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# Cyberinfrastructure: Moving Beyond Broadband at HBCUs and TCUs

## NTIA Webinar Series

*You must dial in to hear the webinar!*  
*Conference Line: 800-593-7190 Passcode: 984-4951#*

July 15, 2020

# Participants

## Moderators

- Dr. Francine Alkisswani, Policy Analyst, BroadbandUSA, NTIA
- Dr. Tonya Smith-Jackson, Senior Vice Provost for Academic Affairs, North Carolina A&T

## Presenters

- Jason Arviso, Vice President of Operations, Navajo Technical University
- Curtis Bradley, Acting Chief Information Officer, South Carolina State University
- Dr. Deborah F. Dent, CIO, Division of Information Technology, Jackson State University
- Al Kuslikis, American Indian Higher Education Consortium

# Helpful Information

## Questions

- Please type questions in the Q&A box on the right hand side of the screen. Questions will be taken after the final presenter.

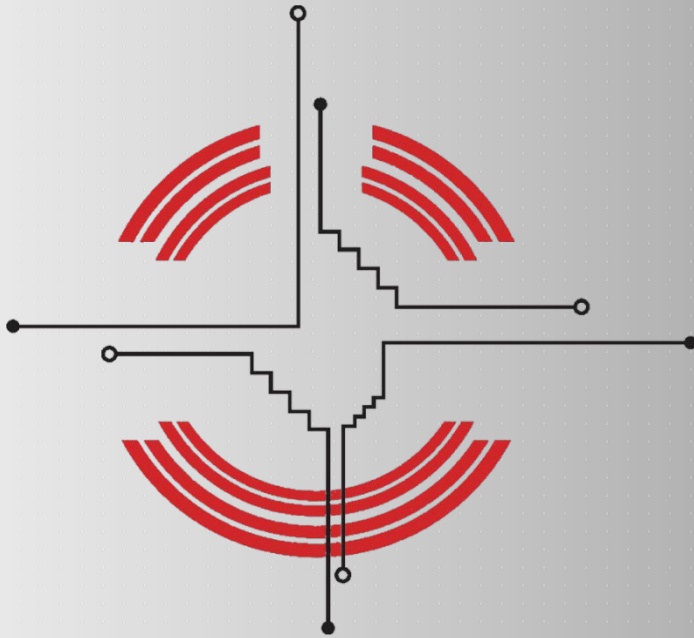
## Presentation

- The presentation along with a transcript and recording will be available on the BroadbandUSA website within 7 days of this webinar under Events/past events.
- <https://broadbandusa.ntia.doc.gov/past-event>

## Technical Assistance

- Guides, products, publications, and other tools are available to assist you with the planning, funding and implementation of your broadband project.
- <https://broadbandusa.ntia.doc.gov>

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# NAVAJO TECHNICAL UNIVERSITY

