Cisco Systems
Cisco UCS B200 M4 (Intel Xeon E5-2695 v3 @ 2.30GHz)

<table>
<thead>
<tr>
<th>SPECint_rate2006</th>
<th>1130</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECint_rate_base2006</td>
<td>1090</td>
</tr>
</tbody>
</table>

CPU2006 license: 9019
Test sponsor: Cisco Systems
Tested by: Cisco Systems

Software
- Operating System: Red Hat Enterprise Linux Server release 7.0 (Maipo) 3.10.0-123.el7.x86_64
- Compiler: C/C++: Version 15.0.0.090 of Intel C++ Studio XE for Linux
- Auto Parallel: No
- File System: xfs
- System State: Run level 3 (multi-user)
- Base Pointers: 32-bit
- Peak Pointers: 32/64-bit
- Other Software: Microquill SmartHeap V10.0

Hardware
- CPU Name: Intel Xeon E5-2695 v3
- CPU Characteristics: Intel Turbo Boost Technology up to 3.30 GHz
- CPU MHz: 2300
- FPU: Integrated
- CPU(s) enabled: 28 cores, 2 chips, 14 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: 35 MB I+D on chip per chip
- Other Cache: None
- Memory: 256 GB (16 x 16 GB 2Rx4 PC4-2133P-R)
- Disk Subsystem: 1 x 300GB SAS, 15K RPM
- Other Hardware: None

Test date: Feb-2015
Hardware Availability: Sep-2014
Software Availability: Jul-2014

```
<table>
<thead>
<tr>
<th>Test</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>perlbench</td>
<td>1030</td>
</tr>
<tr>
<td>bzip2</td>
<td>585</td>
</tr>
<tr>
<td>gcc</td>
<td>859</td>
</tr>
<tr>
<td>mcf</td>
<td>1490</td>
</tr>
<tr>
<td>gobmk</td>
<td>761</td>
</tr>
<tr>
<td>hammer</td>
<td>1590</td>
</tr>
<tr>
<td>sjeng</td>
<td>844</td>
</tr>
<tr>
<td>libquantum</td>
<td>10100</td>
</tr>
<tr>
<td>h264ref</td>
<td>1340</td>
</tr>
<tr>
<td>omnetpp</td>
<td>627</td>
</tr>
<tr>
<td>astar</td>
<td>614</td>
</tr>
<tr>
<td>xalancbmk</td>
<td>1120</td>
</tr>
</tbody>
</table>
```
Cisco Systems
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SPEC CINT2006 Result
SPECint_rate2006 = 1130
SPECint_rate_base2006 = 1090

Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Base Copies</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Peak 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>56</td>
<td>678</td>
<td>807</td>
<td>678</td>
<td>807</td>
<td>679</td>
<td>806</td>
<td>56</td>
<td>536</td>
<td>1020</td>
<td>530</td>
<td>1030</td>
<td>533</td>
<td>1030</td>
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<tr>
<td>401.bzip2</td>
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<td>966</td>
<td>559</td>
<td>965</td>
<td>560</td>
<td>962</td>
<td>562</td>
<td>56</td>
<td>925</td>
<td>584</td>
<td>922</td>
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<td>924</td>
<td>585</td>
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<tr>
<td>403.gcc</td>
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<td>524</td>
<td>860</td>
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<td>851</td>
<td>525</td>
<td>859</td>
<td>56</td>
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<td>859</td>
<td>525</td>
<td>858</td>
<td>524</td>
<td>860</td>
</tr>
<tr>
<td>429.mcf</td>
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<td>341</td>
<td>1500</td>
<td>342</td>
<td>1490</td>
<td>342</td>
<td>1490</td>
<td>56</td>
<td>341</td>
<td>1500</td>
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<td>1490</td>
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<tr>
<td>445.gobmk</td>
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<td>780</td>
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<td>781</td>
<td>752</td>
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<td>456.hmmer</td>
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<tr>
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<td>808</td>
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<td>837</td>
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<td>844</td>
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<td>845</td>
<td>803</td>
<td>844</td>
</tr>
<tr>
<td>462.libquantum</td>
<td>56</td>
<td>115</td>
<td>10100</td>
<td>115</td>
<td>10100</td>
<td>115</td>
<td>10100</td>
<td>56</td>
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<td>10100</td>
<td>115</td>
<td>10100</td>
<td>115</td>
<td>10100</td>
</tr>
<tr>
<td>464.h264ref</td>
<td>56</td>
<td>965</td>
<td>1280</td>
<td>978</td>
<td>1270</td>
<td>969</td>
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<td>1340</td>
<td>960</td>
<td>1290</td>
<td>925</td>
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</tr>
<tr>
<td>471.omnetpp</td>
<td>56</td>
<td>570</td>
<td>614</td>
<td>570</td>
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<td>571</td>
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<td>559</td>
<td>626</td>
<td>558</td>
<td>627</td>
<td>549</td>
<td>637</td>
</tr>
<tr>
<td>473.astar</td>
<td>56</td>
<td>652</td>
<td>603</td>
<td>656</td>
<td>599</td>
<td>657</td>
<td>598</td>
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<td>603</td>
<td>656</td>
<td>599</td>
<td>657</td>
<td>598</td>
</tr>
<tr>
<td>483.xalancbmk</td>
<td>56</td>
<td>344</td>
<td>1120</td>
<td>344</td>
<td>1120</td>
<td>345</td>
<td>1120</td>
<td>56</td>
<td>344</td>
<td>1120</td>
<td>344</td>
<td>1120</td>
<td>345</td>
<td>1120</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"

Platform Notes

Power Technology set to Energy Efficient
CPU performance set to HPC
Energy Performance BIAS setting set to Balanced Performance
Memory RAS configuration set to Maximum Performance
QPI Snoop Mode set to Cluster-on-Die
Sysinfo program /opt/cpu2006-1.2/config/sysinfo.rev6914
$Rev: 6914 $ $Date:: 2014-06-25 #$ e3fbb8667b5a285932ceab81e28219e1
running on localhost.localdomain Fri Feb 27 06:50:57 2015

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 E5-2695 v3 @ 2.30GHz
2 "physical id"s (chips)
56 "processors"

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SPEC CINT2006 Result

SPECint_rate2006 = 1130
SPECint_rate_base2006 = 1090

CPU2006 license: 9019
Test sponsor: Cisco Systems
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<table>
<thead>
<tr>
<th>Platform Notes (Continued)</th>
</tr>
</thead>
<tbody>
<tr>
<td>cores, siblings (Caution: counting these is hw and system dependent. The following excerpts from /proc/cpuinfo might not be reliable. Use with caution.)</td>
</tr>
<tr>
<td>cpu cores : 7</td>
</tr>
<tr>
<td>siblings : 14</td>
</tr>
<tr>
<td>physical 0: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14</td>
</tr>
<tr>
<td>physical 1: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14</td>
</tr>
<tr>
<td>cache size : 17920 KB</td>
</tr>
</tbody>
</table>

From /proc/meminfo

MemTotal: 263702488 kB
HugePages_Total: 0
Hugepagesize: 2048 kB

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

os-release:
NAME="Red Hat Enterprise Linux Server"
VERSION="7.0 (Maipo)"
ID="rhel"
ID_LIKE="fedora"
VERSION_ID="7.0"
PRETTY_NAME="Red Hat Enterprise Linux Server 7.0 (Maipo)"
ANSI_COLOR="0;31"
CPE_NAME="cpe:/o:redhat:enterprise_linux:7.0:GA:server"
redhat-release: Red Hat Enterprise Linux Server release 7.0 (Maipo)
system-release: Red Hat Enterprise Linux Server release 7.0 (Maipo)
system-release-cpe: cpe:/o:redhat:enterprise_linux:7.0:ga:server

uname -a:
Linux localhost.localdomain 3.10.0-123.el7.x86_64 #1 SMP Mon May 5 11:16:57 EDT 2014 x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Feb 27 06:48

SPEC is set to: /opt/cpu2006-1.2

Filesystem Type Size Used Avail Use% Mounted on
/dev/sda2 xfs 260G 13G 248G 5% /

Additional information from dmidecode:

Warning: Use caution when you interpret this section. The ‘dmidecode’ program reads system data which is "intended to allow hardware to be accurately determined", but the intent may not be met, as there are frequent changes to hardware, firmware, and the "DMTF SMBIOS" standard.

