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April 20, 2018

VIA ELECTRONIC FILING

Marlene H. Dortch, Secretary  
Federal Communications Commission  
445 12th Street, S.W., Room TW-B204  
Washington, DC 20554

**Re: Notice of *Ex Parte* in WC Docket Nos. 02-60, 17-310, 02-6, 13-184**

Madam Secretary:

In accordance with Section 1.1206 of the Commission's rules, 47 C.F.R. § 1.1206, we hereby provide notice of a written and oral *ex parte* presentation in connection with the above-captioned proceedings. On Wednesday, April 18, 2018, the following met with Nirali Patel, Special Counsel to Chairman Pai: Jen Leasure, President and CEO of The Quilt, Mark Johnson from MCNC, Jeff Letourneau from Networkmaine, Chip Byers from the Missouri Research and Education Network (MOREnet), Pankaj Shah from the Lonestar Education and Research Network (LEARN), Dave Reese, Vice-President of CENIC, and undersigned counsel.

We discussed the importance of the E-rate and Rural Health Care universal service support mechanisms and provided examples of how The Quilt members utilize those programs to help bridge the digital divide and the rural broadband gap in their respective states. We noted the hardships caused by recent Rural Health Care funding cuts on health care providers that our members serve and expressed support for the emergency petition for waiver of the Rural Health Care Program funding cap recently filed by the Schools, Health & Libraries Broadband Coalition.<sup>1</sup>

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<sup>1</sup> See SHLB Coalition, [Emergency Petition For Waiver of The Rural Health Care Program Funding Cap Pending Conclusion Of The Open Rulemaking](#), WC Docket Nos. 02-60, 17-310, filed April 3, 2018.

Marlene H. Dortch, Secretary  
April 20, 2018

A copy of the materials we reviewed in the meeting are attached to this notice

Sincerely,

A handwritten signature in blue ink, appearing to read "Jeffrey A. Mitchell".

Jeffrey A. Mitchell  
Counsel to The Quilt

Attachment

# The Quilt

## A Collaboration of U.S. Research and Education Networks



THE QUILT



Through **The Quilt**, U.S. non-profit regional research and education networks collaborate to develop, deploy and operate advanced cyberinfrastructure that enables innovation in research and education.



**Quilt members** are our country's not-for-profit networking organizations serving research and education with similar missions to: support research and education, collaborate, manage advanced networks, provide advanced networking services and further knowledge and innovation.





# REGIONAL RESEARCH AND EDUCATION NETWORKS IN THE UNITED STATES



## QUILT MEMBERS AND AFFILIATES



THE QUILT

# ARE-ON

## Arkansas Research and Education Optical Network

THE QUILT



# Arkansas Research and Education Optical Network (ARE-ON)

- **Mission:** to promote, develop, and apply advanced application and communication technologies to support and enhance education, research, telehealth, and economic development.
- **Established:** 2006
- **Business Structure:** State entity governed by the presidents and chancellors of participating institutions in cooperation with the Arkansas Department of Higher Education

# ARE-ON OVERVIEW

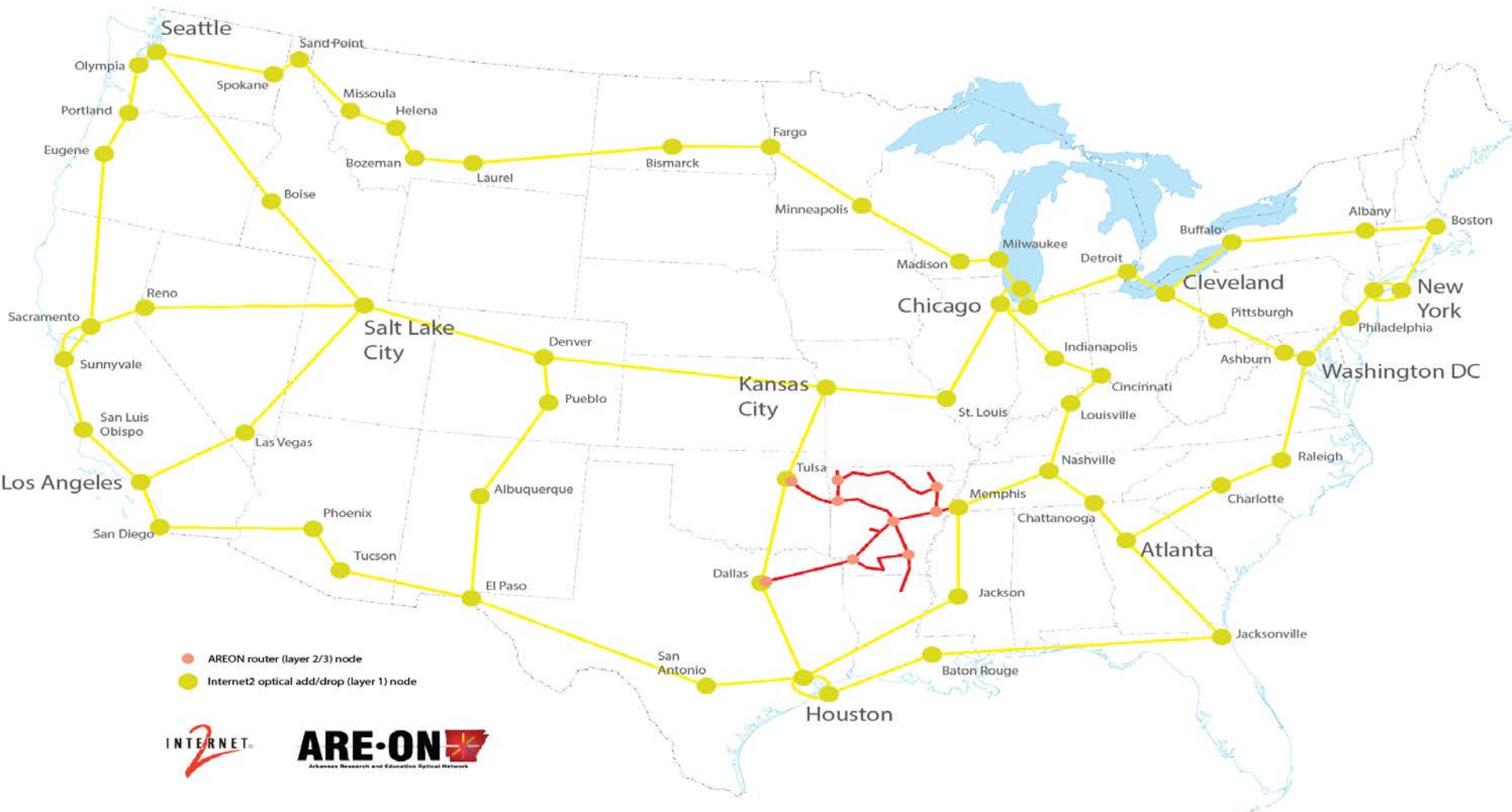
- Operate a 2,300 mile fiber optic network that connects 31 Higher Education Institutions
- Deliver unlimited Internet and Internet2 bandwidth to our members
- Provide a telemedicine backbone for the University of Arkansas Medical Sciences (Arkansas e-Link Network)



