SPEC® CINT2006 Result
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IBM Corporation

IBM System x iDataPlex dx360 M4 (Intel Xeon E5-2665)

$SPECint^{®}2006 =$ 49.1

$SPECint\_base2006 =$ 46.0

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

Benchmark results (values shown):

- 400.perlbench: 32.8 / 27.5
- 401.bzip2: 20.9 / 20.5
- 403.gcc: 29.6 / 29.2
- 429.mcf: 59.5
- 445.gobmk: 23.7 / 22.1
- 456.hmmer: 47.1 / 46.8
- 458.sjeng: 25.5 / 25.4
- 462.libquantum: 2840
- 464.h264ref: 48.6 / 40.4
- 471.omnetpp: 31.7 / 23.2
- 473.astar: 27.3
- 483.xalancbmk: 47.5 / 47.7

SPECint_base2006 = 46.0

SPECint2006 = 49.1

Hardware

CPU Name:	Intel Xeon E5-2665
CPU Characteristics:	Intel Turbo Boost Technology up to 3.10 GHz
CPU MHz:	2400
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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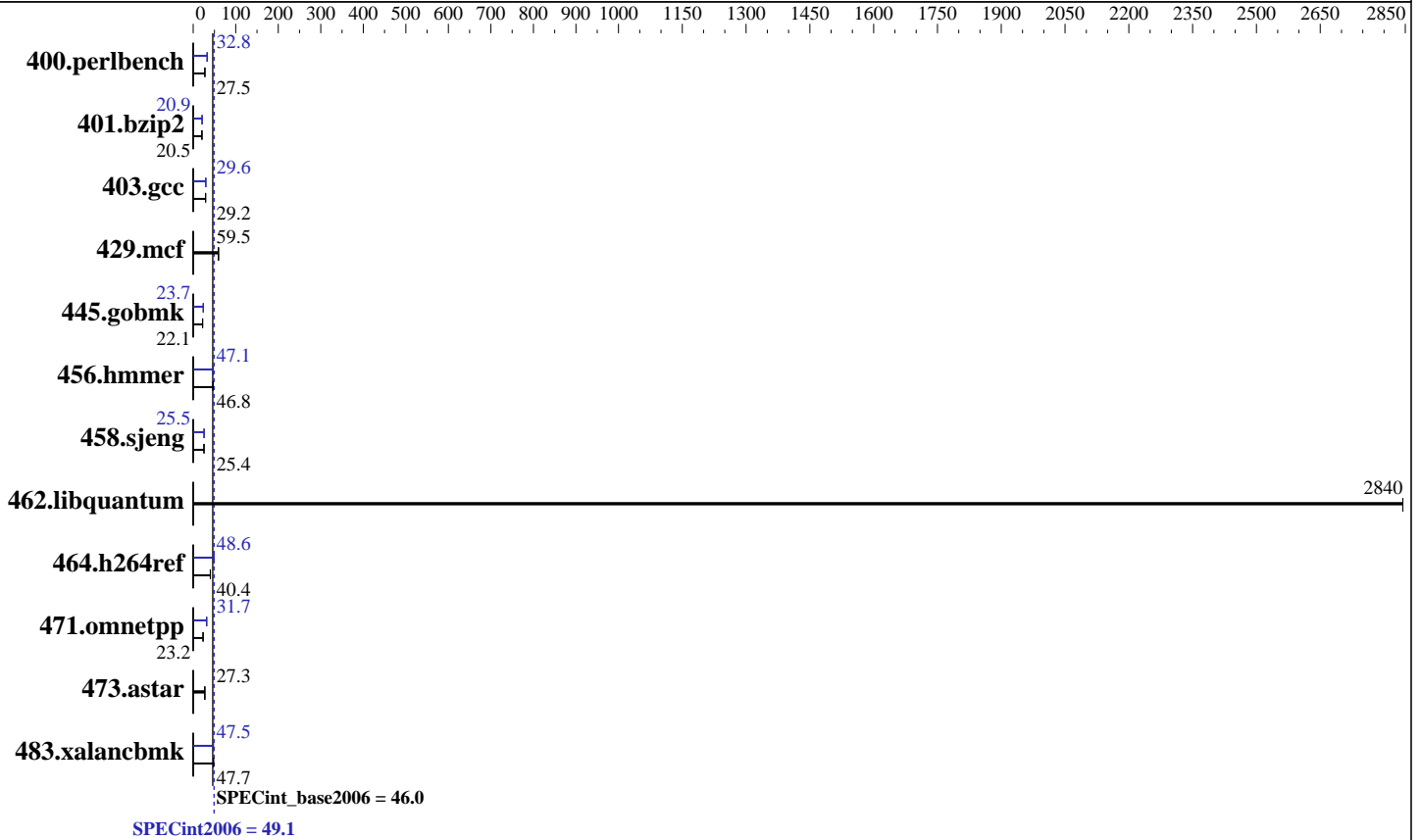SPECint_base2006 =   46.0

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Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
400.perlbench	355	27.5	**356**	**27.5**	356	27.5	298	32.8	298	32.8	**298**	**32.8**
401.bzip2	471	20.5	469	20.6	**470**	**20.5**	**461**	**20.9**	461	20.9	462	20.9
403.gcc	276	29.2	**276**	**29.2**	276	29.1	272	29.6	272	29.6	**272**	**29.6**
429.mcf	**153**	**59.5**	155	58.9	152	59.8	**153**	**59.5**	155	58.9	152	59.8
445.gobmk	**474**	**22.1**	474	22.1	473	22.2	443	23.7	443	23.7	**443**	**23.7**
456.hmmer	199	46.8	199	46.8	**199**	**46.8**	198	47.1	**198**	**47.1**	199	46.8
458.sjeng	**475**	**25.4**	476	25.4	475	25.4	473	25.6	**474**	**25.5**	474	25.5
462.libquantum	7.28	2840	7.28	2840	**7.28**	**2840**	7.28	2840	7.28	2840	**7.28**	**2840**
464.h264ref	547	40.5	**547**	**40.4**	552	40.1	458	48.3	**455**	**48.6**	455	48.7
471.omnetpp	**269**	**23.2**	269	23.2	269	23.3	**197**	**31.7**	198	31.6	197	31.8
473.astar	257	27.3	256	27.4	**257**	**27.3**	257	27.3	256	27.4	**257**	**27.3**
483.xalancbmk	**145**	**47.7**	145	47.7	144	47.8	145	47.6	**145**	**47.5**	145	47.4

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 May  2 10:56:13 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 E5-2665 0 @ 2.40GHz
      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 Apr 30 11:56

  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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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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