BIOS Cisco Systems, Inc. B200M4.2.2.3d.0.111420141438 11/14/2014
Memory:
16x 0xCE00 M393A2G40DB0-CPB 16 GB 2 rank 2133 MHz
8x NO DIMM NO DIMM

(End of data from sysinfo program)
Cisco Systems
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| SPECint_rate2006 = | 1130 |
| SPECint_rate_base2006 = | 1090 |

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Test date: Feb-2015
Hardware Availability: Sep-2014
Software Availability: Jul-2014

General Notes
Environment variables set by runspec before the start of the run:
LD_LIBRARY_PATH = "/opt/cpu2006-1.2/libs/32:/opt/cpu2006-1.2/libs/64:/opt/cpu2006-1.2/sh"

Binaries compiled on a system with 1x Core i5-4670K CPU + 16GB memory using RedHat EL 7.0
Transparent Huge Pages enabled with:
echo always > /sys/kernel/mm/transparent_hugepage/enabled
Filesystem page cache cleared with:
echo 1> /proc/sys/vm/drop_caches
runcspec command invoked through numactl i.e.:
numactl --interleave=all runspec <etc>

Base Compiler Invocation
C benchmarks:
icc -m32 -L/opt/intel/composer_xe_2015/lib/ia32

C++ benchmarks:
icpc -m32 -L/opt/intel/composer_xe_2015/lib/ia32

Base Portability Flags
400.perlbench: -DSPEC_CPU_LINUX_IA32
462.libquantum: -DSPEC_CPU_LINUX
483.xalancbmk: -DSPEC_CPU_LINUX

Base Optimization Flags
C benchmarks:
-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch
-opt-mem-layout-trans=3

C++ benchmarks:
-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch
-opt-mem-layout-trans=3 -Wl,-z,muldefs -L/sh -lsmartheap

Base Other Flags
C benchmarks:
403.gcc: -Dalloca=_alloca
Cisco Systems
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Tested by: Cisco Systems

**Peak Compiler Invocation**

C benchmarks (except as noted below):

icc -m32 -L/opt/intel/composer_xe_2015/lib/ia32

400.perlbench: icc -m64
401.bzip2: icc -m64
456.hmmer: icc -m64
458.sjeng: icc -m64

C++ benchmarks:

icpc -m32 -L/opt/intel/composer_xe_2015/lib/ia32

**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: -xCORE-AVX2(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: -xCORE-AVX2(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: -xCORE-AVX2 -ipo -O3 -no-prec-div

429.mcf: basepeak = yes

445.gobmk: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -prof-use(pass 2)
-ansi-alias -opt-mem-layout-trans=3

456.hmmer: -xCORE-AVX2 -ipo -O3 -no-prec-div -unroll2 -auto-ilp32

458.sjeng: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
-O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)
-unroll4 -auto-ilp32

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Test date: Feb-2015
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Peak Optimization Flags (Continued)

462.libquantum: basepeak = yes
464.h264ref: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
-03(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)
-unroll2 -ansi-alias

C++ benchmarks:
471.omnetpp: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
-03(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)
-ansi-alias -opt-ra-region-strategy=block -Wl,-z,muldefs
-L/sh -lsmartheap
473.astar: basepeak = yes
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-ic15.0-official-linux64.html
http://www.spec.org/cpu2006/flags/Cisco-Platform-Settings-V1.2-revC.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic15.0-official-linux64.xml
http://www.spec.org/cpu2006/flags/Cisco-Platform-Settings-V1.2-revC.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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