



NSF Campus Cyberinfrastructure PI and
Cybersecurity Innovation for Cyberinfrastructure PI Workshop
September 23 – 25, 2019 | Minneapolis, MN

Campus Cyberinfrastructure Investments Across the Northern Tier and Rural States – **Truman State University**

Topics:

- Science Drivers and Scientific Impact
- Current Status
- Challenges and Lessons Learned



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Quad Chart for:

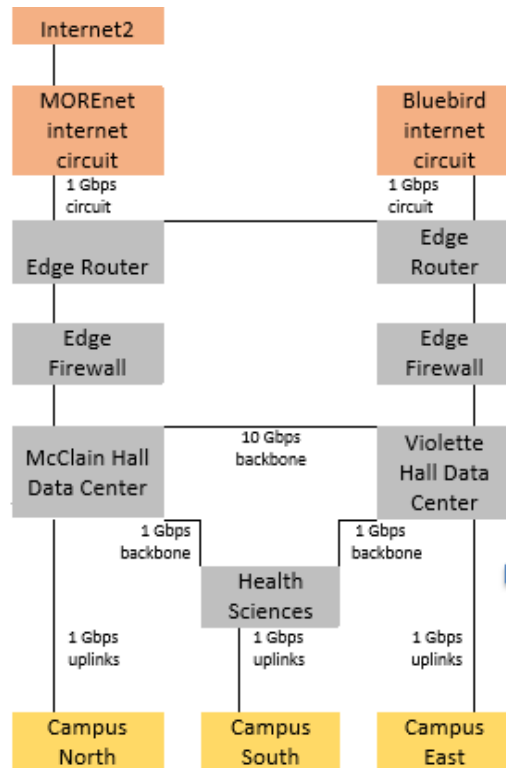
CC Network Design: Network Upgrades to Improve Engagement in Science Discovery and Education*

Challenges:

- Bottlenecks moving large data sets.
- Backup of large locally stored data sets.
- Support for changes in the curriculum.

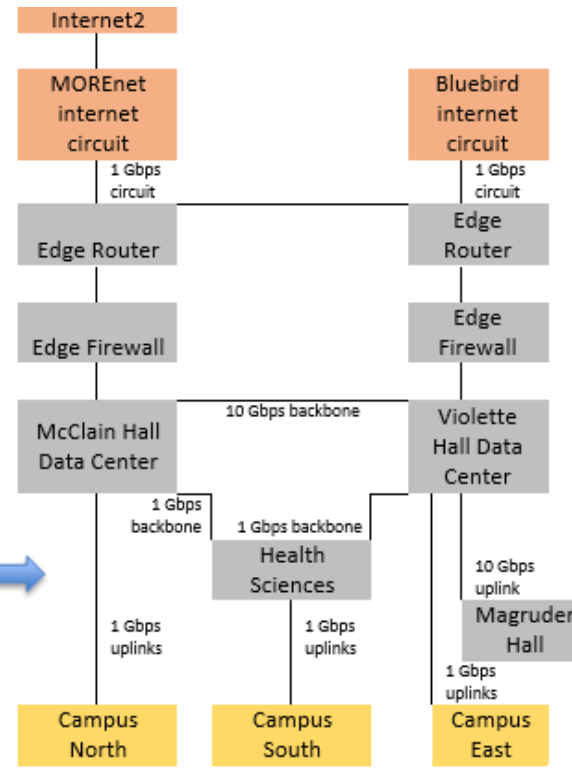
Deliverables:

- Ten-fold increase in data access rates for STEM-related disciplines.
- Increased bandwidth to observatory.
- Improved data transfer of large data sets.
- Better network monitoring tools.
- Federated identity strategy.
- IPv6 in the curriculum.
- Reinvigorated outreach plan.



Logical Network Design (before upgrades)

The current network architecture does not provide for Gig to the desktop speeds. The University desires to upgrade to Gig to the desktop speeds, as well as faster building uplink speed for Magruder Hall.



Logical Network Design (after upgrades)

After the upgrade, the proposed network architecture would include Gig to the desktop speeds in Violette and Magruder Halls, along with a faster building uplink speed for Magruder Hall. In addition, the bandwidth to the Truman Observatory would also be increased.

Scientific Impacts:

- Students involved in high quality astronomy research.
- Remote observation capabilities.
- Quantification of light pollution.
- Enhanced computational chemistry applications.
- Establishing Natural Language Processing dictionaries.
- Building low-cost wireless distributed soil sensors.
- Incorporating IPv6 in the curriculum.

Metadata tag:

<Student
engagement>
<Transition to
practice>



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- Current Status
 - **Identification of faculty research needs and solutions** (ECAR survey, ShowMeCI Consortium, Cyberinfrastructure Plan)
 - **Upgraded network** (baseline network and security audits, Gig to the desktop, enhanced network performance monitoring, bandwidth improvements, and campus backbone improvements)
 - **Enhanced curriculum** (IPv6 in 3 courses in the curriculum)
 - **Scientific impact** (national attention on light pollution)
- Challenges and Lessons Learned
 - The unexpected – cost increases, year-end discounts, and the impact of tariffs
 - Faculty mobility
 - Research pre-requisites
 - Collaborate, collaborate, collaborate!!