.2
456.hmmer 42.6 / 42.3
458.sjeng 23.1 / 23.0
462.libquantum 2090
464.h264ref 43.8 / 37.6
471.omnetpp 25.7 / 19.7
473.astar 24.8
483.xalancbmk 43.2 / 42.5

SPECint_base2006 = 40.7

SPECint2006 = 43.2

Hardware

CPU Name:	Intel Xeon E5-2630
CPU Characteristics:	Intel Turbo Boost Technology up to 2.80 GHz
CPU MHz:	2300
FPU:	Integrated
CPU(s) enabled:	12 cores, 2 chips, 6 cores/chip, 2 threads/core
CPU(s) orderable:	1,2 chips
Primary Cache:	32 KB I + 32 KB D on chip per core
Secondary Cache:	256 KB I+D on chip per core
L3 Cache:	15 MB I+D on chip per chip
Other Cache:	None
Memory:	128 GB (16 x 8 GB 2Rx4 PC3-12800R-11, ECC, running at 1333 MHz)
Disk Subsystem:	1 x 250 GB SATA, 7200 RPM
Other Hardware:	None

Software

Operating System:	Red Hat Enterprise Linux Server release 6.2 (Santiago) 2.6.32-220.el6.x86_64
Compiler:	C/C++: Version 12.1.0.225 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 V9.01

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Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
400.perlbench	393	24.9	**393**	**24.9**	392	24.9	**328**	**29.7**	329	29.7	328	29.8
401.bzip2	519	18.6	518	18.6	**518**	**18.6**	509	18.9	**509**	**19.0**	508	19.0
403.gcc	312	25.8	312	25.8	**312**	**25.8**	**306**	**26.3**	306	26.3	306	26.3
429.mcf	**169**	**53.9**	167	54.7	170	53.7	**169**	**53.9**	167	54.7	170	53.7
445.gobmk	**520**	**20.2**	520	20.2	521	20.1	492	21.3	**493**	**21.3**	493	21.3
456.hmmer	**221**	**42.3**	220	42.3	221	42.3	**219**	**42.6**	219	42.7	220	42.4
458.sjeng	526	23.0	526	23.0	**526**	**23.0**	523	23.1	**523**	**23.1**	523	23.1
462.libquantum	9.89	2090	9.89	2090	**9.89**	**2090**	9.89	2090	9.89	2090	**9.89**	**2090**
464.h264ref	593	37.3	**589**	**37.6**	588	37.6	512	43.2	503	44.0	**505**	**43.8**
471.omnetpp	316	19.8	**317**	**19.7**	318	19.7	247	25.3	243	25.8	**243**	**25.7**
473.astar	283	24.8	285	24.6	**283**	**24.8**	283	24.8	285	24.6	**283**	**24.8**
483.xalancbmk	162	42.6	**162**	**42.5**	162	42.5	160	43.2	160	43.2	**160**	**43.2**

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"
Zone reclaim mode enabled with:
echo 1 > /proc/sys/vm/zone_reclaim_mode
```

Platform Notes

```
BIOS Settings:
Operating Mode set to Maximum Performance
Sysinfo program /root/SPECcpu-v1.2/Docs/sysinfo
$Rev: 6775 $ $Date:: 2011-08-16 #$ 8787f7622badcf24e01c368b1db4377c
running on tianden Fri May 18 22:09:58 2012

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 E5-2630 0 @ 2.30GHz
      2 "physical id"s (chips)
      24 "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 : 6
      siblings  : 12
      physical 0: cores 0 1 2 3 4 5
      physical 1: cores 0 1 2 3 4 5
```

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Platform Notes (Continued)

```
      cache size : 15360 KB

  From /proc/meminfo
     MemTotal:       132094664 kB
     HugePages_Total:        0
     Hugepagesize:        2048 kB

  /usr/bin/lsb_release -d
     Red Hat Enterprise Linux Server release 6.2 (Santiago)

  From /etc/*release* /etc/*version*
     redhat-release: Red Hat Enterprise Linux Server release 6.2 (Santiago)
     system-release: Red Hat Enterprise Linux Server release 6.2 (Santiago)
     system-release-cpe: cpe:/o:redhat:enterprise_linux:6server:ga:server

  uname -a:
     Linux tianden 2.6.32-220.el6.x86_64 #1 SMP Wed Nov 9 08:03:13 EST 2011 x86_64
     x86_64 x86_64 GNU/Linux

  run-level 3 May 17 11:42

  SPEC is set to: /root/SPECcpu-v1.2
     Filesystem     Type     Size  Used Avail Use% Mounted on
     /dev/mapper/vg_tianden-lv_root
                      ext4    145G   61G   78G  44% /

  (End of data from sysinfo program)
```

General Notes

```
Environment variables set by runspec before the start of the run:
KMP_AFFINITY = "granularity=fine,compact,1,0"
LD_LIBRARY_PATH = "/root/SPECcpu-v1.2/libs/32:/root/SPECcpu-v1.2/libs/64"
OMP_NUM_THREADS = "12"

 Binaries compiled on a system with 1x Core i7-860 CPU + 8GB
 memory using RHEL5.5
 Transparent Huge Pages enabled with:
 echo always > /sys/kernel/mm/redhat_transparent_hugepage/enabled
```

Base Compiler Invocation

C benchmarks:
   icc   -m64

C++ benchmarks:
   icpc -m64

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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:

```
-xAVX -ipo -O3 -no-prec-div -parallel -opt-prefetch -auto-p32
```

C++ benchmarks:

```
-xAVX -ipo -O3 -no-prec-div -opt-prefetch -auto-p32 -Wl,-z,muldefs
-L/smartheap -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
```

```
464.h264ref: icc -m32
```

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

```
473.astar: icpc -m64
```

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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: -xAVX(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: -xAVX(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: -xAVX -ipo -O3 -no-prec-div -inline-calloc
                   -opt-malloc-options=3 -auto-ilp32

         429.mcf: basepeak = yes

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

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

        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

   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)
                   -opt-ra-region-strategy=block                -ansi-alias
                   -Wl,-z,muldefs -L/smartheap -lsmartheap
```

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Peak Optimization Flags (Continued)

473.astar: basepeak = yes

483.xalancbmk: `-xAVX -ipo -O3 -no-prec-div -opt-prefetch -ansi-alias -Wl,-z,muldefs -L/smartheap -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-ic12.1-official-linux64.20111122.html
http://www.spec.org/cpu2006/flags/IBM-Platform-Flags-V1.2-SNB-C.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic12.1-official-linux64.20111122.xml
http://www.spec.org/cpu2006/flags/IBM-Platform-Flags-V1.2-SNB-C.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 Jul 24 06:25:24 2014 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 5 June 2012.