

UMBC Campus Cyber Infrastructure (CI) Plan

1. Organize a campus-wide strategy and approach to CI

The Division of IT (DoIT) will be responsible for working closely with the Deans, Vice Presidents, and President and coordinate with campus governance groups such as the Faculty Senate Computer Policy Committee, Research Council, and IT Steering Committee to develop, deliver, and evolve the necessary cyberinfrastructure to support faculty scholarship and research.

Every two years, DoIT will be required to provide an update to all parties and work with them to update the plan for the next two years.

NOTE: ✓ indicates completed or substantially completed (>90%)

The plan should address the following key strategic goals:

1. Supporting and sustaining faculty research and scholarship through partnerships with the academic units;
2. Support and enhance graduate education and undergraduate research; and
3. Build on national and international efforts and standards so that UMBC faculty and graduate students can easily leverage national research facilities and large international science projects in their research.

2. Support and sustain faculty research and scholarship

It is essential that DoIT work closely with the academic departments, research centers, and colleges to coordinate with their departmental IT staff to support their research goals and activities.

- a. Leverage centralization as much as possible. Extend the UMBC problem resolution system, RT, to all departments so that we can track IT support holistically across units and people with a common interface for faculty. ✓
- b. Work closely with the Deans and chairs to develop approaches to funding faculty startup costs that build core facilities and provide more “bang for the buck” so new faculty can quickly start up their research program. ✓
- c. Where possible, UMBC should find ways to work across departments and colleges to build communities of interest amongst researchers (computation, visualization, software packages, and software tools) and to find ways of leveraging funds for site licenses and shared equipment. ✓
- d. DoIT will partner with the Center for Hybrid and Multicore Productivity Research (CHMPR) in CSEE and the High Performance Computing Facility (HPCF) for science and engineering units to provide computational

support to faculty. DoIT will NOT support individual lab clusters. ✓

3. Support and enhance graduate education and undergraduate research.

Where possible, DoIT should work closely with the academic units to provide funding support for graduate students working to provide support;

- Work closely with departments to identify talented graduate students that can be funded by DoIT as RA's and help provide support.
- Where possible, partner with existing departmental and Center IT staff to provide support for research and scholarship.
 - a. Partner with the Mathematics & Statistics Center for Interdisciplinary Research to fund an RA to provide statistical consulting support to the campus;✓
 - b. Partner with Human-Centered Computing Program to fund a RA to support accessibility and HCI testing; (in progress)
 - c. Create partnerships with Computer Science to fund RA's in cybersecurity and data mining/analytics; (in progress)
 - d. Developing partnerships between DoIT's New Media Studio and the Drescher Center for the Humanities to provide support for digital humanities.✓
 - e. Work closely with the Division of Undergraduate Education to provide IT support to students with undergraduate research awards.✓

5. Build on national and international efforts and standards;
UMBC should make certain that we follow best practices and all our efforts support national and international approaches for science and research. In particular, we follow evolving practices in computation, networking, collaboration, and software.

a. Computation

- i. Make certain we have a XSEDE campus champion who is actively engaged in understanding what is available and happening at national centers.✓
- ii. Follow best practices for local campus computation so that faculty can easily move their code to other

platforms.✓

- iii. Work with Math and CSEE to offer undergraduate and graduate courses to train RA's.✓
- iv. Work with Math & Statistics and CSEE to put on regular training workshops on the usage of software tools.✓

b. Visualization

- i. Work with the deans and VP of Research to nurture and sustain our efforts in scientific visualization.
 - 1. Focus on providing technical support in the humanities through the Imaging Research Center.✓
 - 2. Work with VP of Research to fund a 3D visualization effort for the sciences and Engineering (in progress).

c. Storage

- i. Develop a mix of storage resources that can support the growing data storage needs of faculty.
 - 1. Provide one petabyte of high-performance storage (Infiniband connected) for HPCF to support atmospheric sciences, genomics, simulation and modeling. ✓
 - 2. Deploy box.com for desktop computing storage and bench science.✓

d. Networking

- i. Make certain we are building a strong network core capable of supporting of deploying 10GB back to any academic building and 1Gb or greater to any office or lab;✓
- ii. Upgrade our network to support SDN and openflow.
- iii. Build support for IPv6. Plan from 2011.✓
 - 1. 2011

- a. Review offerings, attend joint techs meeting and training. ✓
2. 2012
- a. Evaluate vendors on IPv6 support before selecting network for campus. ✓
 - b. Install new network core capable of supporting IPv6. ✓
3. 2013
- a. Install new building routers capable of supporting IPv6. ✓
 - b. Make dual-stack (IPv4 & IPv6) the default for all server installs. ✓ (partial)
4. 2014
- a. Enable IPv6 for all campus web servers. ✗
 - b. Train desktop support on IPv6. ✗
 - c. Develop plan to dual stack clients by end of 2014. ✗
5. 2015
- a. Finalize plan to launch support for IPv6 across campus. ✗
- e. Develop support for InCommon and collaboration.
- 1. UMBC fully supports InCommon. We now require InCommon for all IT service procurements. ✓
 - 2. UMBC has adopted the InCommon 2nd Factor solution. ✓
 - 3. UMBC participates in eduroam. ✓
 - 4. UMBC is evaluating the CIFER project for Identity Management. In progress. (in progress)

5. UMBC supports Cllogin (since 2012). ✓

f. Support for software resources.

Maintain a rich portfolio of open source software resources and libraries along with key discipline specific packages.

1. UMBC has a site license for Redhat Linux ✓

2. UMBC has a site license for Matlab, SPSS, SAS, and floating licenses for COMSOL. ✓

3. Develop support for R and S-Plus in addition to commercial products. ✓

6. Plan for July 1, 2014 – June 30, 2016.

a. Relocate HPCF facility to the data center in the BWTECH research park. ✓

b. Work with NASA to expand on-premise HPC resources. ✓

c. Work with HPCF to order new Hybrid cluster with PHI and GPU blades. ✓

d. Deploy new management system for HPC storage (Brightview) ✓

e. Upgrade HPC storage by 600TB ✓

f. Upgrade core network to support 20GB to all academic buildings ✓

g. Launch visualization initiative with VP or Research using Mac Pro and 4K displays. ✓

h. Add ExoGENI rack for CSEE research. ✓

i. Expand support for virtualized research clusters (openstack). ✗

j. Deploy IPv6 across campus. ✗

k. Develop and deploy software defined networks and openflow. ✗

l. Upgrade external Internet connections ✗