## PRESENTATION

Jason Arviso

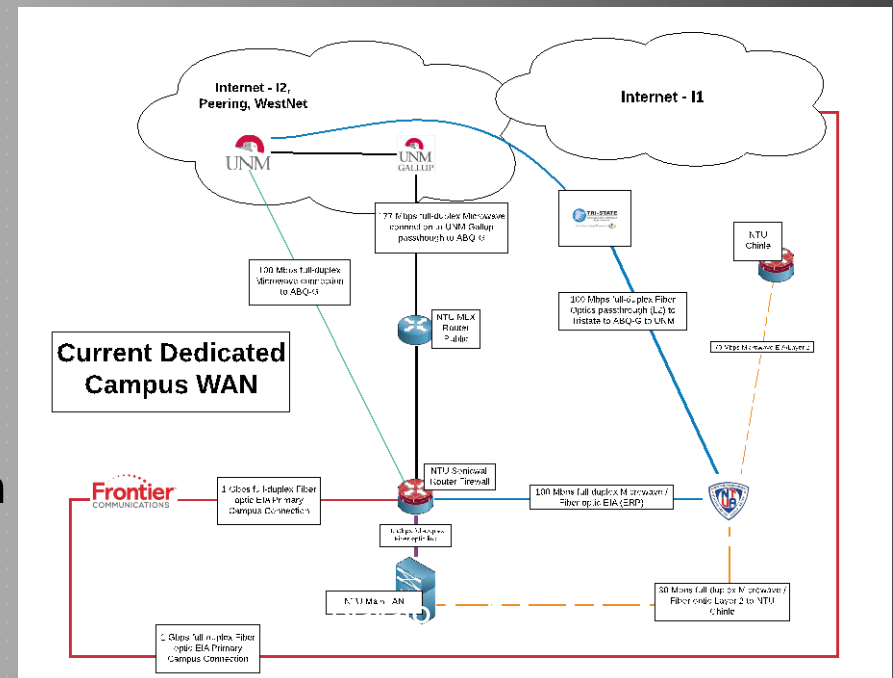
Vice President of Operations

Navajo Technical University

Crownpoint, New Mexico

# WHAT IS THE CURRENT STATE OF CONNECTIVITY FOR NAVAJO TECHNICAL UNIVERSITY, DINE COLLEGE, AND THE TRIBAL EDUCATIONAL COMMUNITY?

- The majority of tribal colleges receive minimal bandwidth from local community carriers that charge a high rate.
- Existing "digital divide" between rural and urban areas when it comes to broadband access
- In 2015, the FCC defines minimum broadband service to 25 mbps down and 3 mbps up.
- Persistent Challenge



# NSF TCU PROJECT

## Two Year Project

- ▶ **examine the capability of each TCU's cyberinfrastructure** to support participation in the national STEM education and research infrastructure
- ▶ **provide a primary planning and evaluation resource** of TCU national and regional connectivity, compute capabilities, and human resource requirements
- ▶ **provide information necessary for each TCU** to articulate (or update) and begin implementing a sustainable Campus Cyberinfrastructure Plan
- ▶ **Campus infrastructure:** Internet connectivity with peering services, connections to local and regional networks, Internet2, campus networking



# NSF TCU PROJECT

## Study Focus Areas

- ▶ **IT personnel:** training, collaboration with other TCUs, and skills compared with CI operations management needs
- ▶ **STEM programs:** current and project demands for CI-enabled resources (e.g. research collaborations, data acquisition, instructional)
- ▶ **Strategic planning:** current status of CI planning, project management, and its impact on budgeting
- ▶ **Faculty capacity:** development and support needs to optimize CI resources for education and research



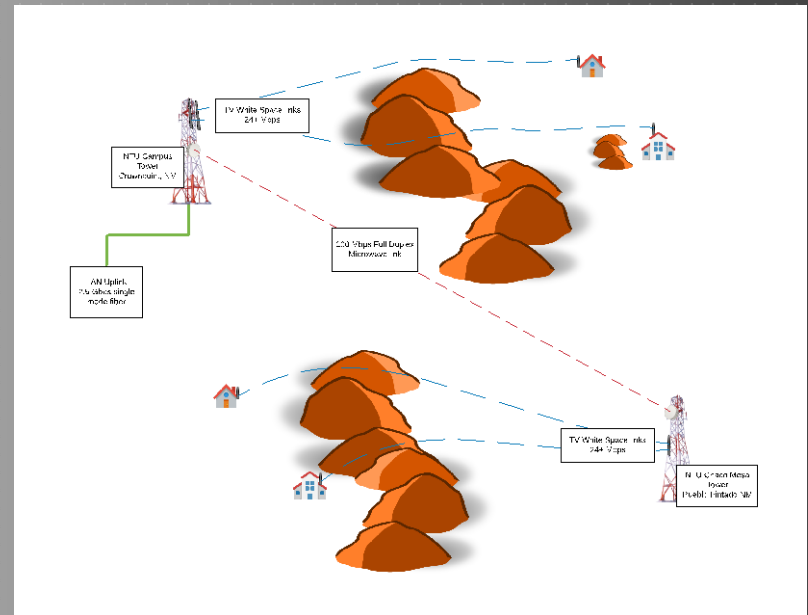






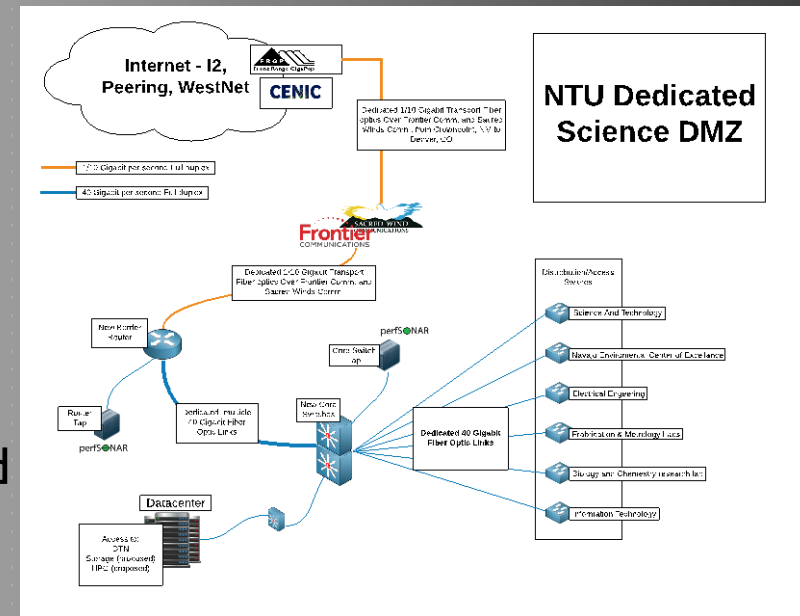
## WHAT TYPES OF RESEARCH NEEDS DOES NTU SUPPORT? WHAT IS COMING?

