CPU Name: Intel Xeon E5-2620 v4
Max MHz.: 3000
Nominal: 2100
Enabled: 16 cores, 2 chips, 2 threads/core
Orderable: 1.2 chip
Cache L1: 32 KB I + 32 KB D on chip per core
L2: 256 KB I+D on chip per core
L3: 20 MB I+D on chip per chip
Other: None
Memory: 256 GB (16 x 16 GB 2Rx4 PC4-2400T-R, running at 2133)
Storage: 500GB SATA 7200 RPM
Other: None

OS: SUSE Linux Enterprise Server 12 SP1
Compiler: C/C++: Version 17.0.0.098 of Intel C++ Compiler Professional Build 20160721;
Fortran: Version 17.0.0.098 of Intel Fortran Compiler Professional Build 20160721;
Parallel: No
Firmware: BIOS American Megatrends Inc. 1.00.15 10/17/2016
File System: xfs
System State: Run level 3 (multi-user)
Base Pointers: 32/64-bit
Peak Pointers: Not Applicable
Other: None
H3C R4900 G2 (Intel Xeon E5-2620 v4, 2.10 GHz)

SPECrate2017_fp_base = 76.0
SPECrate2017_fp_peak = 77.7

Results Table

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

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"

Platform Notes

BIOS Configuration:
Operation Mode set to Maximum Performance
COD set to Enable
Enable CPU HWPM set to HWPM OOB
Energy Performance BIAS Setting set to Performance
Sysinfo program /home/speccpu/Docs/sysinfo
Rev: r5007 of 2016-11-15 fc8dc82f217779bedfed4d694d580ba9
running on linux-n0i2 Tue Feb 28 19:34:36 2017

This section contains SUT (System Under Test) info as seen by some common utilities.
For more information on this section, see http://www.spec.org/cpu2017/Docs/config.html#sysinfo

From /proc/cpuinfo
model name : Intel(R) Xeon(R) CPU E5-2620 v4 @ 2.10GHz
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

(Continued on next page)
H3C R4900 G2 (Intel Xeon E5-2620 v4, 2.10 GHz)

| SPECrate2017_fp_base | 76.0 |
| SPECrate2017_fp_peak | 77.7 |

Platform Notes (Continued)

- 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

The view from numactl --hardware follows. WARNING: a numactl 'node' might or
might not correspond to a physical chip.
- available: 2 nodes (0-1)
- node 0 cpus: 0 1 2 3 4 5 6 7 16 17 18 19 20 21 22 23
- node 0 size: 129009 MB
- node 0 free: 128316 MB
- node 1 cpus: 8 9 10 11 12 13 14 15 24 25 26 27 28 29 30 31
- node 1 size: 129154 MB
- node 1 free: 128456 MB
- node distances:
  - node 0 1
  - 0: 10 21
  - 1: 21 10

From /proc/meminfo
  - MemTotal: 264359968 kB
  - HugePages_Total: 0
  - Hugepagesize: 2048 kB

From /usr/bin/lsb_release -d
  - SUSE Linux Enterprise Server 12 SP1

From /etc/*release* /etc/*version*
  - SuSE-release:
    - SUSE Linux Enterprise Server 12 (x86_64)
    - VERSION = 12
    - PATCHLEVEL = 1
      - # This file is deprecated and will be removed in a future service pack or
      - release.
      - # Please check /etc/os-release for details about this release.
  - os-release:
    - NAME=“SLES”
    - VERSION=“12-SP1”
    - VERSION_ID=“12.1”
    - PRETTY_NAME=“SUSE Linux Enterprise Server 12 SP1”
    - ID=“sles”
    - ANSI_COLOR=“0;32”
    - CPE_NAME=“cpe:/o:suse:sles:12:sp1”

uname -a:

(Continued on next page)
H3C R4900 G2 (Intel Xeon E5-2620 v4, 2.10 GHz)

<table>
<thead>
<tr>
<th>SPECrate2017_fp_base</th>
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</table>

CPU2017 License: 9066  
Test Sponsor: H3C  
Tested by: H3C  
Test Date: Feb-2017  
Hardware Availability: Oct-2016  
Software Availability: Oct-2016

Platform Notes (Continued)

