## SPEChpc™ 2021 Tiny Result

**Advanced Micro Devices**

Dallas Milan Cluster: Gigabyte H262-Z63 (AMD EPYC 7763)

<table>
<thead>
<tr>
<th>hpc2021 License</th>
<th>0017</th>
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</thead>
<tbody>
<tr>
<td>Test Sponsor</td>
<td>Advanced Micro Devices</td>
</tr>
<tr>
<td>Tested by</td>
<td>Advanced Micro Devices</td>
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</table>

**Results Table**

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Model</th>
<th>Ranks</th>
<th>Thrds/Rk</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>505.lbm_t</td>
<td>MPI</td>
<td>512</td>
<td>1</td>
<td>89.7</td>
<td>25.1</td>
<td>90.1</td>
<td>25.0</td>
</tr>
<tr>
<td>513.soma_t</td>
<td>MPI</td>
<td>512</td>
<td>1</td>
<td>323</td>
<td>11.5</td>
<td>316</td>
<td>11.7</td>
</tr>
<tr>
<td>518.tealeaf_t</td>
<td>MPI</td>
<td>512</td>
<td>1</td>
<td>109</td>
<td>15.2</td>
<td>178</td>
<td>20.7</td>
</tr>
<tr>
<td>519.clvleaf_t</td>
<td>MPI</td>
<td>512</td>
<td>1</td>
<td>193</td>
<td>8.56</td>
<td>9.26</td>
<td>7.66</td>
</tr>
<tr>
<td>521.miniswp_t</td>
<td>MPI</td>
<td>512</td>
<td>1</td>
<td>161</td>
<td>9.94</td>
<td>159</td>
<td>10.0</td>
</tr>
<tr>
<td>528.pot3d_t</td>
<td>MPI</td>
<td>512</td>
<td>1</td>
<td>139</td>
<td>15.3</td>
<td>149</td>
<td>14.2</td>
</tr>
<tr>
<td>532.sph_exa_t</td>
<td>MPI</td>
<td>512</td>
<td>1</td>
<td>184</td>
<td>10.6</td>
<td>185</td>
<td>10.5</td>
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<tr>
<td>534.hpgmgfv_t</td>
<td>MPI</td>
<td>512</td>
<td>1</td>
<td>125</td>
<td>9.42</td>
<td>125</td>
<td>9.39</td>
</tr>
<tr>
<td>535.weather_t</td>
<td>MPI</td>
<td>512</td>
<td>1</td>
<td>131</td>
<td>24.6</td>
<td>129</td>
<td>25.0</td>
</tr>
</tbody>
</table>

**SPEChpc 2021_tny_base = 13.9**

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

- **Type of System:** Homogenous Cluster  
- **Compute Node:** Gigabyte H262-Z63  
- **Interconnect:** Mellanox  
- **Compute Nodes Used:** 4  
- **Total Chips:** 8  
- **Total Cores:** 512  
- **Total Threads:** 512  
- **Total Memory:** 2 TB  
- **Max. Peak Threads:** --

### Software Summary

- **Compiler:** LLVM/Clang 13.0  
- **C/C++/Fortran:** Version 13.0-0 MLSE ROCm 4.3.0 Compilers  
- **MLSE ROCm 4.3.0 Compilers:**  
  - Compiler available by installing ROCm 4.3 or getting
  - llvm-amdgpu_13.0.0.21295.40300_amd64.deb  
  - openmp-extras4.3.0_12.43.0.40300-52_amd64.deb

- **MPI Library:** OpenMPI Version 4.0.5  
- **Other MPI Info:** None  
- **Other Software:** None  
- **Base Parallel Model:** MPI  
- **Base Ranks Run:** 512  
- **Base Threads Run:** 1  
- **Peak Parallel Models:** Not Run  
- **Minimum Peak Ranks:** --  
- **Maximum Peak Ranks:** --  
- **Max. Peak Threads:** --  
- **Min. Peak Threads:** --

### Node Description: Gigabyte H262-Z63

- **Number of nodes:** 4  
- **Uses of the node:** compute  
- **Vendor:** Gigabyte  
- **Model:** Gigabyte H262-Z63  
- **CPU Name:** AMD EPYC 7763  
- **CPU(s) orderable:** 1.2 chips  
- **Chips enabled:** 2  
- **Cores enabled:** 128  
- **Cores per chip:** 64  
- **Threads per core:** 1  
- **CPU Characteristics:** Max Boost Clock disabled  
- **CPU MHz:** 2450  
- **Primary Cache:** 32 KB I + 32 KB D on chip per core  
- **Secondary Cache:** 512 KB I+D on chip per core  
- **L3 Cache:** 256 MB I+D on chip per core  
- **32 MB shared / 8 cores**  
- **Other Cache:** None  
- **Memory:** 512 GB (16 x 32 GB 2Rx4 PC4-3200AA-R)  
- **Disk Subsystem:** Intel SSD 520 Series 240GB, 2.5in SATA 6Gb/s  
- **Other Hardware:** None  
- **Accel Count:** --  
- **Accel Model:** --  
- **Accel Vendor:** --  
- **Accel Type:** --  
- **Accel Connection:** --  
- **Accel ECC enabled:** --  
- **Accel Description:** --

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**Dallas Milan Cluster: Gigabyte H262-Z63 (AMD EPYC 7763)**

<table>
<thead>
<tr>
<th>SPECchio 2021_tny_base =</th>
<th>13.9</th>
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<tbody>
<tr>
<td>SPECchio 2021_tny_peak =</td>
<td>Not Run</td>
</tr>
</tbody>
</table>

**hpc2021 License:** 0017  
**Test Sponsor:** Advanced Micro Devices  
**Tested by:** Advanced Micro Devices  
**Test Date:** Aug-2021  
**Hardware Availability:** Apr-2021  
**Software Availability:** Aug-2021

### Node Description: Gigabyte H262-Z63

**Hardware (Continued)**
- Adapter: ConnectX-6 Dual port, model number: MCX653106A
- Number of Adapters: 0
- Slot Type: None
- Data Rate: None
- Ports Used: 0
- Interconnect Type: None

### Interconnect Description: Mellanox

**Hardware**
- Vendor: Mellanox
- Model: NVIDIA MCX653106A-EFAT ConnectX-6 VPI Adapter Card HDR100/EDR/100GbE
- Switch Model: MLNX_OFED_LINUX-5.2.1.0 (OFED-5.2.1.0)  
  Switch: 27_2008_2202-MQM8790-HS2X_Ax
- Number of Switches: 2
- Number of Ports: 40
- Data Rate: InfiniBand HDR 100 Gb/s
- Firmware: HCA: 20.29.1016
- Topology: non-blocking fat tree
- Primary Use: MPI Traffic

**Software**

: --

### Submit Notes

The config file option 'submit' was used.  
MPI startup command: mpirun command was used to start MPI jobs.

### Compiler Version Notes

```
CXXC 532.sph_exa_t (base)

/home/rlieberm/rocm/rocm-4.3.0-llvm/llvm/bin/clang++ /lib64/libtinfo.so.5:
no version information available (required by
/home/rlieberm/rocm/rocm-4.3.0-llvm/llvm/bin/clang++)
clang version 13.0.0 (https://github.com/RadeonOpenCompute/llvm-project
roc-4.3.0 21295 f2943f684437d2c1143a56e418d29fc6b3314072)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /home/rlieberm/rocm/rocm-4.3.0-llvm/llvm/bin
```

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SPEChpc 2021 Tiny Result

**SPEChpc 2021_tny_base = 13.9**

**SPEChpc 2021_tny_peak = Not Run**

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**Compiler Version Notes (Continued)**

```plaintext
CC  505.lbm_t(base) 513.soma_t(base) 518.tealeaf_t(base) 521.miniswp_t(base) 534.hpgmgfv_t(base)
```

```
/home/rlieberm/rocm/rocm-4.3.0-llvm/llvm/bin/clang: /lib64/libtinfo.so.5: no version information available (required by
/home/rlieberm/rocm/rocm-4.3.0-llvm/llvm/bin/clang)
clang version 13.0.0 (https://github.com/RadeonOpenCompute/llvm-project
roc-4.3.0 21295 f2943f684437d2c1143a56e418d29fc6b3314072)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /home/rlieberm/rocm/rocm-4.3.0-llvm/llvm/bin
```

```
FC  519.clvleaf_t(base) 528.pot3d_t(base) 535.weather_t(base)
```

```
/home/rlieberm/rocm/rocm-4.3.0-llvm/llvm/bin/flang: /lib64/libtinfo.so.5: no version information available (required by
/home/rlieberm/rocm/rocm-4.3.0-llvm/llvm/bin/flang)
flang-new version 13.0.0 (https://github.com/RadeonOpenCompute/llvm-project
roc-4.3.0 21295 f2943f684437d2c1143a56e418d29fc6b3314072)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /home/rlieberm/rocm/rocm-4.3.0-llvm/llvm/bin
```

---

**Base Compiler Invocation**

- **C benchmarks:**
  - mpicc

- **C++ benchmarks:**
  - mpicxx

- **Fortran benchmarks:**
  - mpif90

---

**Base Portability Flags**

- 519.clvleaf_t: -DSPEC_USE_MPIFH
- 521.miniswp_t: -DUSE_KBA -DUSE_ACCELDIR

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Base Portability Flags (Continued)

528.pot3d_t: -DSPEC_USE_MPIFH
532.sph_exa_t: -DSPEC_USE_LT_IN_KERNELS
535.weather_t: -DSPEC_USE_MPIFH

Base Optimization Flags

C benchmarks:
-03

C++ benchmarks:
-03

Fortran benchmarks:
-03

Base Other Flags

C benchmarks:
-I/home/rlieberm/rocm/rocm-4.3.0-llvm/llvm/include

C++ benchmarks:
-I/home/rlieberm/rocm/rocm-4.3.0-llvm/llvm/include

Fortran benchmarks:
-I/home/rlieberm/rocm/rocm-4.3.0-llvm/llvm/include
-I/home/software/openmpi/aocc30/4.0.5/include/

The flags file that was used to format this result can be browsed at

You can also download the XML flags source by saving the following link:
http://www.spec.org/hpc2021/flags/amd2021_flags.xml

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