- ▶ Navajo Technical University (NTU) developing research capacity
- ▶ NTU/Navajo Nation Research and Broadband Capital Investments.
- ▶ Develop 10/40 Gbps lossless Research Network fabric and cross-campus Science DMZ
- ▶ Advancing education and research for the Navajo Nation.



# HOW WOULD NSF CC\* PROPOSALS HELP NTU?

- ▶ This proposed research network will support NTU research and academic programs in Biology, Engineering, Geography Information Systems, Boeing Research Lab, the Navajo Uranium Remediation Project, and the next generation of the Internet to the Hogan Initiative.
- ▶ Dr. Peter Romine, Electrical Engineering
- ▶ Dr. Jason Post, Geospatial Technology and Systems
- ▶ Harold Halliday, Digital Manufacturing







## **Cyberinfrastructure: Moving Beyond Broadband at HBCUs and TCUs**

**Thank you, Jason!**

# Cyberinfrastructure: Moving Beyond Broadband at HBCUs and TCUs

## Curtis Bradley – Acting CIO SC State University



### About SCSU:

- James E. Clark, President
- Located in Orangeburg, SC
- Founded in 1896 as the State's Sole Public College for Black youth.
- Only university in SC offering the MS degree in transportation.
- Developed and implemented the only UG environmental science field station in the nation.
- Only university in the state of SC offering an UG program in Nuclear Engineering & the only HBCU in the nation offering an UG program in Nuclear Engineering.
- Only HBCU in the nation offering the BS degree in physics with an option or concentration in Medical Physics

### About: Campus Infrastructure:

- Cisco three-layer hierarchical model with both 10GB & 40 GB backbone.
- Aruba Wireless Infrastructure

### About SCSU Cyberinfrastructure:

- Research Network:
- Connected to Clemson's C-Light Internet2 Network and Serve as a Point of Presence (POP) for other institutions to connect to Internet2.
- 1 Gbps Commodity Internet & 10 Gbps Internet 2
- 40/100 Gbps On-demand Science DMZs

### Collaborations:

- Participated in NSF CI EMPOWER initiative with other HBCU's which contributed to:
  - 2018 NSF Grant: CC\* Networking Infrastructure: Bulldog Connectivity and Research
  - Minority Serving – Cyberinfrastructure Consortium (MS-CC)



## **Cyberinfrastructure: Moving Beyond Broadband at HBCUs and TCUs**

**Thank you, Curtis!**

# Cyberinfrastructure: Moving Beyond Broadband at HBCUs and TCUs

## Deborah F. Dent, Ph.D. – CIO Jackson State University

July 15, 2020

### About JSU:

- Mr. Thomas Hudson, Acting President of Jackson State University
- Located in Jackson, Mississippi
- Carnegie Doctoral/Research Intensive public institution of higher learning
- Designated the Urban University of the State of Mississippi
- Fall 2019 Enrollment: 7020
- 1<sup>st</sup> Generation Students

### About: Campus Infrastructure:

- **Cloud-Based Enterprise** Systems (Online, ERP ...)
- **Commodity Network** (Non-Research) - 10GB backbone - upgrading to 40GB

### About JSU Cyberinfrastructure:

#### ➤ **Research Network:**

- Member of the Mississippi Optical Network (MissiON)
- 2 -10GB connections with MissiON which provides access to Internet 2.
  - Core equipment upgraded in 2018 with NSF grant funds.
  - 100GB backbone



#### ➤ **Collaborations:**

- Participated in NSF CI EMPOWER initiative with other HBCU's which contributed to:
  - 2018 NSF Grant: CC\* Networking Infrastructure: Jackson State University (JSU)-Research Network
  - Minority Serving - Cyberinfrastructure Consortium (MS-CC)