Linux linux-n0i2 3.12.49-11-default #1 SMP Wed Nov 11 20:52:43 UTC 2015
(8d714a0) x86_64 x86_64 x86_64 GNU/Linux  

run-level 3 Feb 28 19:27  
SPEC is set to: /home/speccpu

Filesystem  Type  Size  Used  Avail  Use%  Mounted on
/dev/sda3  xfs  417G  26G  392G  7%  /home

Additional information from dmidecode follows. 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 American Megatrends Inc. 1.00.15 10/20/2016  
Memory:  
16x Hynix Semiconductor HMA42GR7AFR4N-UH 16 GB 2 rank 2400 MHz, configured at 2133 MHz  
8x NO DIMM NO DIMM

(End of data from sysinfo program)

Compiler Version Notes

==============================================================================
CC  507.cactuBSSN_r(base, peak) 511.povray_r(base, peak) 519.lbm_r(base, peak) 521.wrf_r(base, peak) 526.blender_r(base, peak) 527.cam4_r(base, peak) 538.imagick_r(base, peak) 544.nab_r(base, peak)
==============================================================================
Intel(R) C Intel(R) 64 Compiler for applications running on Intel(R) 64, Version 17.0.0.098 Build 20160721  
Copyright (C) 1985-2016 Intel Corporation. All rights reserved.  
icc: NOTE: The evaluation period for this product ends on 11-mar-2017 UTC.
==============================================================================

CXCC  507.cactuBSSN_r(base, peak) 508.namd_r(base, peak) 510.parest_r(base, peak) 511.povray_r(base, peak) 526.blender_r(base, peak)
==============================================================================
Intel(R) C++ Intel(R) 64 Compiler for applications running on Intel(R) 64, Version 17.0.0.098 Build 20160721  
Copyright (C) 1985-2016 Intel Corporation. All rights reserved.  
icpc: NOTE: The evaluation period for this product ends on 11-mar-2017 UTC.
==============================================================================
(Continued on next page)
H3C

H3C R4900 G2 (Intel Xeon E5-2620 v4, 2.10 GHz)

SPECrater2017_fp_base = 76.0
SPECrater2017_fp_peak = 77.7

CPU2017 License: 9066
Test Sponsor: H3C
Test Date: Feb-2017
Tested by: H3C
Hardware Availability: Oct-2016
Software Availability: Oct-2016

Compiler Version Notes (Continued)

FC 503.bwaves_r(base, peak) 507.cactuBSSN_r(base, peak) 521.wrf_r(base, peak) 527.cam4_r(base, peak) 549.fotonik3d_r(base, peak) 554.roms_r(base, peak)

Intel(R) Fortran Intel(R) 64 Compiler for applications running on Intel(R) 64, Version 17.0.0.098 Build 20160721
Copyright (C) 1985-2016 Intel Corporation. All rights reserved.
ifort: NOTE: The evaluation period for this product ends on 11-mar-2017 UTC.

Base Compiler Invocation

C benchmarks:
icc -m64 -std=c11

C++ benchmarks:
icpc -m64

Fortran benchmarks:
ifort -m64

Benchmarks using both Fortran and C:
ifort -m64 icc -m64 -std=c11

Benchmarks using both C and C++:
icpc -m64 icc -m64 -std=c11

Benchmarks using Fortran, C, and C++:
icpc -m64 icc -m64 -std=c11 ifort -m64

Base Portability Flags

503.bwaves_r -DSPEC_LP64
507.cactuBSSN_r -DSPEC_LP64
508.namd_r -DSPEC_LP64
510.parest_r -DSPEC_LP64
511.povray_r -DSPEC_LP64
519.ibm_r -DSPEC_LP64
521.wrf_r -DSPEC_LP64 -DSPEC_CASE_FLAG -convert big_endian
526.blender_r -DSPEC_LP64 -DSPEC_LINUX -funsigned-char
527.cam4_r -DSPEC_LP64 -DSPEC_CASE_FLAG
538.imagick_r -DSPEC_LP64
544.nab_r -DSPEC_LP64

