IBM Corporation
IBM System x3630 M4 (Intel Pentium 1403)

SPEClnt\textsuperscript{©}_rate2006 = 62.3
SPEClnt_rate_base2006 = 59.8

CPU2006 license: 11
Test date: Jul-2012
CPU Name: Intel Pentium 1403
Test sponsor: IBM Corporation
CPU Characteristics: CPU MHz: 2600
Tested by: IBM Corporation
FPU: Integrated
Hardware Availability: May-2012
CPU(s) enabled: 2 cores, 1 chip, 2 cores/chip
Software Availability: Dec-2011
CPU(s) orderable: 1.2 chips
Primary Cache: 32 KB I + 32 KB D on chip per core
Other Cache: None
Secondary Cache: 256 KB I+D on chip per core
Other Hardware: None
L3 Cache: 5 MB I+D on chip per chip
48 GB (6 x 8 GB 2Rx4 PC3-12800R-11, ECC, running at 1066 MHz)
Disk Subsystem: 1 x 500 GB SATA, 7200 RPM
Other Software: Microquill SmartHeap V9.01

Operating System: Red Hat Enterprise Linux Server release 6.2
Compiler: C/C++: Version 12.1.0.225 of Intel C++ Studio XE
Auto Parallel: No
System State: Run level 3 (multi-user)
File System: ext4
Base Pointers: 32-bit
Peak Pointers: 32/64-bit
Other Software: Microquill SmartHeap V9.01

<table>
<thead>
<tr>
<th>Specint benchmark</th>
<th>CPU copies</th>
<th>CPU results</th>
</tr>
</thead>
<tbody>
<tr>
<td>400.perlbench</td>
<td>2</td>
<td>43.0</td>
</tr>
<tr>
<td>401.bzip2</td>
<td>2</td>
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<tr>
<td>403.gcc</td>
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<td>429.mcf</td>
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<td>445.gobmk</td>
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<td>456.hmmer</td>
<td>2</td>
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<td>458.sjeng</td>
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<tr>
<td>462.libquantum</td>
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<td>471.omnetpp</td>
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<td>473.astar</td>
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<tr>
<td>483.xalancbmk</td>
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SPEClnt_rate_base2006 = 59.8

<table>
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<tr>
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<th>Software</th>
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<tr>
<td>CPU Name: Intel Pentium 1403</td>
<td>Operating System: Red Hat Enterprise Linux Server release 6.2 (Santiago) 2.6.32-220.el6.x86_64</td>
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<td>CPU Characteristics:</td>
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IBM Corporation

IBM System x3630 M4 (Intel Pentium 1403)

SPECint_rate2006 = 62.3
SPECint_rate_base2006 = 59.8

Results Table

<table>
<thead>
<tr>
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<th>Seconds</th>
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<th>Seconds</th>
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<th>Seconds</th>
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<th>Seconds</th>
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<tr>
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<tr>
<td>473.astar</td>
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<td>70.7</td>
<td>195</td>
<td>70.7</td>
</tr>
</tbody>
</table>

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

Submit Notes

The taskset mechanism was used to bind copies to processors. The config file option 'submit' was used to generate taskset 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 setting:
Operating Mode set to Maximum Performance
Sysinfo program /home/SPECcpu-v1.2/config/sysinfo.rev6800
$Rev: 6800 $ $Date:: 2011-10-11 #$ 6f2ebdff5032aaa42e583f96b07f99d3
running on x3630m4-rhel62 Mon Jul 23 11:44:07 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) Pentium(R) CPU 1403 @ 2.60GHz
 1 "physical id" s (chips)
 2 "processors"
cores, siblings (Caution: counting these is hw and system dependent. The following excerpts from /proc/cpuinfo might not be reliable. Use with caution.)
**IBM Corporation**

**IBM System x3630 M4 (Intel Pentium 1403)**

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**CPU2006 license:** 11  
**Test sponsor:** IBM Corporation  
**Tested by:** IBM Corporation

**Test date:** Jul-2012  
**Hardware Availability:** May-2012  
**Software Availability:** Dec-2011

---

### Platform Notes (Continued)

```
cpu cores : 2  
siblings : 2  
physical 0: cores 0 1  
cache size : 5120 KB
```

```
From /proc/meminfo
MemTotal: 49405540 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)  
```

```
uname -a:
Linux x3630m4-rhel62 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 23 11:21
```

```
SPEC is set to: /home/SPECcpu-v1.2
```

<table>
<thead>
<tr>
<th>Filesystem</th>
<th>Type</th>
<th>Size</th>
<th>Used</th>
<th>Avail</th>
<th>Use% Mounted on</th>
</tr>
</thead>
<tbody>
<tr>
<td>/dev/mapper/vg_x3630m4-rhel62-1v_home</td>
<td>ext4</td>
<td>383G</td>
<td>4.5G</td>
<td>359G</td>
<td>2% /home</td>
</tr>
</tbody>
</table>

Additional information from dmidecode:

```
Memory:  
6x Samsung M393B1K70DH0-CK0 8 GB 1066 MHz 2 rank
```

(End of data from sysinfo program)

---

### General Notes

Environment variables set by runspec before the start of the run:

```
LD_LIBRARY_PATH = "/home/SPECcpu-v1.2/lib32:/home/SPECcpu-v1.2/lib64"
```

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  -m32
```

Continued on next page
IBM Corporation
IBM System x3630 M4 (Intel Pentium 1403)

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Test date: Jul-2012
Hardware Availability: May-2012
Software Availability: Dec-2011

Base Compiler Invocation (Continued)

C++ benchmarks:
icpc -m32

Base Portability Flags

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

Base Optimization Flags

C benchmarks:
-xSSE4.2 -ipo -O3 -no-prec-div -opt-prefetch -opt-mem-layout-trans=3
C++ benchmarks:
-xSSE4.2 -ipo -O3 -no-prec-div -opt-prefetch -opt-mem-layout-trans=3
-Wl,-z,muldefs -L/smartheap -lsmartheap

Base Other Flags

C benchmarks:
403.gcc: -Dalloca=_alloca

Peak Compiler Invocation

C benchmarks (except as noted below):
icc -m32
400.perlbench: icc -m64
401.bzip2: icc -m64
456.hmmer: icc -m64
458.sjeng: icc -m64
C++ benchmarks:
icpc -m32
IBM Corporation
IBM System x3630 M4 (Intel Pentium 1403)

**SPEC int_rate2006 = 62.3**
**SPEC int_rate_base2006 = 59.8**

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

---

**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: -xSSE4.2(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: -xSSE4.2(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: -xSSE4.2 -ipo -O3 -no-prec-div

- 429.mcf: basepeak = yes

- 445.gobmk: -xSSE4.2(pass 2) -prof-gen(pass 1) -prof-use(pass 2)
  -ansi-alias -opt-mem-layout-trans=3

- 456.hmmer: -xSSE4.2 -ipo -O3 -no-prec-div -unroll2 -auto-ilp32

- 458.sjeng: -xSSE4.2(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: -xSSE4.2(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: -xSSE4.2(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

- 473.astar: basepeak = yes
IBM Corporation

IBM System x3630 M4 (Intel Pentium 1403)

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</tr>
</tbody>
</table>

Peak Optimization Flags (Continued)

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-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

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For questions about this result, please contact the tester.
For other inquiries, please contact webmaster@spec.org.

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