Road Map Team Proposal Form

Proposal: I24

1: Road Map Team Name: Infrastructure

1b: Team Theme Name: Technology

2. Title of Proposal: Network – High Speed redundant Link to the internet
This relates to idea 29.

3. Will this proposal require resources on a continual basis? (Yes or No) Yes

4. Will this proposal require resources on a one-time basis? (Yes or No) Yes

5. Will this proposal require further study to develop the answers to the questions 3 and 4 above? (Yes or No) No

6. Proposal Description:

Build a high speed, redundant network connection to the internet

Currently, Binghamton University maintains a 1Gigabit (GB), or 1,000 Megabit (MB) link to the commodity internet. We also maintain a 50 megabit (MB) link to Internet2, which is a high speed research only network that is shared among member institutions and organizations. Both of these services are carried over a single piece of fiber optic cable from Binghamton University to Syracuse, NY, where we connect into our major peering point. These links are what connect the campus to the World Wide Web and websites across the world.

At this level of service, Information Technology Services is able to give the students a 2MB level of service connection per device. This also gives faculty and staff in the core of campus approximately an 8MB level of service for off campus connections. In comparison, a standard Road Runner connection in the Southern Tier area gives a connection speed of 10MB and the turbo service gives a 15-20MB level of service. Most of our peer institutions attain a level of service near 20MB per connection. Even with this restricted level of service per device, our current connection runs at about a 90-95 utilization rate and maxes out each night for a period of time.

Below is a chart detailing the usage and growth of the internet connection at Binghamton University:

Year	2012-2013	2011-2012	2010-2011	2009-2010	2008-2009	2007-2008	2006-2007	2005-2006	2(
Contract Holder	Fibertech	Fibertech	TWTC	TWTC	Campus Tele-Video	Campus Tele-Video	TWTC	TWTC	T
Minimum	1,000	300	300mb/sec	200	200	200	200	155MB	1

campus service	mb/sec	mb/sec		mb/sec	mb/sec	mb/sec	mb/sec	OC3	OC3
Actual bandwidth usage	1,300 mb/sec	800 mb/sec	500 mb/sec	350 mb/sec	250 mb/sec	200 mb/sec	175 mb/sec	155 mb/sec	<155 mb/sec
Year to year increase %	63%	60%	43%	40%	25%	14%	13%		

With the addition of 2,000 students and 500 faculty/staff over the next 4 years, this demand will increase dramatically. On average, each individual student has 4 devices that connect directly to the network.

As the campus moves forward with a more cloud based architecture and web delivery of classes and services, the network infrastructure needs to be robust and flexible enough to scale with the increasing demands. With higher wireless speeds introduced this fall by the next generation of wireless devices that are 802.11ac compliant, the demand on the network will grow accordingly. We not only need to be able to scale to allow for faster communications and data transfer, but need to invest in a second, diverse network connection to the outside world so that we do not become isolated if there is a service disruption. For example, in April 2012, during the spring semester, a person used a fiber junction box on a telephone pole in Dryden NY for rifle target practice. The hit on this box caused the University internet service to be down for 10 hours as it cut through a junction point on our fiber path. This caused disruption throughout the campus in lecture hall classrooms, purchasing, business, teaching, human resources, research, and email systems. It is imperative that the university invests in a secondary and disparate path to connect to the outside world. As we move towards more distance learning, online classes, and externally hosted systems, the lack of a higher speed and redundant connection to the internet could be crippling to our business.

7. Describe any synergistic attributes of this proposal with other Road Map topics:

This proposal is synergistic with any proposals from other Road Map teams that require online work or data to be transmitted on or off campus. It also supports any collaborative teaching and research proposals between Binghamton University and external entities.

8. Describe how this proposal leverages areas of strength at Binghamton University:

This proposal will support a seamless environment in which to build distance learning classrooms, hosted cloud system integration and the enhancement of synchronous data transfer between Binghamton University and offsite companies, researchers, and students.

9. Describe how this proposal integrates with and enhances and existing activities on campus.

This proposal would enhance the faculty, staff, and students ability to perform tasks that require internet access. Just as electricity is an afterthought until it is out, the campus network is lifeline for all business, teaching, and research on campus. Without it, we are at a standstill in terms of being able to function. With the expanding plans for more distance learning, integration with the other SUNY campuses, and more hosted systems, we are more dependent on a continuously available connection.

10. Describe the specific metric or metrics that this proposal will enhance. For each metric, state where Binghamton currently rates and the expected impact on the metric: if 0= "Does Not Rank" and 10= "Premier", where is the University currently and where will it end up?

Current network redundancy metric for Binghamton University: 2
Post installation metric for network redundancy for Binghamton University: 8

In terms of metrics and measurements, see the proposal description to review the expansion of this service over the past 8 years. Another metric that can be used as a comparison is the annual Educause wireless bandwidth survey which compares connection information among peer institutions. Currently, Binghamton is at the lower end of the rankings in this area compared to institutions of similar size.

11. Describe an approximate time line for implementation and impact of your proposal:

The process for creating a faster and redundant campus connection can be accomplished in a six month time frame. A secondary path to the campus would have to be identified and fiber installed to an external internet service provider's peering point off campus. At that point, the connection could be set up.