SuperMike-3 Launch Workshop

Le Yan

LSU CENTER FOR COMPUTATION & TECHNOLOGY

Schedule

- 9:00 - 9:15 Opening remarks and introduction
- 9:15 - 10:00 System overview
- 10:00 - 10:15 Break
- 10:15 - 11:15 Job management with SLURM
- 11:15 - 12:00 Performance benchmarks and tuning
- 12:00 - 1:30 Lunch break
- 1:30 - 3:30 Q&A + On-ramp sessions (breakout sessions)

Changes at A Glance

- New SLURM job scheduler
- Upgraded RHEL operating system
- Compute nodes: more memory & more cores
- Upgraded software packages & compilers

Job Submission

SuperMIC

PBS (TORQUE)
+ Moab

SuperMike-3

slurm
workload manager

Operating System

Upgraded version of same Linux operating system:

redhat®
LINUX

SuperMIC	SuperMike-3
RHEL 7	**RHEL 8**

Hardware Changes

	SuperMike-3	SuperMIC
Compute Node	64 cores	20 CPU cores
	256 GB memory	64 GB memory
Infiniband Fabric	200 Gbps	56 Gbps
Big memory nodes	2 TB memory	256 GB memory 1 TB memory
GPU ndoes	8 nodes, 4 A100 GPUs each	4 nodes, 2 V100 GPUs each

MPI and Compilers

- **Intel 2021.5.0** is the default compiler.
- **Intel MPI 2021.5.1** is the default MPI implementation.
  - **Different from SuperMIC (MVAPICH2).**
  - Most MPI-enabled packages are/will be built with this MPI flavor.
  - Better performance compared to other flavors.

Storage/File Systems

- NFS for /home and Lustre for /work and /project
- SuperMike-3 shares the /work and /project file systems with SuperMIC and Deep Bayou
  - The total capacity is 2 PB
- The quota on /home is 10 GB for SuperMike-3.

Accounts and Allocations

- LSU HPC user account credentials work on all three clusters – SuperMike-3, SuperMIC and Deep Bayou.
- SuperMike-3 and SuperMIC both use the same allocations
  - In other words, if you have a SuperMIC allocation, it can be used on SuperMike-3.
- Deep Bayou still has its own allocations.

SU Consumption on SuperMike-3

- There is no weighting factor
  - It is not less expensive per core hour to run on SuperMike-3)
- BUT, the higher number of cores per node (64 on SuperMike-3 vs. 20 on SuperMIC) means the cost per NODE hour is 3.2 times higher – so be careful!

Should I Move to SuperMike-3?

- The short answer is – YES
- Most applications and workloads run (much) faster on SuperMike-3 compared to SuperMIC
- A few things to consider
  - Job wait time on SM-3 may be longer
  - Installing and testing new versions/software will take time
  - Keep an eye on your allocation balance – the burn rate will be higher on SM-3
  - Don't assume that your workloads will run dramatically faster on SuperMike-3 – test it!