# SPEC ACCEL™ OCL Result

## Lenovo Global Technology

**NVIDIA Tesla V100S-PCIE-16GB**

**ThinkSystem SR860 V2**

- **SPECaccel_ocl_peak** = 13.5
- **SPECaccel_ocl_base** = 12.2

### ACCEL license: 28

### Test sponsor: Lenovo Global Technology

### Tested by: Lenovo Global Technology

### Test date: Aug-2020

### Hardware Availability: Oct-2020

### Software Availability: Oct-2020

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<tbody>
<tr>
<td>101.tpacf</td>
<td>19.3</td>
</tr>
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<td>103.stencil</td>
<td>18.2, 19.4</td>
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<td>5.86, 5.92</td>
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### NVIDIA Tesla V100S-PCIE-16GB
#### ThinkSystem SR860 V2

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### Hardware
- **CPU Name**: Intel Xeon Platinum 8380H
- **CPU Characteristics**: Intel Turbo Boost Technology up to 4.3 GHz
- **CPU MHz**: 2900
- **CPU MHz Maximum**: 4300
- **FPU**: Integrated
- **CPU(s) enabled**: 112 cores, 4 chips, 28 cores/chip
- **CPU(s) orderable**: 2,4 chips
- **Primary Cache**: 32 KB I + 32 KB D on chip per core
- **Secondary Cache**: 1 MB I+D on chip per core
- **L3 Cache**: 39424 KB I+D on chip per chip
- **Other Cache**: None
- **Memory**: 1536 GB (48 x 32 GB 2Rx8 PC4-3200AA-R)
- **Disk Subsystem**: 1 x 1TB SATA 2.5" SSD
- **Other Hardware**: None

### Accelerator
- **Accel Model Name**: Tesla V100S
- **Accel Vendor**: NVIDIA Corporation
- **Accel Name**: NVIDIA Tesla V100S-PCIE-16GB
- **Type of Accel**: GPU
- **Accel Connection**: PCIe 3.0 16x
- **Does Accel Use ECC**: Yes
- **Accel Description**: NVIDIA Tesla V100S-PCIE-16GB
- **Accel Driver**: NVIDIA UNIX x86_64 Kernel Module 450.51.06

### Software
- **Operating System**: SUSE Linux Enterprise Server 15 SP2 5.3.18-22-default
- **Compiler**: Nvidia HPC SDK Release 20.5
- **File System**: xfs
- **System State**: Run level 3
- **Other Software**: CUDA 11.0 SDK
**Lenovo Global Technology**  
**NVIDIA Tesla V100S-PCIE-16GB**  
**ThinkSystem SR860 V2**  
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### Results Table

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<tr>
<th>Benchmark</th>
<th>Base</th>
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<tbody>
<tr>
<td></td>
<td>Seconds</td>
<td>Ratio</td>
</tr>
<tr>
<td>101.tpacf</td>
<td>5.88</td>
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<td>103.stencil</td>
<td>6.43</td>
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<td>104.lbm</td>
<td>5.61</td>
<td>20.0</td>
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<td>110.fft</td>
<td>6.77</td>
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Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

### Submit Notes

The config file option 'submit' was used.

### Platform Notes

Sysinfo program /home/ACCEL1.3/Docs/sysinfo  
$Rev: 6965 $ $Date:: 2015-04-21 #$ c05a7f14b1b1765e3fe1df68447e8a35  
running on Narvi152 Tue Aug 18 13:36:52 2020

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/accel/Docs/config.html#sysinfo

From /proc/cpuinfo  
model name : Intel(R) Xeon(R) Platinum 8380H CPU @ 2.90GHz  
Continued on next page
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**Platform Notes (Continued)**

4 "physical id"s (chips)
112 "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 : 28
siblings : 28
physical 0: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14 16 17 18 19 20 21 22 24
25 26 27 28 29 30
physical 1: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14 16 17 18 19 20 21 22 24
25 26 27 28 29 30
physical 2: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14 16 17 18 19 20 21 22 24
25 26 27 28 29 30
physical 3: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14 16 17 18 19 20 21 22 24
25 26 27 28 29 30
cache size : 39424 KB

From /proc/meminfo
MemTotal: 1584974840 kB
HugePages_Total: 0
Hugepagesize: 2048 kB

From /etc/*release* /etc/*version*
os-release:
NAME="SLES"
VERSION="15-SP2"
VERSION_ID="15.2"
PRETTY_NAME="SUSE Linux Enterprise Server 15 SP2"
ID=sles
ID_LIKE=suse
ANSI_COLOR="0;32"
CPE_NAME=cpe:/o:suse:sles:15:sp2

uname -a:
Linux Narvi152 5.3.18-22-default #1 SMP Wed Jun 3 12:16:43 UTC 2020 (720aeba)
x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Aug 17 15:54

SPEC is set to: /home/ACCEL1.3
Filesystem Type Size Used Avail Use% Mounted on
/dev/sda4 xfs 490G 47G 443G 10% /home

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.

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### Platform Notes (Continued)

- BIOS Lenovo M5E103N-1.00 08/07/2020
- Memory: 48x Samsung M393A4G43AB3-CWE 32 GB 2 rank 3200 MT/s

(End of data from sysinfo program)

### General Notes

Yes: The test sponsor attests, as of date of publication, that CVE-2017-5754 (Meltdown) is mitigated in the system as tested and documented.

Yes: The test sponsor attests, as of date of publication, that CVE-2017-5753 (Spectre variant 1) is mitigated in the system as tested and documented.

Yes: The test sponsor attests, as of date of publication, that CVE-2017-5715 (Spectre variant 2) is mitigated in the system as tested and documented.

### Base Runtime Environment

#### C benchmarks:
- OpenCL Platform: NVIDIA CUDA, OpenCL 1.2 CUDA 11.0.197
- OpenCL Device #0: Tesla V100S-PCIE-32GB, v 450.51.06

#### C++ benchmarks:
- OpenCL Platform: NVIDIA CUDA, OpenCL 1.2 CUDA 11.0.197
- OpenCL Device #0: Tesla V100S-PCIE-32GB, v 450.51.06

### Base Compiler Invocation

#### C benchmarks:
- `nvc`

#### C++ benchmarks:
- `nvc++`

### Base Portability Flags

```
116.histo: -DSPEC_LOCAL_MEMORY_HEADROOM=1
```
## Lenovo Global Technology

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## Base Optimization Flags

**C benchmarks:**
- `-fast` `-Mfprelaxed`

**C++ benchmarks:**
- `-fast` `-Mfprelaxed`

---

## Base Other Flags

**C benchmarks:**
- `-I/usr/local/cuda-11.0/targets/x86_64-linux/include`
- `-L/usr/local/cuda-11.0/lib64` `-lOpenCL`

**C++ benchmarks:**
- `-I/usr/local/cuda-11.0/targets/x86_64-linux/include`
- `-L/usr/local/cuda-11.0/lib64` `-lOpenCL`

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## Peak Runtime Environment

**C benchmarks:**
- **OpenCL Platform:** NVIDIA CUDA, OpenCL 1.2 CUDA 11.0.197
- **OpenCL Device #0:** Tesla V100S-PCIE-32GB, v 450.51.06

**C++ benchmarks:**
- **OpenCL Platform:** NVIDIA CUDA, OpenCL 1.2 CUDA 11.0.197
- **OpenCL Device #0:** Tesla V100S-PCIE-32GB, v 450.51.06

---

## Peak Compiler Invocation

**C benchmarks:**
- `nvc`

**C++ benchmarks:**
- `nvc++`

---

## Peak Portability Flags

116.histo: `-DSPEC_LOCAL_MEMORY_HEADROOM=1`
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ThinkSystem SR860 V2

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Peak Optimization Flags

C benchmarks:

110.fft: basepeak = yes
114.mriq: basepeak = yes
116.histo: basepeak = yes
117.bfs: -fast -Mfprelaxed -DSPEC_ACCEL_WG_SIZE_0_0=64
         -DSPEC_ACCEL_WG_SIZE_1_0=64
118.cutcp: basepeak = yes
121.lavamd: basepeak = yes
124.hotspot: basepeak = yes
127.srad: basepeak = yes
128.heartwall: basepeak = yes
140.bplustree: basepeak = yes

C++ benchmarks:

101.tpacf: -fast -Mfprelaxed -DSPEC_ACCEL_WG_SIZE_0_0=1024
103.stencil: basepeak = yes
104.lbm: -fast -Mfprelaxed -DSPEC_ACCEL_WG_SIZE_0_0=32
         -DSPEC_ACCEL_WG_SIZE_0_1=1 -DSPEC_ACCEL_WG_SIZE_0_2=1
112.spmv: -fast -Mfprelaxed -DSPEC_ACCEL_WG_SIZE_0_0=96
120.kmeans: -fast -Mfprelaxed -DSPEC_ACCEL_WG_SIZE_0_0=288
122.cfd: -fast -Mfprelaxed -DSPEC_ACCEL_WG_SIZE_3_0=288
123.nw: basepeak = yes
125.lud: -fast -Mfprelaxed -DSPEC_ACCEL_WG_SIZE_0_0=32
126.ge: -fast -Mfprelaxed -DSPEC_ACCEL_WG_SIZE_0_0=512
         -DSPEC_ACCEL_WG_SIZE_1_0=1 -DSPEC_ACCEL_WG_SIZE_1_1=512
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### Peak Other Flags

**C benchmarks:**
- `-I/usr/local/cuda-11.0/targets/x86_64-linux/include`
- `-L/usr/local/cuda-11.0/lib64 -lOpenCL`

**C++ benchmarks:**
- `-I/usr/local/cuda-11.0/targets/x86_64-linux/include`
- `-L/usr/local/cuda-11.0/lib64 -lOpenCL`

The flags file that was used to format this result can be browsed at [https://www.spec.org/accel/flags/nv2020_flags.html](https://www.spec.org/accel/flags/nv2020_flags.html)

You can also download the XML flags source by saving the following link: [https://www.spec.org/accel/flags/nv2020_flags.xml](https://www.spec.org/accel/flags/nv2020_flags.xml)

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

Tested with SPEC ACCEL v1.3.
Report generated on Tue Oct 13 17:09:54 2020 by SPEC ACCEL PS/PDF formatter v1290.
Originally published on 13 October 2020.

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