Huawei XH320 V2 (Intel Xeon E5-2470)

<table>
<thead>
<tr>
<th>SPECint®_rate2006</th>
<th>584</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECint_rate_base2006</td>
<td>562</td>
</tr>
</tbody>
</table>

| Copyright 2006-2014 Standard Performance Evaluation Corporation |

**CPU2006 license:** 3175  
**Test sponsor:** Huawei  
**Tested by:** Huawei  
**Test date:** Jul-2012  
**Hardware Availability:** May-2012  
**Software Availability:** Dec-2011

### Hardware

<table>
<thead>
<tr>
<th>CPU Name</th>
<th>Intel Xeon E5-2470</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU Characteristics</td>
<td>Intel Turbo Boost Technology up to 3.10 GHz</td>
</tr>
<tr>
<td>CPU MHz</td>
<td>2300</td>
</tr>
<tr>
<td>FPU</td>
<td>Integrated</td>
</tr>
<tr>
<td>CPU(s) enabled</td>
<td>16 cores, 2 chips, 8 cores/chip, 2 threads/core</td>
</tr>
<tr>
<td>CPU(s) orderable</td>
<td>1.2 chips</td>
</tr>
<tr>
<td>Primary Cache</td>
<td>32 KB I + 32 KB D on chip per core</td>
</tr>
<tr>
<td>Secondary Cache</td>
<td>256 KB I+D on chip per core</td>
</tr>
<tr>
<td>L3 Cache</td>
<td>20 MB I+D on chip per chip</td>
</tr>
<tr>
<td>Other Cache</td>
<td>None</td>
</tr>
<tr>
<td>Memory</td>
<td>96 GB (12 x 8 GB 1Rx4 PC3-12800R-11, ECC)</td>
</tr>
<tr>
<td>Disk Subsystem</td>
<td>1 x 300 GB SAS, 10K RPM</td>
</tr>
<tr>
<td>Other Hardware</td>
<td>None</td>
</tr>
</tbody>
</table>

### Software

<table>
<thead>
<tr>
<th>Operating System</th>
<th>Red Hat Enterprise Linux Server release 6.2 (Santiago)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compiler</td>
<td>C/C++: Version 12.1.0.225 of Intel C++ Studio XE for Linux</td>
</tr>
<tr>
<td>Auto Parallel</td>
<td>No</td>
</tr>
<tr>
<td>File System</td>
<td>ext4</td>
</tr>
<tr>
<td>System State</td>
<td>Run level 3 (multi-user)</td>
</tr>
<tr>
<td>Base Pointers</td>
<td>32-bit</td>
</tr>
<tr>
<td>Peak Pointers</td>
<td>32/64-bit</td>
</tr>
<tr>
<td>Other Software</td>
<td>Microquill SmartHeap V9.01</td>
</tr>
</tbody>
</table>
### Huawei XH320 V2 (Intel Xeon E5-2470)

**SPECint_rate2006** = 584  
**SPECint_rate_base2006** = 562

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Copies</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>400.perlbench</td>
<td>32</td>
<td>725</td>
<td>431</td>
<td>726</td>
<td>430</td>
<td>725</td>
<td>431</td>
</tr>
<tr>
<td>401.bzip2</td>
<td>32</td>
<td>962</td>
<td>321</td>
<td>963</td>
<td>321</td>
<td>963</td>
<td>321</td>
</tr>
<tr>
<td>403.mcf</td>
<td>32</td>
<td>573</td>
<td>449</td>
<td>573</td>
<td>450</td>
<td>572</td>
<td>451</td>
</tr>
<tr>
<td>429.mcf</td>
<td>32</td>
<td>346</td>
<td>843</td>
<td>347</td>
<td>841</td>
<td>348</td>
<td>840</td>
</tr>
<tr>
<td>445.gobmk</td>
<td>32</td>
<td>767</td>
<td>437</td>
<td>767</td>
<td>438</td>
<td>768</td>
<td>437</td>
</tr>
<tr>
<td>456.hmmer</td>
<td>32</td>
<td>426</td>
<td>701</td>
<td>426</td>
<td>701</td>
<td>425</td>
<td>702</td>
</tr>
<tr>
<td>458.sjeng</td>
<td>32</td>
<td>890</td>
<td>435</td>
<td>885</td>
<td>437</td>
<td>886</td>
<td>437</td>
</tr>
<tr>
<td>462.libquantum</td>
<td>32</td>
<td>200</td>
<td>3320</td>
<td>199</td>
<td>3330</td>
<td>199</td>
<td>3330</td>
</tr>
<tr>
<td>464.h264ref</td>
<td>32</td>
<td>937</td>
<td>756</td>
<td>954</td>
<td>742</td>
<td>973</td>
<td>728</td>
</tr>
<tr>
<td>471.omnetpp</td>
<td>32</td>
<td>622</td>
<td>322</td>
<td>622</td>
<td>321</td>
<td>623</td>
<td>321</td>
</tr>
<tr>
<td>473.astar</td>
<td>32</td>
<td>694</td>
<td>324</td>
<td>689</td>
<td>326</td>
<td>692</td>
<td>324</td>
</tr>
<tr>
<td>483.xalancbmk</td>
<td>32</td>
<td>399</td>
<td>553</td>
<td>399</td>
<td>553</td>
<td>399</td>
<td>553</td>
</tr>
</tbody>
</table>

