**Research Support Services (RSS)**

**2023**

**Research Support Team:**

**Leadership:** Mark Bookout (Director Research Support Solutions), Matthew Keeler (Associate Director – IT University of Missouri), Jenn Nixon (Associate Director – IT Missouri S&T University), John Harrison (Manager IT University of Missouri), Buddy Scharfenberg (Manager IT - Missouri S&T University)

**Non-HPC Research System Support:** 10 Research Support Technologists, 2 Research Technology Analyst

**HPC End User Support**: 3 Cyberinfrastructure Engineers, 1 Research Technology Analyst

**HPC System Administration:** 5 System Administrators

**HPC Facilities, Equipment and Other Resources**

University of Missouri Cluster (**Hellbender**)

* Operating System: Alma Linux 8
* Scheduling Software: Slurm
* Nodes: 112
* Cores: 14,336
* GPU: 68 Nvidia A100 GPU’s across 17 Nodes
* Storage:
  + Connected to Research Data Ecosystem
    - 8 Pb connected high-performance storage available.
      * 4PB VAST
      * 4PB GPFS/Pixstor
* Network: The NDR Infiniband backbone will provide up to four hundred (400) gigabits of data throughput per second from point to point on the network, with an anticipated theoretical latency of less than six hundred (600) nanoseconds.
* Each node will be attached to the backbone with an HDR Infiniband connection capable of providing two hundred (200) gigabits of data throughput per second to each node, with an anticipated theoretical latency of less than six hundred (600) nanoseconds.

University of Missouri Cluster (**Lewis**)

* Operating System: CentOS 7.0
* Scheduling Software: Slurm
* Nodes: 190
* Cores: Over 8,000
* GPU: 12 Nvidia V100 GPU’s
* Storage:
  + 1 PB of high speed Lustre parallel storage (hpc storage)
  + 3PB of large economical low computational intensity project zfs storage
* Network: 100Gbps HDR InfiniBand interconnects for data and MPI
* DTN:100Gbps Bidirectional link
* Login Node: 10 Gbps Bidirectional link

Missouri University of Science and Technology Cluster (**Foundry**)

* Operating System: Ubuntu 18.04 LTS
* Scheduling Software: Slurm
* Nodes: 143
* Cores: Over 11,000
* GPU: 24 Nvidia V100 GPUs connected via NV-link and interconnected with other nodes via HDR-100 infiniband.
* Storage:
  + 50 TB of high speed Lustre scratch space
  + 2PB of large economical low computational intensity project ceph storage
* Network:
  + 100Gbps HDR InfiniBand interconnects for data and MPI
  + Globus DTN with 10Gbps Bidirectional link
  + Login node with 10Gbps Bidirectional link

**Science DMZ**

The University of Missouri has a 100Gbps Science-DMZ to support high speed data transfers between the campus and HPC centers within the Great Plains Network, Internet2, ESnet, the Pacific Wave, and other R&E networks. The Science-DMZ was supported in part by NSF CC-NIE Award 1245795.

**Specialized System Support Resources**

RSS provides expert support for specialized devices, including sensors, instrumentation interfaces, atypical workstations and servers, development, storage, security, and other IT related needs in the research context.

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