SPEC® CINT2006 Result
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IBM Corporation

IBM System x iDataPlex dx360 M4 (Intel Xeon E5-2658)

SPECint®2006 = 38.8
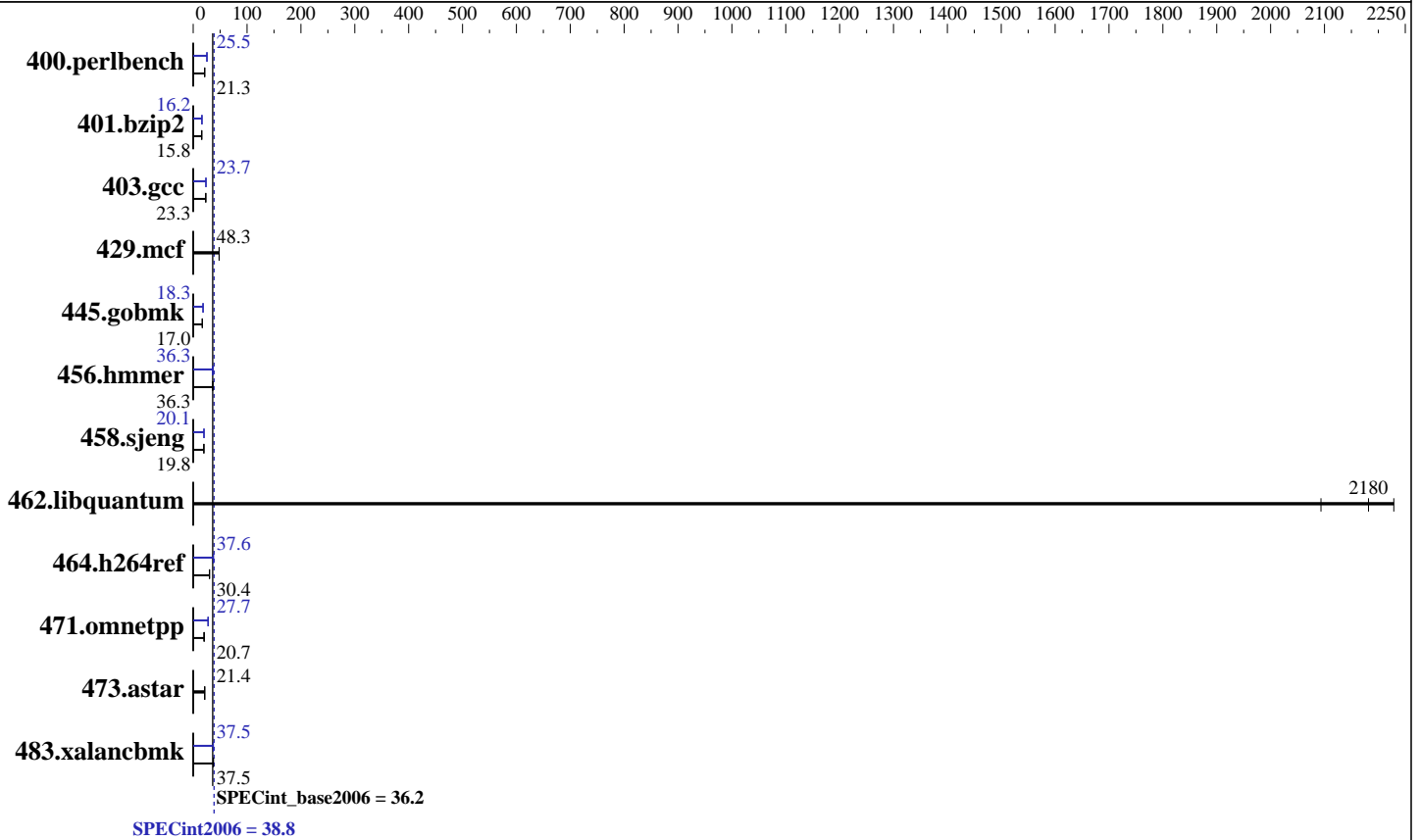
SPECint_base2006 = 36.2

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

400.perlbench 25.5 / 21.3
401.bzip2 16.2 / 15.8
403.gcc 23.7 / 23.3
429.mcf 48.3
445.gobmk 18.3 / 17.0
456.hmmer 36.3 / 36.3
458.sjeng 20.1 / 19.8
462.libquantum 2180
464.h264ref 37.6 / 30.4
471.omnetpp 27.7 / 20.7
473.astar 21.4
483.xalancbmk 37.5 / 37.5

SPECint_base2006 = 36.2

SPECint2006 = 38.8

Hardware

CPU Name:	Intel Xeon E5-2658
CPU Characteristics:	Intel Turbo Boost Technology up to 2.40 GHz
CPU MHz:	2100
FPU:	Integrated
CPU(s) enabled:	16 cores, 2 chips, 8 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:	20 MB I+D on chip per chip
Other Cache:	None
Memory:	128 GB (16 x 8 GB 2Rx4 PC3-12800R-11, ECC)
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 Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Peak Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
400.perlbench	459	21.3	**458**	**21.3**	457	21.4	**383**	**25.5**	383	25.5	382	25.6
401.bzip2	609	15.9	610	15.8	**609**	**15.8**	595	16.2	594	16.2	**594**	**16.2**
403.gcc	**345**	**23.3**	345	23.3	345	23.3	340	23.7	**340**	**23.7**	340	23.7
429.mcf	189	48.3	190	48.0	**189**	**48.3**	189	48.3	190	48.0	**189**	**48.3**
445.gobmk	**619**	**17.0**	622	16.9	618	17.0	572	18.3	**572**	**18.3**	572	18.3
456.hmmer	257	36.3	257	36.3	**257**	**36.3**	255	36.5	**257**	**36.3**	258	36.2
458.sjeng	611	19.8	609	19.9	**610**	**19.8**	604	20.0	**603**	**20.1**	603	20.1
462.libquantum	9.90	2090	**9.50**	**2180**	9.30	2230	9.90	2090	**9.50**	**2180**	9.30	2230
464.h264ref	737	30.0	**728**	**30.4**	728	30.4	**588**	**37.6**	588	37.7	592	37.4
471.omnetpp	318	19.7	**302**	**20.7**	301	20.7	225	27.7	226	27.7	**226**	**27.7**
473.astar	330	21.3	**329**	**21.4**	328	21.4	330	21.3	**329**	**21.4**	328	21.4
483.xalancbmk	184	37.5	**184**	**37.5**	184	37.6	185	37.2	**184**	**37.5**	184	37.5

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 Wed Jul 11 23:25:27 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 E5-2658 0 @ 2.10GHz
      2 "physical id"s (chips)
      32 "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 : 8
      siblings  : 16
      physical 0: cores 0 1 2 3 4 5 6 7
      physical 1: cores 0 1 2 3 4 5 6 7
```

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Platform Notes (Continued)

```
    cache size : 20480 KB

  From /proc/meminfo
     MemTotal:       132093704 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 Jul 9 14:44

  SPEC is set to: /root/SPECcpu-v1.2
     Filesystem     Type    Size  Used Avail Use% Mounted on
     /dev/mapper/vg_tianden-lv_root
                    ext4    145G   74G   64G  54% /

  (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 = "16"

 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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Tested by:	IBM Corporation	**Software Availability:**	Dec-2011

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.

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