The 90,000 square foot, 15 megawatt facility is the first university research data center featuring sustainable green technology (LEED Platinum Certification, the highest level possible). MGHPCC is located 100 Bigelow Street, Holyoke, MA.

The Massachusetts Green High Performance Computing Center (MGHPCC) provides state-of-the-art high-performance computing resources for UMass Amherst faculty and researchers pursuing a diverse body of research.

With high-end computing equipment and storage, including thousands of CPU cores and GPU cards, UMass Amherst operates one of the biggest GPU clusters in the nation in the MGHPCC.

ACCESS

The five campuses of the University of Massachusetts are the consortium within the consortium at the MGHPCC offering a shared high performance computing cluster service to all UMass researchers, a condo service that provides system management and scheduling for researcher-owned hardware, and a co-lo service that provides hosting and network access for research groups that operate their own hardware.

PARTNER WITH US!

UMass Amherst | Core Facilities
Institute for Applied Life Sciences
University of Massachusetts Amherst
240 Thatcher Road
Amherst, MA 01003

MGHPCC Inquiries
John Griffin
IT Project Manager
john.griffin@umass.edu
(413) 545-9939
umass.edu/ials/mghpcc

UMass Core Facilities Inquiries
Andrew Vinard
Core Facilities Director
S307 Life Science Laboratories
avinard@umass.edu
(413) 577-4592
umass.edu/ials/core-facilities

State-of-the-Art High Performance Computing Resources for Research
WHAT IS THE MASSACHUSETTS GREEN HIGH PERFORMANCE COMPUTING CENTER?

- A research computing and data center supporting the growing needs of five research-intensive universities: the University of Massachusetts, Boston University, Harvard University, MIT, and Northeastern University.
- A historic collaboration among state government, industry, and public and private universities. The center provides world-class computational infrastructure and enables millions of virtual scientific experiments per month, serving thousands for researchers in Massachusetts and around the world.
- A partnership with Holyoke, the Pioneer Valley, and the Commonwealth, furthering the innovation economy of the region through cooperative research, education, and outreach activities. The center has worked with the Holyoke Innovation District Task Force, local K-12 public schools, and community colleges on new educational and workforce development initiatives.

WHAT MGHPCCC CAN DO FOR YOU

- Get Started Right Away
  Sign up at umassrc.org/hpc and get immediate access to the UMass Shared Cluster and 50GB of storage—with no initial commitment.
- Receive Priority Access
  Within the UMass Shared Cluster is the Amherst Priority-Shared Cluster. This setup allows you to contribute and receive priority access to your own equipment while using other available cores.
- Bring Your Own Equipment
  If your research has specific computing needs which may not fit into the existing shared or priority models, contact hpc@it.umass.edu to discuss options to bring and configure your own grant-funded hardware.
- Run The Software You Need
  Use a wide variety of software for your research, whether for bioinformatics, next-gen sequencing, physics, molecular mechanics, etc. Compatible software includes NCBI Blast, R, BioScope, NAMD or you can install your own. For the full software list, visit umass.edu/it/mghpcc-software.
- Build A Custom Environment
  Within the shared cluster, UMass Amherst will work with you to build and configure a custom environment that meets your research needs and any federal standards or compliance requirements.

SHARED COMPUTING CLUSTERS AT MGHPCCC

UMass Shared Cluster

- 15,000-core system, including 140 Graphics Processing Unit (GPU) nodes for rapid calculations and data-heavy processing.
- Available for general use to UMass Amherst researchers at no charge, with no initial commitment.
- EMC Isilon storage for easy management and protection of unstructured data.

Amherst Priority Shared Cluster

- Supplements shared access as a part of the UMass Shared Cluster.
- Includes 1,152 CPU cores needed for high performance computing.
- For a fee, researchers receive dedicated access to a set of nodes and unused CPU cycles.

UMass Computational Core Facility

- This facility provides expert consultative and collaborative services to academic and industry partners.
- Expertise includes molecular dynamics and chemistry simulation applications.
- 44 nodes, 4x GPUs per node for demanding computational modeling and simulations.
- Includes a fee-for-service computational modeling facility using the IALS GPU cluster.
- More information at umass.edu/ials/computational-modeling.

GET STARTED WITH MGHPCCC

Any member of the UMass Amherst community may use MGHPCCC, once approved by their Principal Investigator (PI). Register as a Principal Investigator at umassrc.org/hpc. Students require a faculty sponsor.

New users are allocated 50GB of storage and can request additional resources by contacting hpc@it.umass.edu.

Visit mghpcc.umass.edu or umassrc.org/wiki

C3DDB

- The Commonwealth Computational Cloud for Data Driven Biology (C3DDB) is a computer system dedicated to life sciences research supported by innovative big data analytics.
- Available to all UMass Principal Investigators.
- Open to anyone conducting life science research or development at a university or research institute, including software tool developers.
- 133 computer nodes, with a total of 7,200 cores.
- Easy to sign up. More information at umass.edu/itics/c3dwb.

MOHPCC AVAILABLE SOFTWARE

MGHPCC provides a wide variety of software (you can also run your own). For more information, including the full list, see umass.edu/it/mghpcc-software.

General

- CUDA
- Java
- DDD
- Python
- Gnuplot
- Graphviz

Bioinformatics

- CLUSTAL 2.1
- EMBOSs
- Meme
- PAML
- Bioinformatics software

- ImageMagick
- NCBI Blast
- Iprscan
- MIPBlast

High-Throughput Sequencing

- Abyss
- Bisulfite
- BWA
- Hapsembler Software
- MACS
- PySam
- SoapSNP

- BFast
- Bowtie
- FastX Toolkit
- HTSeq
- Methylcode
- RNA_pipeline
- SOLIDtools

- Bioscope
- Brat & Brat_bw
- Genomics Software
- IlluminaPipeline
- MatePair
- SAMtools
- SpiceSites
- TopHat

Molecular Mechanics

- Amber
- Charm
- GROMACS
- NAMD
- Molecular Mechanics software

- Charmmd
- Desmond
- Vmd
- Gaussian
- Velv

Visit mghpcc.umass.edu or umassrc.org/wiki