Coming Soon! UC's newest High-Performance Computing, AI and High-Performance Data Analytics (HPDA) system

UC's newest high-performance computing and data analytics system, temporarily referred to as ARCC-2, is coming soon with plans for early operations to begin in late summer 2021 and broad availability Fall 2021. It is funded in part by investments from the Office of Research, IT@UC, colleges and departments and a significant grant from the National Science Foundation's Major Research Instrumentation (MRI) program. UC is partnering with Hewlett Packard Enterprises (HPE) to architect a purpose-built compute resource for demanding High-Performance Computing (HPC) and Artificial Intelligence (AI) applications. Final specifications may change due to availability, pricing and user requirements.

ARCC-2 will provide transformative capability for rapidly evolving, computation-intensive and data-intensive research, supporting both traditional and non-traditional research communities and applications. The converged, scalable HPC, machine learning and data tools create an opportunity for collaboration and converged research, prioritizing researcher productivity and ease of use with an easy-to-use web-based interface.

Expect announcements regarding the 1) Early User Program (EUP), 2) naming contest and 3) grand opening soon.

Request resources on current high performance computing resources: **UC HPC Project Request**

Please contact Jane Combs at combsje@uc.edu or arc_info@uc.edu if you are interested in purchasing priority/boosted fair share access to nodes for your time-sensitive research. Deadline for this round of purchases: April 19, 2021.

Core Concepts

- Converged HPC + AI + Data
- Custom topology optimized for data-centric HPC, AI and HPDA (High Performance Data Analytics)
- Heterogeneous node types for different aspects of workflows
- CPUs and AI-targeted GPUS

Innovation

- AMD EPYC 7452 CPUs: 32-core 2.35–3.35 GHz
- AI scaling to 14 Tesla A100-40GB GPUs
- Mellanox HDR-100 InfiniBand supports in-network MPI-Direct, RDMA, GPUDirect, SR- IOV, and data encryption
- Cray ClusterStor E1000 Storage System
- Open OnDemand – Web based interface

Regular Memory

Regular Memory (RM) CPU nodes provide extremely powerful general-purpose computing, machine learning and data analytics, AI inferencing, and pre- and post-processing.

70 RM nodes will have:

- Two AMD EPYC CPUS, each with:

    - 32 cores
    - 2.35-3.35GHz
    - 128MB L3
    - 256GB of RAM
    - 8 memory channels
- SATA SSD (960GB)
- Mellanox ConnectX-6 HDR InfiniBand 100Gb/s Adapter

Large Memory

Large Memory (LM) node will provide 1TB of shared memory for genome sequence assembly, graph analytics, statistics, and other applications requiring a large amount of memory for which distributed-memory implementations are not available.

ARCC-2's 1 LM nodes will consist of:

- Two AMD EPYC CPUS, each with:
    - 32 cores
    - 2.35-3.35GHz
    - 128MB L3
    - 8 memory channels
- Mellanox ConnectX-6 HDR InfiniBand 100Gb/s Adapter

GPU

7 GPU nodes provide exceptional performance and scalability for deep learning and accelerated computing. Each GPU node will contain:

- Two NVIDIA Tesla A100 40GB GPUs
- Two AMD EPYC CPUS, each with:
    - 32 cores
    - 2.35-3.35GHz
    - 128MB L3
    - 8 memory channels
- 512GB of RAM
- SATA SSD (960GB)
- Mellanox ConnectX-6 HDR InfiniBand 100Gb/s Adapter

Maintenance (2nd Tuesday of every month)

Maintenance reservations will be set to make sure that jobs are not started during this time. You will see jobs labeled as "(ReqNodeNotAvail, reserved for maintenance)" This is expected, and jobs will resume once maintenance is completed.

Next Maintenance: Tuesday May 11, 2021 7am - 7pm

There may be brief interruptions to current cluster operations due to infrastructure modifications being made to the university data center in preparation for our newest, high performance computing cluster which will be water-cooled. You will receive notifications of planned downtimes via the arc_info@uc.edu listserv.

Research Computing & Data Training & Consultation

Accelerate Your Research! Research Computing and Data hosts a variety of training available at no-charge to you. We plan to resume in-person workshops in late 2021.

- Upcoming remote workshops:
  - April 14: R Data Visualization Workshop
  - May 14: Jetstream API
- Explore online/on-demand training options

Advanced Research Computing Consultation Hours

1st Tuesdays, 1 - 4pm | 3rd Fridays, 9:00am - 12:00 pm | Zoom

Schedule ahead of time or drop in the ARC virtual office hours for personalized assistance for your research computing and data storage needs. Consultations are available to any UC student, faculty or staff member. We can assist you with getting up and running on the ARC system, discuss research & data needs, ask questions or share an idea!

Join Zoom Meeting:
https://ucincinnati.zoom.us/j/92504797987?pwd=UEhScDQ4c2VkK2plYUJlZ2lxTmtYZz09

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