MEMORANDUM

To: Jeff Bartkovich, Vice President, Educational Technology Services

From: Donna Pogroszewski, Director, CNS
             James Clement, Assistant Director, CNS

Date: March 30, 2012

Subject: Monroe Community College's Network Upgrade

On February 18, 2012, Monroe Community College began a four-day comprehensive upgrade of the College's critical network infrastructure. This upgrade consisted of the replacement of two central core switches, and the implementation of two Adaptive Security Appliances (ASA) to replace a single central firewall.

Background

Prior to the network upgrade, MCC's network infrastructure and Cisco 6509 core switches (that connected all of the Brighton Campus data closets with remote campus locations) were ten years old. The major threat related to network stability was the loss of the 6509 switches. This loss could have resulted in a full enterprise-wide network outage, followed by a period of connectivity issues resulting from the main outage. The core switches were at end-of-life and were limited to 1 Gigabit bandwidth throughput. They would not support future technologies such as video applications, thin clients and the increased demand on wireless. The former network design lacked redundancy on critical components leaving the College susceptible to partial, but significant, network outages.

In order to meet these technology risks, and meet the voice, video, and data needs of the College in the coming years, it was determined that the aging hardware needed to be replaced. The four primary design concerns were building a resilient network, minimizing single points of failure, implementing a scalable network design capable of 10+ Gbps speeds, and providing a multilayered security model utilizing both firewalls and Intrusion Prevention Systems (IPSs) to secure the College's data.

The following are direct benefits of MCC's new network design:

1) Increased Bandwidth to 10Gigs
2) Failsafe design of critical equipment guaranteeing a fault tolerant network
3) Lower maintenance contracts on equipment due to the fact that we can do Next Business Day vs. 24x7x7 hour response. The network design will allow equipment to failover on secondary equipment keeping the network up while equipment failures are repaired. This holds true for maintenance upgrades—the technicians will be able to maintain the equipment without a network outage.
4) Next generation of wireless with greater bandwidth and increased coverage

5) Next generation of VoIP (Voice over Internet Protocol) phones
6) End users will notice increased speed (or throughput) due to the upgrade

The MCC Network Upgrade

To update MCC's entire network and phone infrastructure, the College negotiated with Cisco to achieve a lease option that cost the College $1.5 million dollars to be paid over a period of six years. This allowed MCC to operationalize the cost of the network upgrades. The funding provided for a complete network redesign and upgrade to the latest Cisco network technologies.

To perform an upgrade of this magnitude, Communications and Network Services (CNS) categorized the network upgrades into four distinct segments:

- Core network switches and firewalls
- Data closet (IDF—Intermediate Distribution Frame) switching hardware
- Secondary access devices (VoIP phones, wireless access points)
- VoIP Server infrastructure and resilient uplinks

The entire upgrade took place over a period of approximately nine months, from August 2011 to Spring semester 2012.

The College is now operating on dual Nexus 7000 core switches, each with two redundant supervisor modules. These core switches provide the backbone connectivity for literally every network-based service on the College's network.

Some examples of network-based services include:

- VoIP communications
- Emergency Paging Systems
- College Security Cameras
- Building Environmental Controls
- Co-Gen Power Plant Monitoring/Operation
- M:Drive and S:Drive storage resources
- ANGEL Course Management System (CMS)
- The Banner system
- myMCC (MCC's portal), myMail (web-accessible MCC email), and myVPN (Virtual Private Network)
- Internet connectivity

The Networking staff from CNS in the Educational Technology Services (ETS) division performed the upgrade with assistance from Cisco Networks.

If you would like to provide feedback on the network upgrade, please send an email to: etsfeedback@monroecc.edu.