(Continued on next page)
**SPEC CPU2017 Floating Point Rate Result**

**H3C**

H3C R4900 G2 (Intel Xeon E5-2620 v4, 2.10 GHz)

| SPECrate2017_fp_base | 76.0 |
| SPECrate2017_fp_peak | 77.7 |

**CPU2017 License:** 9066  
**Test Sponsor:** H3C  
**Tested by:** H3C

**Test Date:** Feb-2017  
**Hardware Availability:** Oct-2016  
**Software Availability:** Oct-2016

**Base Portability Flags (Continued)**

- 549.fotonik3d_r: -DSPEC_LP64
- 554.roms_r: -DSPEC_LP64

**Base Optimization Flags**

**C benchmarks:**
- -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ansi-alias
- -qopt-mem-layout-trans=3 -auto-p32

**C++ benchmarks:**
- -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ansi-alias
- -qopt-mem-layout-trans=3 -auto-p32

**Fortran benchmarks:**
- -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ansi-alias
- -qopt-mem-layout-trans=3 -heap-arrays

**Benchmarks using both Fortran and C:**
- -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ansi-alias
- -qopt-mem-layout-trans=3 -auto-p32 -heap-arrays

**Benchmarks using both C and C++:**
- -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ansi-alias
- -qopt-mem-layout-trans=3 -auto-p32

**Benchmarks using Fortran, C, and C++:**
- -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ansi-alias
- -qopt-mem-layout-trans=3 -auto-p32 -heap-arrays

**Peak Compiler Invocation**

**C benchmarks:**
- icc -m64 -std=c11

**C++ benchmarks:**
- icpc -m64

**Fortran benchmarks:**
- ifort -m64

**Benchmarks using both Fortran and C:**
- ifort -m64 icc -m64 -std=c11

(Continued on next page)
<table>
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<th>Peak Compiler Invocation (Continued)</th>
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</table>

Benchmarks using both C and C++:
- `icpc -m64 icc -m64 -std=c11`

Benchmarks using Fortran, C, and C++:
- `icpc -m64 icc -m64 -std=c11 ifort -m64`

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Same as Base Portability Flags

<table>
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</table>

C benchmarks:
- `519.lbm_r: basepeak = yes`
- `538.imagick_r: -xCORE-AVX2(pas 2) -prof-genthreadsafe(pass 1) -ipo(pass 2) -O3(pass 2) -par-num-threads=1(pass 1) -no-prec-div(pass 2) -prof-use(pass 2) -auto-ilp32 -ansi-alias`
- `544.nab_r: Same as 538.imagick_r`

C++ benchmarks:
- `-xCORE-AVX2(pass 2) -prof-genthreadsafe(pass 1) -ipo(pass 2) -O3(pass 2) -par-num-threads=1(pass 1) -no-prec-div(pass 2) -prof-use(pass 2) -ansi-alias`

Fortran benchmarks:
- `503.bwaves_r: basepeak = yes`
- `549.fotonik3d_r: basepeak = yes`
- `554.roms_r: basepeak = yes`

Benchmarks using both Fortran and C:
- `521.wrf_r: basepeak = yes`

(Continued on next page)
## SPEC CPU2017 Floating Point Rate Result

**H3C**

H3C R4900 G2 (Intel Xeon E5-2620 v4, 2.10 GHz)

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**CPU2017 License:** 9066  
**Test Sponsor:** H3C  
**Tested by:** H3C

**Test Date:** Feb-2017  
**Hardware Availability:** Oct-2016  
**Software Availability:** Oct-2016

### Peak Optimization Flags (Continued)

527.cam4_r: basepeak = yes

Benchmarks using both C and C++:

-xCORE-AVX2(pass 2) -prof-genthreadsafe(pass 1) -ipo(pass 2)
-O3(pass 2) -par-num-threads=1(pass 1) -no-prec-div(pass 2)
-profit-use(pass 2) -auto-ilp32 -ansi-alias

Benchmarks using Fortran, C, and C++:

507.cactuBSSN_r: basepeak = yes

The flags file that was used to format this result can be browsed at [http://www.spec.org/cpu2017/flags/IC17.0-official-linux64.html](http://www.spec.org/cpu2017/flags/IC17.0-official-linux64.html)

You can also download the XML flags source by saving the following link:  
[http://www.spec.org/cpu2017/flags/IC17.0-official-linux64.xml](http://www.spec.org/cpu2017/flags/IC17.0-official-linux64.xml)

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

Tested with SPEC CPU2017 v0.904.0 on 2017-02-28 06:34:33-0500.  
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