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

### Submit Notes

The numactl mechanism was used to bind copies to processors. The config file option 'submit' was used to generate numactl 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"  
Transparent Huge Pages enabled with:  
```
echo always > /sys/kernel/mm/redhat_transparent_hugepage/always
```
Filesystem page cache cleared with:  
```
echo 1> /proc/sys/vm/drop_caches
```
runspec command invoked through numactl i.e.:  
```
umactl --interleave=all runspec <etc>
```
Select only test related files when installing the operating system

### Platform Notes

BIOS configuration:  
Set Power Efficiency Mode to Performance  
Baseboard Management Controller used to adjust the fan speed to 100%  
Sysinfo program /spec/config/sysinfo.rev6800  
$Rev: 6800 $ $Date:: 2011-10-11 #s 6f2ebd8f5032aa42e583f96b07f99d3  
running on RH62-yjp2 Fri Jul 20 17:09:01 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  
Continued on next page
Huawei

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CPU2006 license: 3175

Test sponsor: Huawei

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Software Availability: Dec-2011

**Platform Notes (Continued)**

From /proc/cpuinfo

```markdown
model name : Intel(R) Xeon(R) CPU E5-2470 0 @ 2.30GHz
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
cache size : 20480 KB
```

From /proc/meminfo

```markdown
MemTotal:       99041084 kB
HugePages_Total:       0
Hugepagesize:       2048 kB
```

From /etc/*release* /etc/*version*

```markdown
redhat-release: Red Hat Enterprise Linux Server release 6.2 (Santiago)
system-release: Red Hat Enterprise Linux Server release 6.2 (Santiago)
```

```markdown
uname -a:
Linux RH62-yjp2 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 20 17:06

SPEC is set to: /spec

<table>
<thead>
<tr>
<th>Filesystem</th>
<th>Type</th>
<th>Size</th>
<th>Used</th>
<th>Avail</th>
<th>Use%</th>
<th>Mounted on</th>
</tr>
</thead>
<tbody>
<tr>
<td>/dev/sda1</td>
<td>ext3</td>
<td>270G</td>
<td>60G</td>
<td>197G</td>
<td>24%</td>
<td>/</td>
</tr>
</tbody>
</table>

Additional information from dmidecode:

```markdown
Memory:
12x Samsu M393B 8 GB 1600 MHz 1 rank
```

(End of data from sysinfo program)

**General Notes**

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

```
LD_LIBRARY_PATH = "/spec/libs/32:/spec/libs/64"
```

Binaries compiled on a system with 2 x Xeon X5645 CPU + 16GB memory using RHEL 6.1
Huawei

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Base Compiler Invocation

C benchmarks:
- icc -m32

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
SPEC CINT2006 Result

Huawei
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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)
            -opt-prefetch -auto-ilp32 -ansi-alias
403.gcc: basepeak = yes
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
            -L/smartheap -lsmartheap
473.astar: basepeak = yes

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Huawei XH320 V2 (Intel Xeon E5-2470) | SPECint_rate2006 = 584  
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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-linux64.20120425.html

You can also download the XML flags sources by saving the following links:

http://www.spec.org/cpu2006/flags/Intel-ic12.1-official-linux64.20120425.xml
http://www.spec.org/cpu2006/flags/Huawei-Platform-Settings-revE.20120703.xml

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Tested with SPEC CPU2006 v1.2.