**Major Concern: Internet Access for Students & Employee Outside of Campus**





## **Cyberinfrastructure: Moving Beyond Broadband at HBCUs and TCUs**

**Thank you, Deborah!**



# TCUs: BROADBAND AND TRIBAL NATION-BUILDING

MINORITY BROADBAND INITIATIVE  
July 15, 2020



TRIBAL Colleges and Universities: *Educating, Engaging, Innovating, Sustaining, Honoring*

**NORTH DAKOTA**

Cankdeska Cikana Community College  
Nueta Hidatsa Sahnish College  
Sitting Bull College  
Turtle Mountain Community College  
United Tribes Technical College

**MONTANA**

Blackfeet Community College  
Chief Dull Knife College  
Aaniiih Nakoda College  
Fort Peck Community College  
Little Big Horn College  
Salish Kootenai College  
Stone Child College

**SOUTH DAKOTA**

Oglala Lakota College  
Sinte Gleska University  
Sisseton Wahpeton College  
Sitting Bull College

**IOWA**

Little Priest Tribal College

**MINNESOTA**

Fond du Lac Tribal and Community College  
Leech Lake Tribal College  
Red Lake Nation College  
White Earth Tribal and Community College

**WISCONSIN**

College of Menominee Nation  
Lac Courte Oreilles Ojibwa Community College

**MICHIGAN**

Bay Mills Community College  
Keweenaw Bay Ojibwa Community College  
Saginaw Chippewa Tribal College

**NEBRASKA**

Nebraska Indian Community College

**KANSAS**

Haskell Indian Nations University

**OKLAHOMA**

College of the Muscogee Nation

**NEW MEXICO**

Diné College  
Navajo Technical University  
Institute of American Indian Arts  
Southwestern Indian Polytechnic Institute

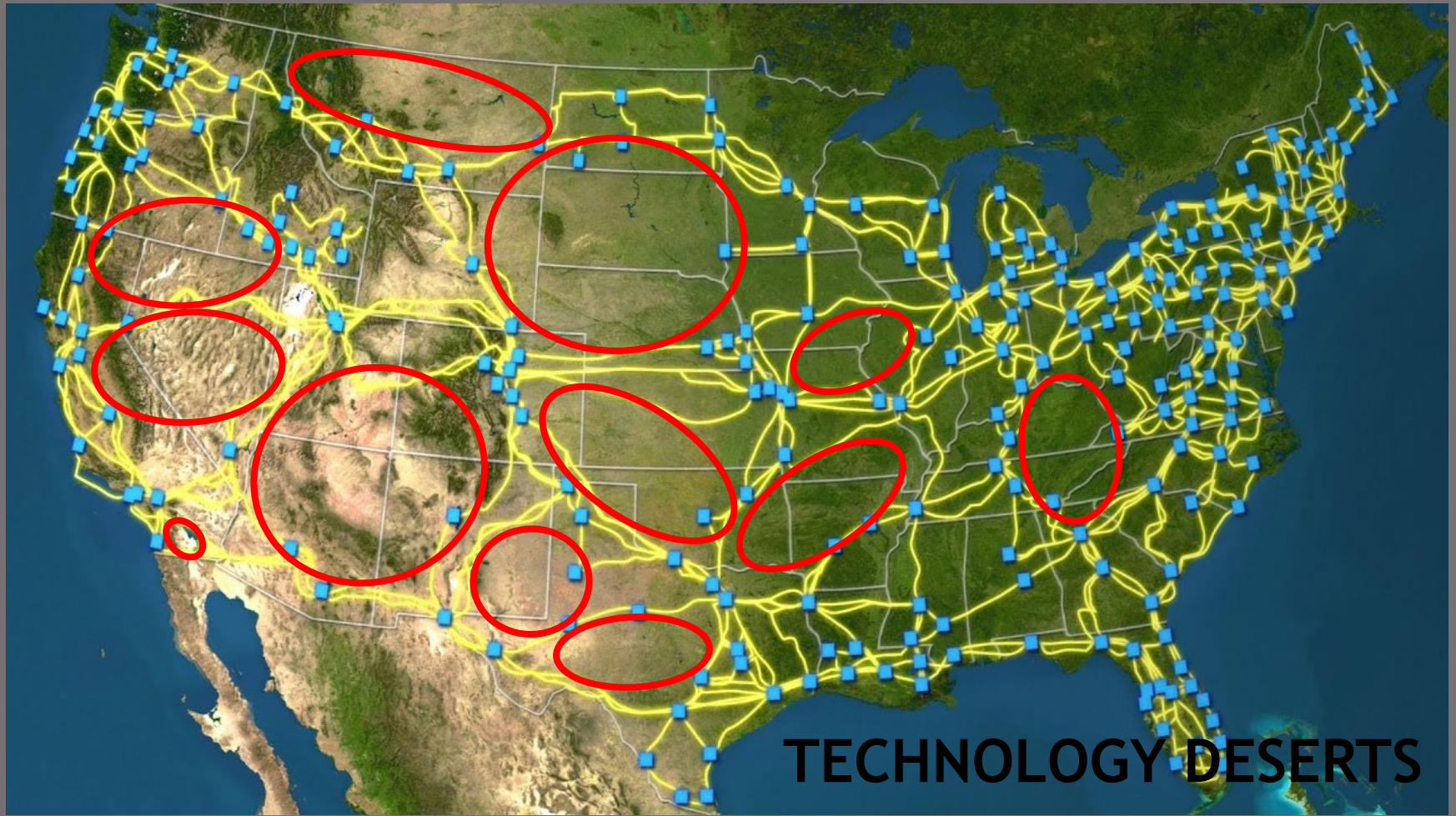
States whose AI students attend TCUs

## 2<sup>nd</sup> Circle of TCU Movement:

- **37 TCUs** – More than 75 sites in U.S. – 16 States
- **TCU students come from 30+ states**
- More than 230 federally recognized Indian Tribes are represented at TCUs
- New TCUs are emerging...



Access to the middle-mile is the hardest





# TCU Connectivity: **LOW** Compared to Rest of US IHE

	TCUs	2-year IHE	4-year IHE
Average Connectivity	<b>336 MBPS</b> Max: 1,060 MBPS Lowest: <b>6 MBPS</b>	<b>513 MBPS</b>	<b>3.5 GBPS</b>
Average Hardware Refresh Cycle	<b>8.29 years</b>	<b>3-5 years</b>	
Average TCU Internet Cost	<b>\$40,000/year</b> <b>Highest: \$250,000/year: Iñisagvik College</b> <b>Barrow, AK</b>		





# Tribal & TCU Broadband Partnerships



**Tribal IT Community of Practice:** TCUs, Tribal agencies and Tribal schools to share best practices

**Research Alternative Broadband Technologies:** focus on unique Tribal jurisdictional, geographic and economic constraints & opportunities

**Experimental Wireless Research Testbeds:** develop and support for broadband delivery to remote communities

**Collaborate on Infrastructure Development Projects:** USDA, Commerce and other federal agencies



## Questions?

AI Kuslikis – Senior Associate for Strategic Initiatives  
[akuslikis@aihec.org](mailto:akuslikis@aihec.org)



TRIBAL Colleges and Universities: *Educating, Engaging, Innovating, Sustaining, Honoring*



## **Cyberinfrastructure: Moving Beyond Broadband at HBCUs and TCUs**

**Thank you, AI!**



# HBCU-TCU COLLABORATION--PROMISING PRACTICES

- **Community of IT Practice** (regular webmeetings of MSI IT directors/CIOs to discuss common issues, strategies and projects)
- **Centralized IT services** (sharing DBA, other areas of technical support across multiple institutions)
- **IT professional development** training events open to multiple MSIs
- **IT equipment/software acquisitions** leveraging multiple MSI purchasing power to negotiate favorable pricing

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# BroadbandUSA

Thank you for attending.

Tune in for the next Practical Conversations Webinar

## Smart Agriculture

September 16, 2020

2:00 pm EST

Registration is required for each webinar:

<https://broadbandusa.ntia.doc.gov/event>

# BroadbandUSA is available to help communities with their broadband access and digital inclusion efforts

## For General Information:



202-482-2048



[broadbandusa@ntia.doc.gov](mailto:broadbandusa@ntia.doc.gov)



<https://broadbandusa.ntia.doc.gov/resources>

## To Request Technical Assistance (TA):



Broadband TA Request Form -  
<https://broadbandusa.ntia.doc.gov/ntia-common-content/how-we-can-help>

### **BBUSA Resources**

- [Implementing a Broadband Network Vision: A Toolkit for Local and Tribal Governments](#)
- [Community Broadband Roadmap Toolkit](#)
- [Guide to Federal Funding of Broadband Projects](#)
- [Using Partnerships to Power Smart Cities](#)