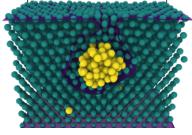


# NVIDIA+ARM evaluation on “Wombat” (NCCS)

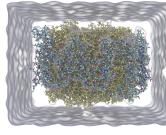
Applications:



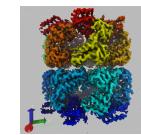
**CoMet**  
Comparative  
Genomics



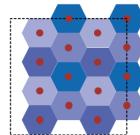
**LAMMPS**  
Molecular  
Dynamics



**NAMD**  
Molecular  
Dynamics



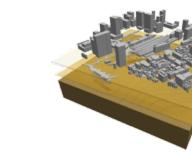
**VMD**  
MD  
Visualize.



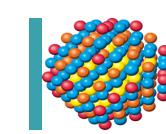
**DCA++**  
Material  
Science



**Gromacs**  
Molecular  
Dynamics



**Gamera**  
Earthquake  
Simulator



**LSMS**  
Material  
Science

Benchmarks & Mini-apps:



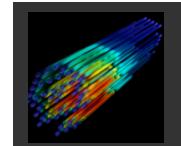
**BabelStream**  
Memory  
Transfer



**Tea Leaf**  
Heat Cond.



**Clover Leaf**  
Lagrangian  
Eulerian  
hydrodynamic



**MiniSweep**  
Radiation  
Transport



**SNAP**  
Radiation  
Transport

**Patatrack**  
Pixel  
Reconstruction

Parallel Prog Models & Sci. Libraries:



**Kokkos**  
C++  
Prog.  
Model



**Open MPI**  
Distributed  
Prog.  
Model



**NVIDIA**  
CUDA /  
Fortran  
GPU Prog.



**UCX**  
Comm.  
Framework



**Magma**  
**SLATE**  
Sci.  
Libraries

Testbed: Wombat: <https://www.olcf.ornl.gov/olcf-resources/compute-systems/wombat/>

## Hardware:

HPE Apollo 70 Preproduction nodes

CPU: **ARM ThunderX2**

2 Sockets, 28 Cores/socket, 4 threads/ per core, 2.0GHz, 256 GB RAM

GPU's: **NVIDIA Volta GV100** (2 per node) with 32 GB HBM2 each

4 nodes with NVIDIA GPUs

EDR InfiniBand

## Software:

RHEL 8

CUDA 10.2.107 (aka “Drop 2”), PGI “Dev version”

Installed Nov 7. Most user's results are with 10.2.91 (“Drop 1”)

GCC 8.2.1is the default compiler and armclang 19.3 available

Open MPI 3.1.4 and 4.0.2rc3

UCX 1.7.0

Evaluation done by: