Lenovo Global Technology

ThinkSystem SR655 (AMD EYPC 7763 CPU, 2.45GHz)

<table>
<thead>
<tr>
<th>Test Sponsor</th>
<th>Lenovo Global Technology</th>
<th>Tested by</th>
<th>Lenovo Global Technology</th>
</tr>
</thead>
<tbody>
<tr>
<td>OMP2012 License</td>
<td>28</td>
<td>Test Date</td>
<td>May-2021</td>
</tr>
<tr>
<td>Hardware Availability</td>
<td>Jun-2021</td>
<td>Software Availability</td>
<td>Jun-2021</td>
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<table>
<thead>
<tr>
<th>Thread</th>
<th>SPECompG_peak2012</th>
<th>SPECompG_base2012</th>
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<tbody>
<tr>
<td>350.md</td>
<td>24.7</td>
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<tr>
<td>351.bwaves</td>
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<td>357.bt331</td>
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<td>363.swim</td>
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<td>367.imagick</td>
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<td>371.applu331</td>
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<td>372.smithwa</td>
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<tr>
<td>376.kdtree</td>
<td>27.3</td>
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</tr>
</tbody>
</table>

Software

Operating System: Red Hat Enterprise Linux Server release 8.3, Kernel 4.18.0-240.el8.x86_64
Compiler: C/C++/Fortran: Version 19.10 of PGI Community Edition
Auto Parallel: No
File System: xfs
System State: Multi-user, run level 3
Base Pointers: 64-bit
Peak Pointers: 64-bit
Other Software: None

Hardware

CPU Name: AMD EPYC 7763
CPU Characteristics: None
CPU MHz: 2450
CPU MHz Maximum: 3500
FPU: Integrated
CPU(s) enabled: 64 cores, 1 chip, 64 cores/chip, 2 threads/core
CPU(s) orderable: 1 Chips
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 chip
Other Cache: None
Memory: 256 GB (8 x 32 GB 2Rx8 PC4-3200AA-R)
Disk Subsystem: 1 x 1 TB SATA Hard Drive
Other Hardware: None
Base Threads Run: 128
Minimum Peak Threads: 128

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SPECompG_peak2012 = 24.3  
SPECompG_base2012 = 24.3

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### Software Availability:
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### Maximum Peak Threads:
128

### Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
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<td>165</td>
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</tr>
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</table>

### Platform Notes

Sysinfo program /home/omp2012/Docs/sysinfo  
Revision 563 of 2016-06-10 (097295389cf6073d8c3b03fa376740a5)  
running on amd2srh833 Mon May 31 17:50:44 2021

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/omp2012/Docs/config.html#sysinfo

From /proc/cpuinfo

- model name : AMD EPYC 7763 64-Core Processor  
- 1 "physical id"s (chips)  
- 128 "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 : 64
- siblings : 128
- physical 0: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21
- 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46
- 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63
- cache size : 512 KB

From /proc/meminfo

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SPECompG_base2012 = 24.3

**Platform Notes (Continued)**

MemTotal: 263697932 kB
HugePages_Total: 0
Hugepagesize: 2048 kB

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

os-release:
  NAME="Red Hat Enterprise Linux"
  VERSION="8.3 (Ootpa)"
  ID="rhel"
  ID_LIKE="fedora"
  VERSION_ID="8.3"
  PLATFORM_ID="platform:el8"
  PRETTY_NAME="Red Hat Enterprise Linux 8.3 (Ootpa)"
  ANSI_COLOR="0;31"
redhat-release: Red Hat Enterprise Linux release 8.3 (Ootpa)
system-release: Red Hat Enterprise Linux release 8.3 (Ootpa)
system-release-cpe: cpe:/o:redhat:enterprise_linux:8.3:ga

uname -a:
  Linux amd2srh833 4.18.0-240.el8.x86_64 #1 SMP Wed Sep 23 05:13:10 EDT 2020
  x86_64 x86_64 x86_64 GNU/Linux

run-level 3 May 31 17:37

SPEC is set to: /home/omp2012
Filesystem Type Size Used Avail Use% Mounted on
/dev/sda3 xfs 419G 123G 297G 30% /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.

BIOS Lenovo
Memory:
  8x Samsung M393A4G43AB3-CWE 32 GB 2 rank 3200 MT/s
  8x Unknown Unknown

(End of data from sysinfo program)

**General Notes**

==============================================

General OMP Library Settings
KMP_STACKSIZE = 256M
KMP_BLOCKTIME = infinite
KMP_LIBRARY= turnaround

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### General Notes (Continued)

- **OMP_NESTED** = FALSE
- **OMP_DYNAMIC** = FALSE
- **OMP_SCHEDULER** = static
- **OMP_THREADS** = 128

uEFI Setting notes:
- Choose Operating Mode set to Maximum Performance and changed to Customer Mode
- LLC as NUMA Node set as Disabled
- SMT Mode as Auto
- NUMA nodes per sockets set as NPS1

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

Yes: The test sponsor attests, as of date of publication, the 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-2017-5754 (Spectre variant 2) is mitigated in the system as tested and documented.

OS tuning:
- `ulimit -s unlimited`

### Base Compiler Invocation

- **C benchmarks**: `pgcc`
- **C++ benchmarks**: `pgc++`
- **Fortran benchmarks**: `pgfortran`

### Base Portability Flags

- `350.md: -Mfree`
- `357.bt331: -mcmode=medium`
- `362.fma3d: -Mfree`
- `363.swim: -mcmode=medium`

### Base Optimization Flags

- **C benchmarks**:
  - `-O3`
  - `-tp=zen`
  - `-mp`
  - `-m64`
  - `-fast`
  - `-Mpre`
  - `-Mlre`
  - `-Mfprelaxed`
  - `-Mstack_arrays`
  - `-Masmkeyword`
  - `-Mnosingle`
  - `-Mschar`

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Base Optimization Flags (Continued)

C++ benchmarks:
- `-O3`  
- `-tp=zen`  
- `-mp`  
- `-m64`  
- `-fast`  
- `-Mpre`  
- `-Mlre`  
- `-Mfprelaxed`  
- `-Mstack_arrays`  
- `-Mnoasmkeyword`

Fortran benchmarks:
- `-O3`  
- `-tp=zen`  
- `-mp`  
- `-m64`  
- `-fast`  
- `-Mpre`  
- `-Mlre`  
- `-Mfprelaxed`  
- `-Mstack_arrays`  
- `-Mallocatable=95`  
- `-Mnoupcase`  
- `-Mdefaultunit`  
- `-Mnostride0`  
- `-Mnoiomutex`  
- `-Mcray=pointer`

Peak Optimization Flags

C benchmarks:
- `352.nab`: basepeak = yes  
- `358.botsalgn`: basepeak = yes  
- `359.botsspar`: basepeak = yes  
- `367.imagick`: basepeak = yes  
- `372.smithwa`: basepeak = yes

C++ benchmarks:
- `376.kdtree`: basepeak = yes

Fortran benchmarks:
- `350.md`: basepeak = yes  
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The flags files that were used to format this result can be browsed at
http://www.spec.org/omp2012/flags/Lenovo-OMP2012-AMD-PGI.html
http://www.spec.org/omp2012/flags/Lenovo-Platform-SPEComp2012-Flags-V1.0-AMD.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/omp2012/flags/Lenovo-OMP2012-AMD-PGI.xml
http://www.spec.org/omp2012/flags/Lenovo-Platform-SPEComp2012-Flags-V1.0-AMD.xml

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