

Introduction

- Jason Collet, CIO for Western New Mexico University.
- WNMU is a smaller campus, with an enrollment of roughly 3500.
- Our campus is located in Silver City, which resides in the Southwest corner of NM.
- It is very much a rural community, about an hour away from any interstate.
- Our campus borders the Gila National Forest.
- As is the case with many small universities and their communities, WNMU is a major catalyst in community improvements and often the sole source of technology expertise.



NSF Campus Cyberinfrastructure PI and Cybersecurity Innovation for Cyberinfrastructure PI Workshop

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“Quad Chart” for:

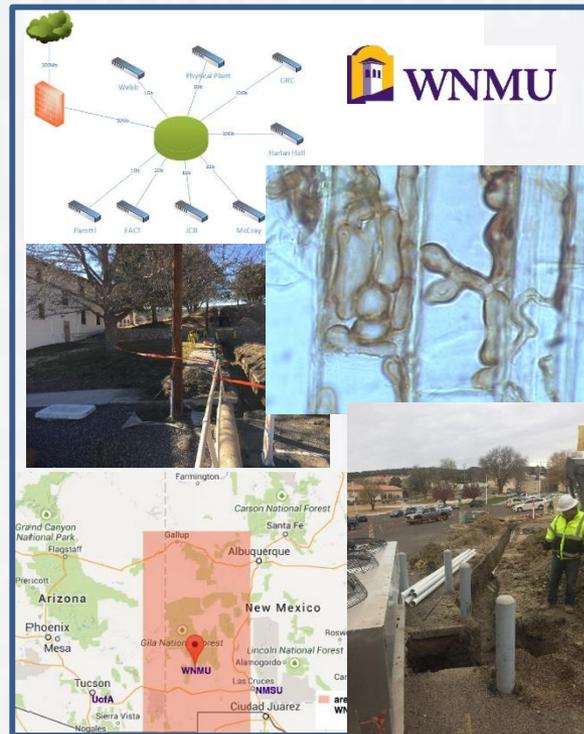
Western New Mexico University's Small Campus Cyberinfrastructure Grant

Challenge:

- How to overcome NM’s rural challenges for sufficient broadband.
- How to transform WNMU’s failing and antiquated Cyberinfrastructure .
- How to defeat the paradigm of “Small Universities cannot participate in STEM Research”.

Deliverables:

- Improved core and edge infrastructure to accommodate greater bandwidth.
- Upgraded fiber plant that allows for redundancy, capable of 10Gb.
- WNMU is now positioned to become the regional champion for consolidated bandwidth.



Broader Impact:

- WNMU will have greater research collaboration opportunities.
- Improved Cyberinfrastructure will greatly improve WNMU’s institutional educational research of “at risk” students.
- Enhanced network will provide greater opportunity for STEM courses via ITV.

Metadata tag:

- <http://www.wnmu.edu/itdept/NSFCyber.html>
- *Summary workshop to be held in December 2017*
- *#wnmuit*



Hidden Research

- WNMU is not a research institution like UNM, NMT or NMSU.
- This had fostered a paradigm.
- Once we interviewed departments, we found pockets of research.
- We also found innovation.
- These interviews also gave IT insight as to what more could be done, with a few improvements.
- The whole process was both humbling and inspiring.

What were our challenges?

- Bandwidth
 - New Mexico has a dearth of infrastructure, particularly for those institutions not located along its center corridor.
 - This results in much higher costs, and puts small campuses at a loss when trying to obtain necessary bandwidth.
 - WNMU sustained its services on 40Mb just four years ago, and now is looking to improve its 200Mb connection.

Local Infrastructure

- Local campus fiber plant was not sufficient, and had many faulty segments.
- Network design was not adequate to distribute bandwidth, should it come available.
- WNMU needed to stage its development, to take foundational steps for possible community collaboration and for a future Science DMZ.

Addressing the insufficient Fiber Infrastructure Plant

- Establish pathways for conduit and expansion of fiber plant.
- Replace damaged fiber that serviced 50% of the campus.
- Establish redundant loops for East and West portions of campus.
- Create links for those segments responsible for research capable of 10Gb throughput, outside of network manipulation and constraints.

Redesigning the Core

- Greatly improve campus connectivity through new equipment at the core.
- Establish redundant loops for East and West portions of campus.
- Configure routing at the core to allow for immediate failover in case of a break.
- Create the framework for STEM traffic to completely bypass campus firewall, for a future Science DMZ.

Potential for the Future?

- Network is now set for the implementation of a Science DMZ.
- Enhanced core now has the capacity to accept connections for greater bandwidth, and from separate sources.
- WNMU is now position to be a champion for southwest NM, and be a bandwidth head for many other institutions to partner and bring in lower costs.
- The proposal also has shifted WNMU's paradigm of not being a campus capable of research.

Small Campus Research

- WNMU is in this newfound position because of the assistance of :
 - NSF’s investment
 - Collaboration and assistance of NM’s Higher Education, particularly UNM and NMSU.
- With these contributions, our small teaching university is furthering research.