### Cisco Systems

#### Cisco UCS B200 M4 (Intel Xeon E5-2609 v3 @ 1.90GHz)

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

**CPU2006 license:** 9019  
**Test sponsor:** Cisco Systems  
**Tested by:** Cisco Systems  
**Test date:** Feb-2015  
**Hardware Availability:** Sep-2014  
**Software Availability:** Jul-2014

#### SPECint Rate

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Rate 2006</th>
<th>Rate Base 2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>400.perlbench</td>
<td>236</td>
<td></td>
</tr>
<tr>
<td>401.bzip2</td>
<td>149</td>
<td></td>
</tr>
<tr>
<td>403.gcc</td>
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</tr>
<tr>
<td>429.mcf</td>
<td>447</td>
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<tr>
<td>445.gobmk</td>
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<tr>
<td>456.hmmer</td>
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<tr>
<td>458.sjeng</td>
<td>214</td>
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<tr>
<td>462.libquantum</td>
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<tr>
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<td></td>
<td></td>
</tr>
<tr>
<td>483.xalancbmk</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**SPECint Rate Base 2006:** 310

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### Hardware

- **CPU Name:** Intel Xeon E5-2609 v3
- **CPU Characteristics:**
  - CPU MHz: 1900
  - FPU: Integrated
  - CPU(s) enabled: 12 cores, 2 chips, 6 cores/chip
  - Primary Cache: 32 KB I + 32 KB D on chip per core
  - Secondary Cache: 256 KB I+D on chip per core
  - L3 Cache: 15 MB I+D on chip per chip
  - Other Cache: None
  - Memory: 256 GB (16 x 16 GB 2Rx4 PC4-2133P-R, running at 1600 MHz)
  - Disk Subsystem: 1 x 300GB SAS, 15K RPM
  - Other Hardware: None

### 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:** ext4
- **System State:** Run level 3 (multi user)
- **Base Pointers:** 32-bit
- **Peak Pointers:** 32/64-bit
- **Other Software:** Microquill SmartHeap V10.0
### Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Copies</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
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<td>462.libquantum</td>
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<td>473.astar</td>
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<td>483.xalancbmk</td>
<td>12</td>
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<td>373</td>
<td>222</td>
<td>373</td>
<td>222</td>
<td>372</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

CPU Performance set to HPC  
Power Technology set to Custom  
Processor Power State C6 set to Disabled  
Energy Performance BIAS setting set to Performance  
Memory RAS configuration set to Maximum Performance  
QPI Snoop Mode set to Early Snoop  
Sysinfo program /opt/cpu2006-1.2/config/sysinfo.rev6914  
$Rev: 6914 $ $Date:: 2014-06-25 #$ e3fbb8667b5a285932ceab81e8219e1  
running on localhost.localdomain Fri Feb 27 01:25:30 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 E5-2609 v3 @ 1.90GHz  
2 "physical id"s (chips)

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Cisco UCS B200 M4 (Intel Xeon E5-2609 v3 @ 1.90GHz)  

**SPECint_rate2006 = 320**  
**SPECint_rate_base2006 = 310**

<table>
<thead>
<tr>
<th>CPU2006 license:</th>
<th>9019</th>
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<tbody>
<tr>
<td>Test sponsor:</td>
<td>Cisco Systems</td>
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<td>Tested by:</td>
<td>Cisco Systems</td>
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<td>Test date:</td>
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</tbody>
</table>

**Platform Notes (Continued)**

12 "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 : 6
- siblings : 6
- physical 0: cores 0 1 2 3 4 5
- physical 1: cores 0 1 2 3 4 5
- cache size : 15360 KB

From /proc/meminfo

- MemTotal: 263708084 kB
- HugePages_Total: 0
- Hugepagesize: 2048 kB

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

- 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 00:04

SPEC is set to: /opt/cpu2006-1.2

Filesystem Type Size Used Avail Use% Mounted on
/dev/sda1 ext4 193G 13G 170G 8% /

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, configured at 1600 MHz
8x NO DIMM NO DIMM

(End of data from sysinfo program)
## Cisco Systems

Cisco UCS B200 M4 (Intel Xeon E5-2609 v3 @ 1.90GHz)

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

### 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
Cisco UCS B200 M4 (Intel Xeon E5-2609 v3 @ 1.90GHz)

SPECint_rate2006 = 320
SPECint_rate_base2006 = 310

CPU2006 license: 9019
Test sponsor: Cisco Systems
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) -prof-use(pass 2)
             -O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)
             -unroll4 -auto-ilp32

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Cisco Systems

Cisco UCS B200 M4 (Intel Xeon E5-2609 v3 @ 1.90GHz)

SPECint_rate2006 = 320
SPECint_rate_base2006 = 310

Peak Optimization Flags (Continued)

462.libquantum: basepeak = yes

464.h264ref: -xCORE-AVX2(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: -xCORE-AVX2(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/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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