# ARE-ON Backbone



# ARE-ON Connections to Internet2



# ARE-ON OVERVIEW – Arkansas e-Link

- Comprised of 400+ hospitals, medical clinics, and mental health facilities
- Video access to 1000+ endpoints
- Telehealth training
- Arkansas SAVES (stroke), TRIUMPH (spinal cord injuries), ANGELS (high-risk obstetrics), Baptist Health eICU, Arkansas Heart Hospital cardiology clinics, RSPMI (behavioral health)

## Arkansas e-Link Capstone Metrics for 2017

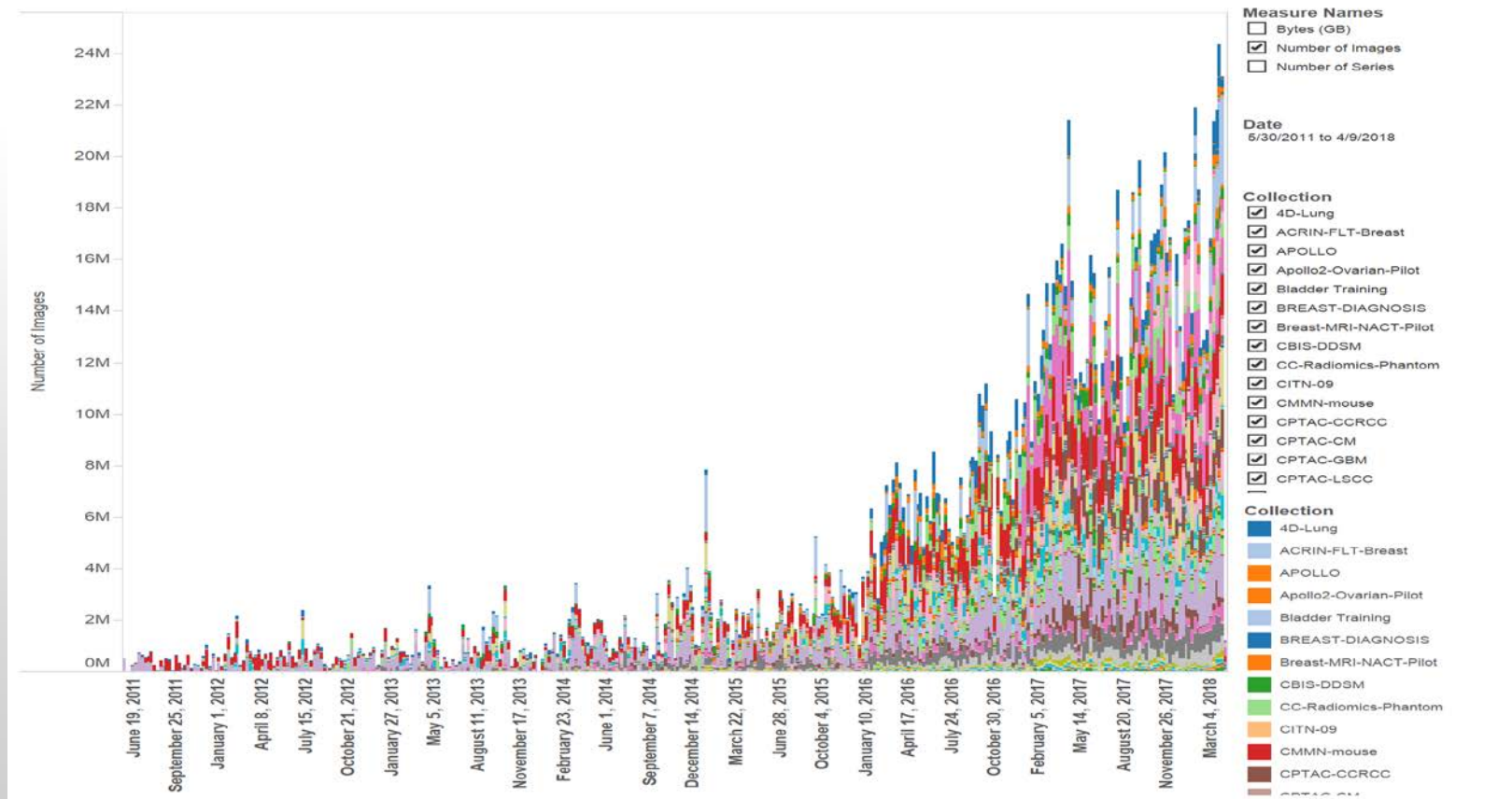
- Trauma Images Transmitted/Routed = 4,575,025 (each image could contain several hundred/thousand scans)
- Call Center Communications = 171,845
- Arkansas e-Link Telemed/Telehealth calls 213,569 representing 9,716,446 minutes of video
- AR Saves (Stroke) = 925 referrals representing t-PA administered (blood thinner) 304
- Language Interpreter Video Exchanges (patient to provider) = 10,131

# The Cancer Imaging Archive

- Large de-identified archive of cancer medical images available for public download
- Organized as “Collections”, typically patients related by common disease (e.g. lung cancer), image modality (MRI, CT, etc.), or research focus
- Supporting data related to the images such as patient outcomes, treatment details, genomics, pathology, and expert analyses are also provided when available

# The Cancer Imaging Archive - cancerimagingarchive.net

View last updated: 2018-04-09





# CENIC

## Corporation for Education Network Initiatives in California

THE QUILT



CENIC is a 501(c)(3) with the mission to advance education and research statewide by providing the world-class network essential for innovation, collaboration, and economic growth.

**CENIC Charter Associates:**

California K-12 System  
California Community Colleges  
California State University System  
Stanford, Caltech, USC  
University of California  
California Public Libraries  
Naval Postgraduate School



# 20,000,000 Californians use CENIC



**8,000+** miles of optical fiber

**Members in all 58 counties** connect via fiber-optic cable or leased circuits from telecom carriers

**Over 12,000 sites** connect to CENIC

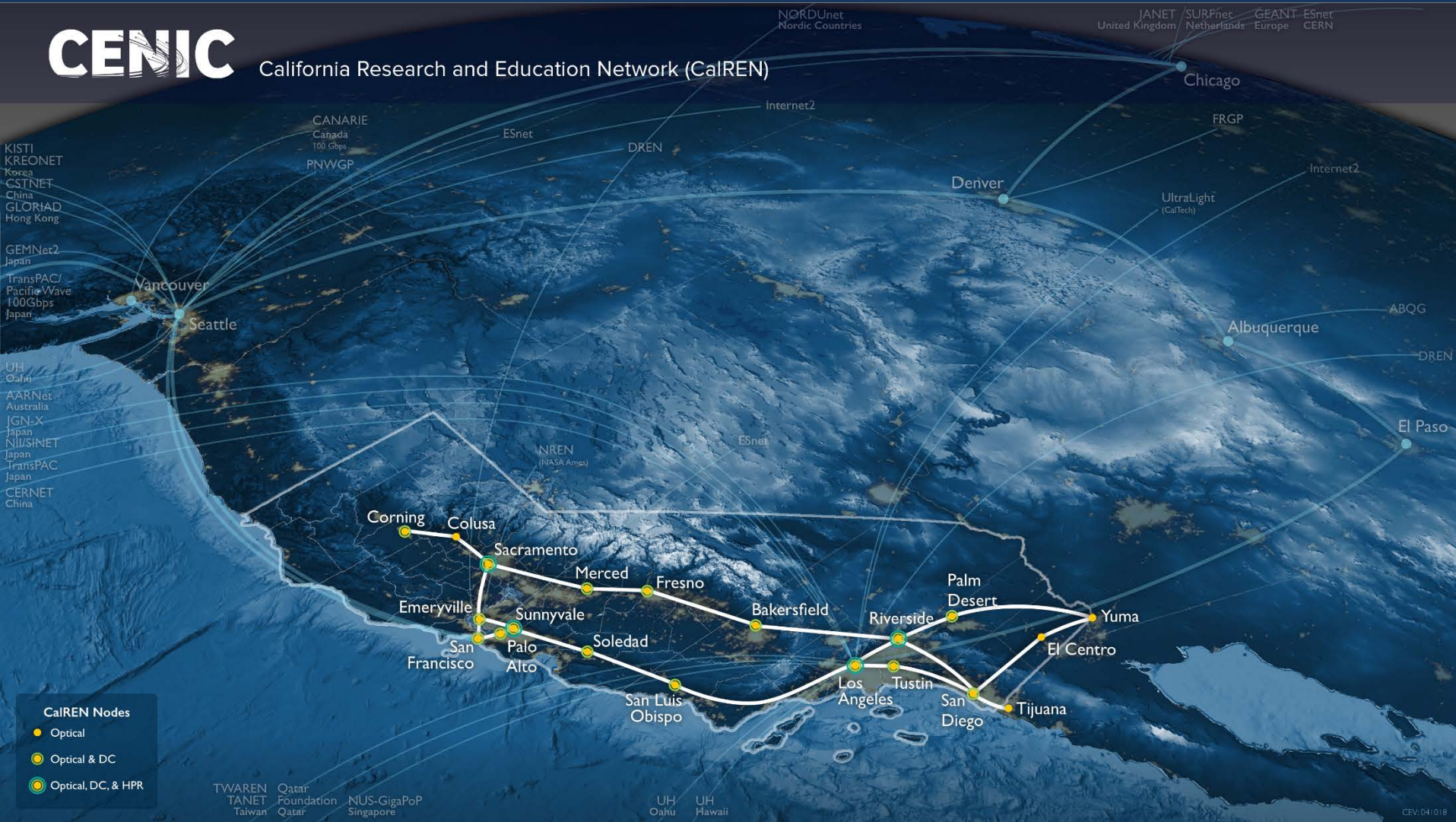
**Non-profit** governed by it's members

Collaborates with over **750 private sector partners** and **contributes > \$100,000,000** to the CA Economy

**20 years** of connecting California







# CENIC Broadband Initiatives for Libraries & K12

**Library Initiative:** Currently **800 public libraries** have been connected in this multi-year initiative; an additional 350 will be connected.

**Broadband Improvement Grant Program:** Over **350 schools** in some of the least well-connected rural regions of the state are now connected, most at 1Gbps (or higher).

*Both of these initiatives have significant commitments from the California state legislature, the Governor's office, and support from the California Public Utility Commissions California Teleconnect Fund. Both initiatives make use of e-rate subsidies, which are absolutely critical.*



# LEARN

## Lonestar Education and Research Network

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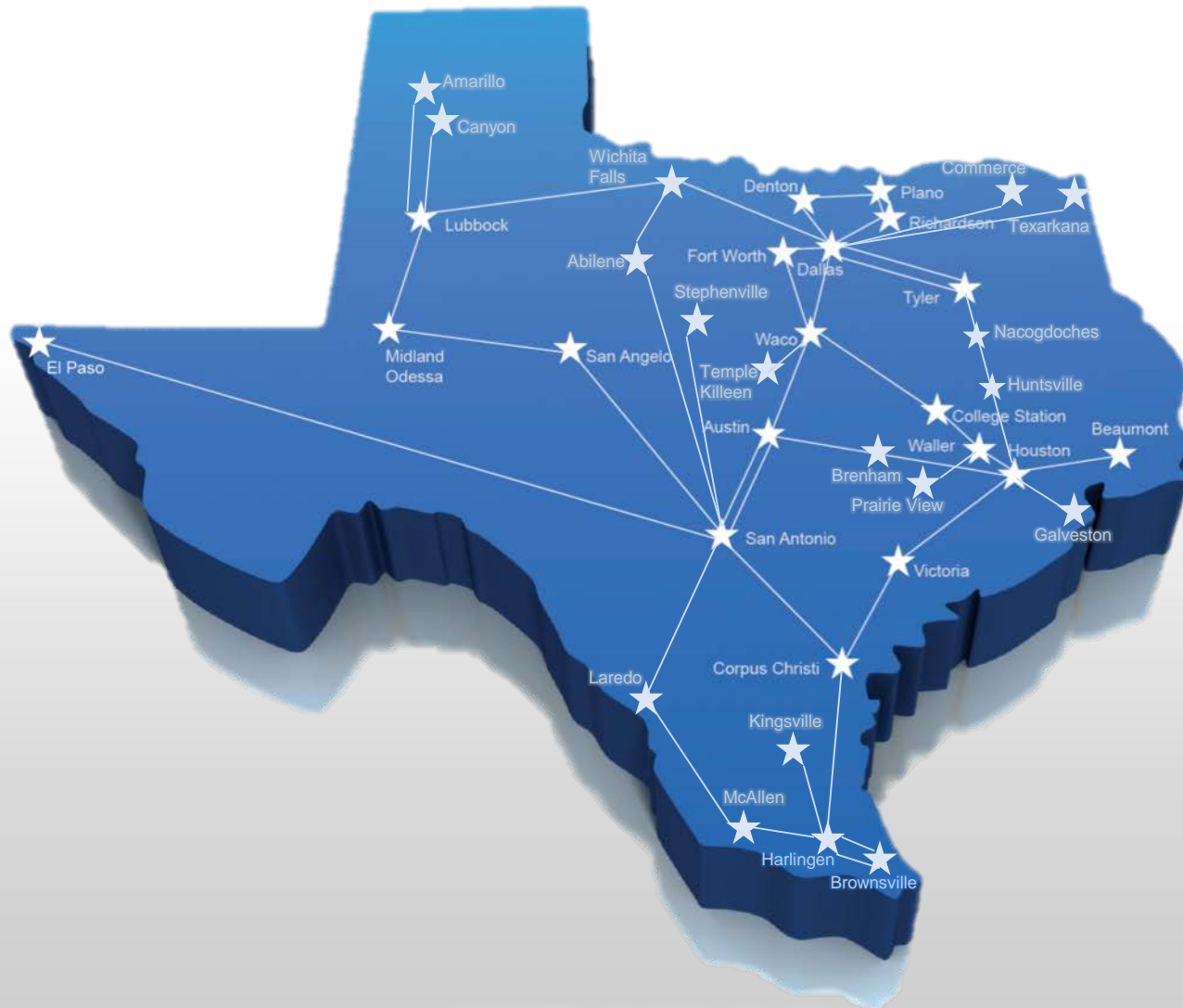
# LEARN – Who We Serve

- 520 K-12 Independent School Districts
- 20 K-12 Education Service Centers
- 5 University Systems
- 39 Universities & Colleges
- 12 Health Sciences Centers
- 20 Community Colleges
- 5 Libraries
- 2 National Weather Service & NOAA
- 3 Peer Regional R&E Networks
- 20 Cities, Counties & Other CAls

## LEARN's Mission

- Education
- Research
- Healthcare
- Public Service

# LEARN Backbone



# Texas Public Private Partnership – Summary

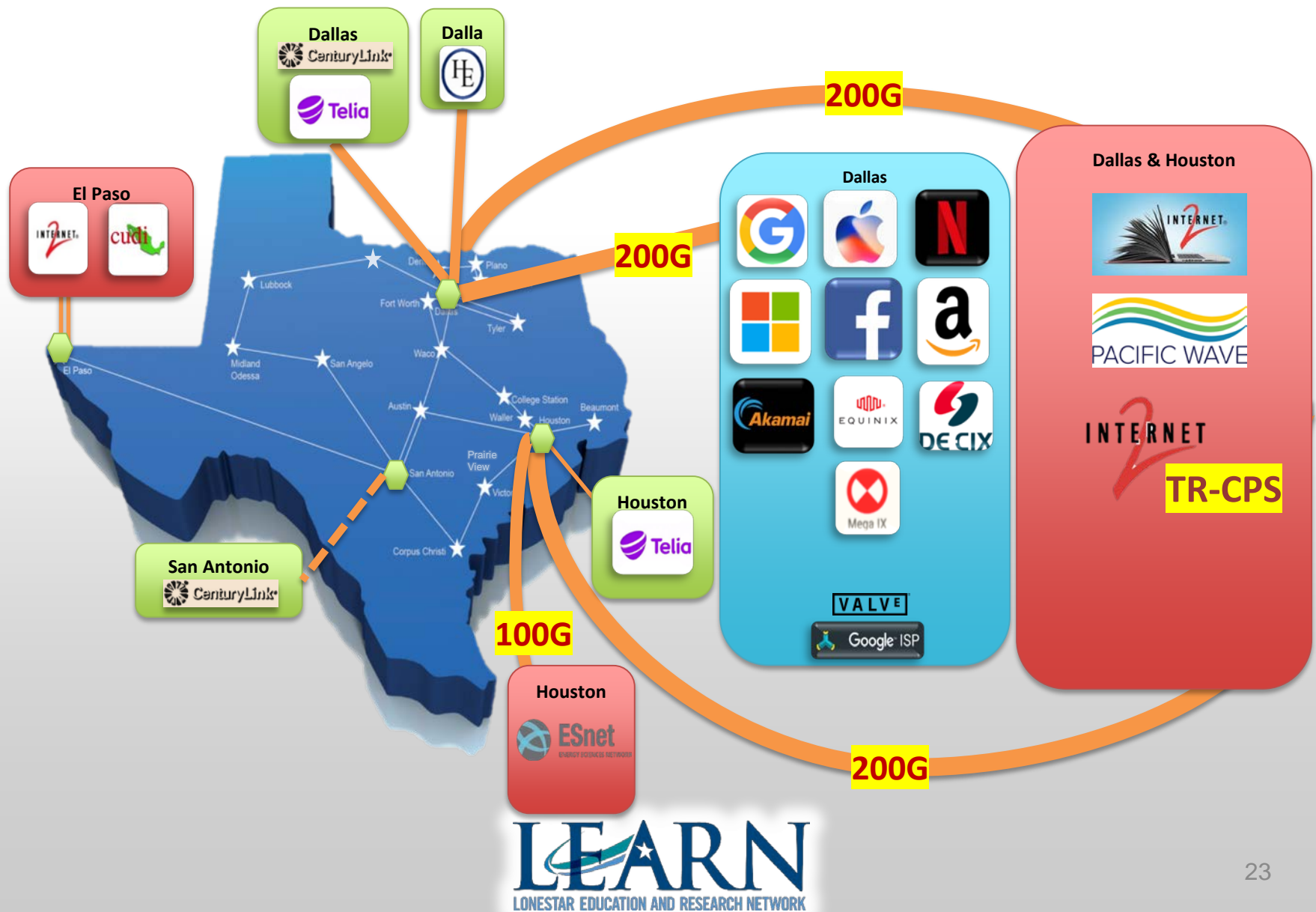
- The Lonestar Network (TLSN) & LEARN
- TLSN is a consortium of 41 Rural Telecommunications Carriers in Texas
- TLSN operates a member owned Statewide Optical Network for over 2 decades
- In 2008, TLSN members needed capital to upgrade its legacy network with new generation optical technology
- TLSN partnered with LEARN to enable 'new' optical DWDM network
  - 32 channel system deployed (16 ch for LEARN and 16 ch for TLSN)
  - 10 year term, with option to renew
- LEARN extended the contract for additional 5 years
- Cities and communities served: Wichita Falls, Lubbock, Midland, San Angelo
  - Surrounding Communities: Odessa, Amarillo, Alpine, & Abilene



## Expense spent with private sector since inception of LEARN equals over 72% of our total expenses (\$63.4M)

Fiber	9,843,211.00	15.523%
Equipment & Parts	10,530,137.93	16.606%
Fiber Maintenance & Circuits (including installations)	15,210,222.52	23.986%
Colocation	6,960,784.73	10.977%
Network Equipment Maintenance	3,268,002.33	5.154%
<b>Total</b>	<b>45,812,358.51</b>	<b>72.245%</b>

# LEARN Topology and Services



# MCNC

## North Carolina Research and Education Network

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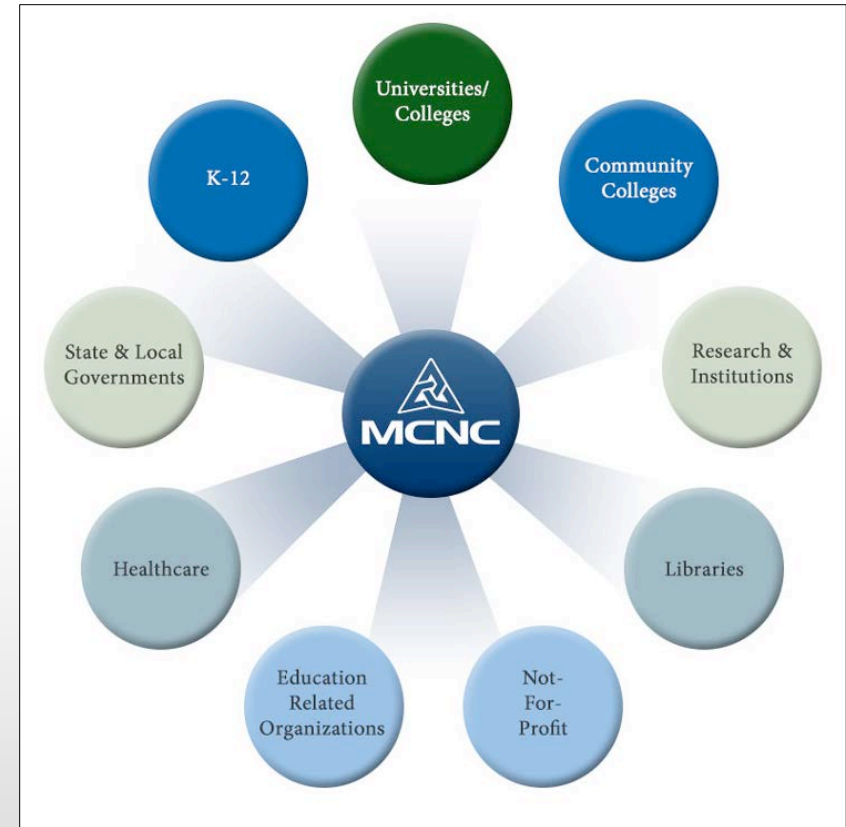


# MCNC: Connecting North Carolina's Future Today

- › **Mission: MCNC** is one of the nation's first statewide education and research networks. It provides broadband communications technology services and support to K-12 school districts, higher education campuses and academic research institutions across North Carolina.
- › **Established:** 1980
- › **Business Structure:** Non-profit organization governed by a Board of Directors

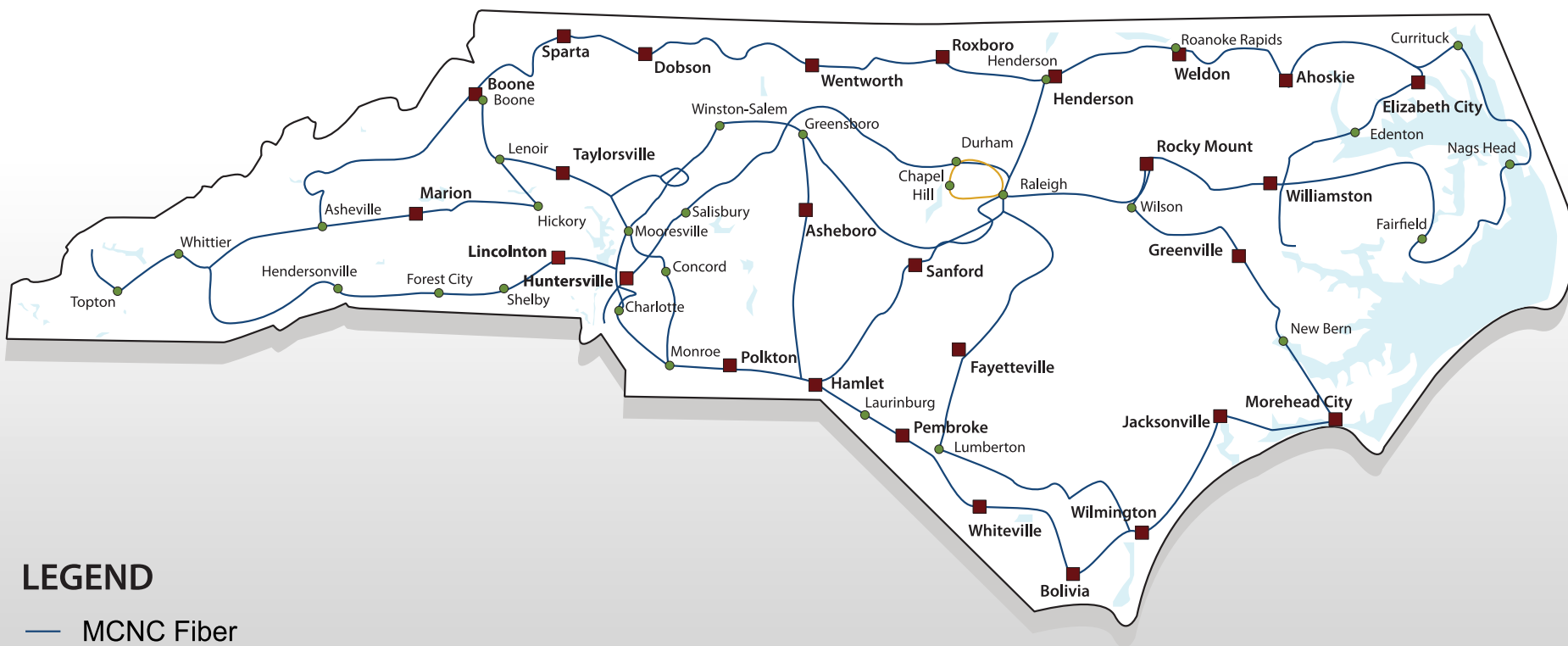
# Who We Serve...

- 17 UNC System Institutions
- 26 private colleges and universities
- 58 Community Colleges
- 115 Local Education Agencies
- (All School Districts)
- 135 Charter Schools
- Healthcare
  - 39 Hospitals (Non Profit)
  - 200 County Health Agencies and Free clinics
- RTI, NISS, NHC, Burroughs Welcome Fund, Bio Tech Center, other research institutions



# MCNC Fiber Infrastructure

Enabling the Operation of the North Carolina Research and Education Network



## LEGEND

- MCNC Fiber
- MCNC Co-location Facility
- MCNC Fiber (Triangle Ring)
- City

As of July 2017



**MCNC**  
Connecting North Carolina's Future Today

# MOREnet

## The Missouri Research and Education Network

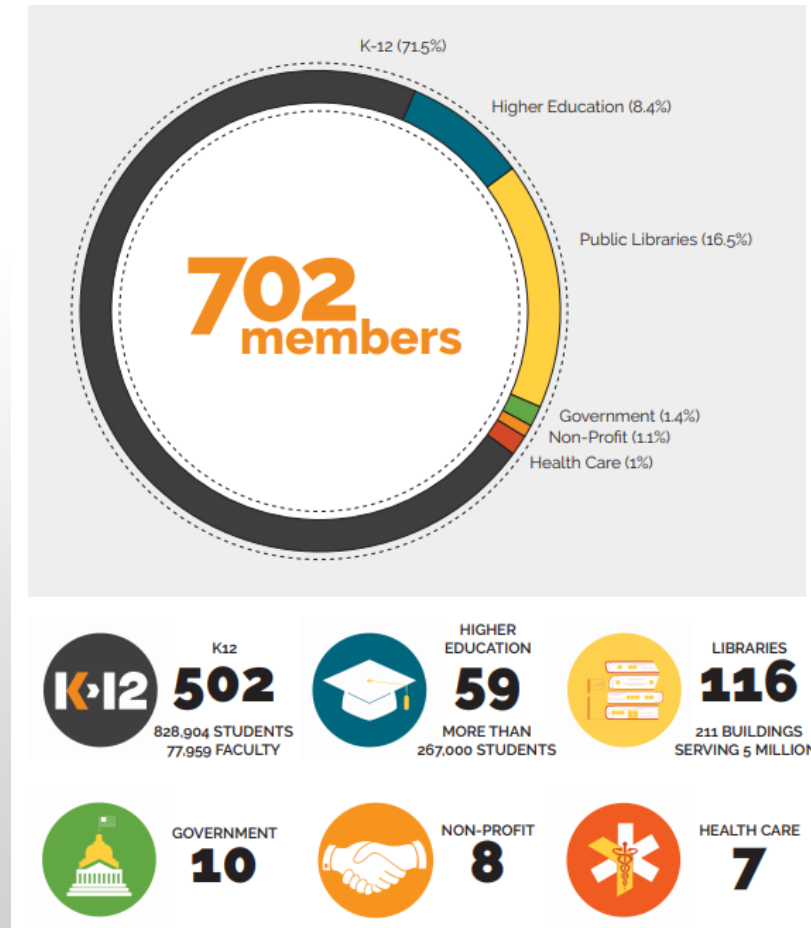
THE QUILT



# Missouri Research and Education Network

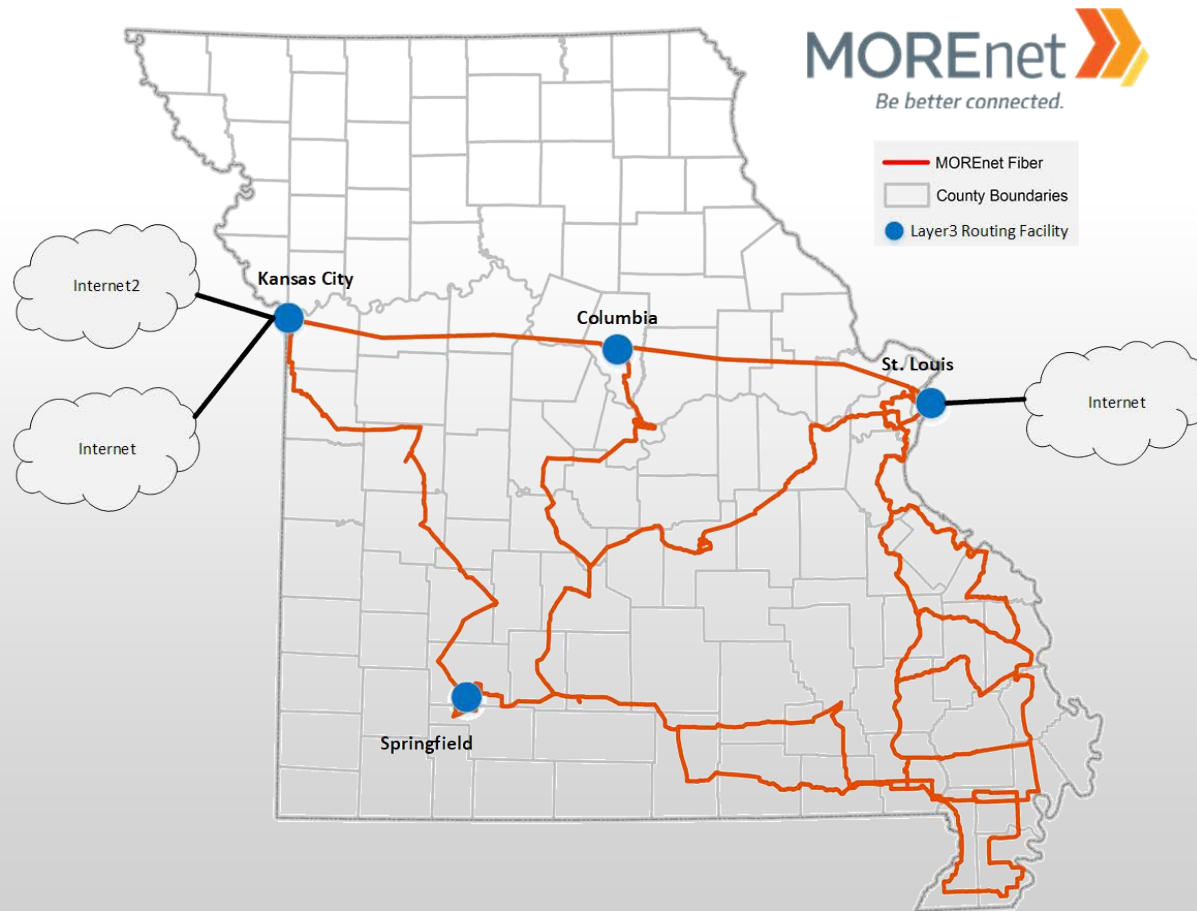
- › **Mission: MOREnet** provides Internet connectivity, access to Internet2, technical services, resources and support, as well as technical training to Missouri's public sector entities, including K-12 schools, colleges and universities, public libraries, health care, government and other affiliated organizations
- › **Established:** 1991
- › **Business Structure:** Operates as a department within the University of Missouri System

# MOREnet Membership





# MOREnet Backbone Network



# MOREnet Network

- Fiber Footprint
  - ~3,600 miles of fiber contracted via Indefeasible-Right-of-Use (IRU) agreement
  - 100Gbps Core backbone
  - 10Gbps Internet2 access
- Last-mile Connections
  - More than 650 circuits
  - Bandwidth ranges from 1.5Mbps to 100Gbps
  - 116.4Gbps aggregate capacity (last-mile)
  - 20% FY17 growth rate (19.4Gbps)

# Networkmaine

## Research and Education Network

### Maine School and Library Network

THE QUILT



NETWORKMAINE

# Networkmaine

- **Purpose:** To operate Maine's Regional Optical Network (MaineREN) and provide services in support of K-20 education, research, public service, government, and economic development.
- **Established:** 2009
- **Business Structure:** Operates as a unit within the University of Maine System

# Networkmaine – Who we are

- Networkmaine is a collaboration of the
  - University of Maine System
  - Maine State Library
  - Maine Department of Education
  - Maine State Office of Information Technology
- Created in 2009 to provide the public entities served with greater involvement in shaping the future of Maine's research and education network
- Current initiatives
  - MaineREN – State-wide facilities based optical network
  - MSLN – K12 and public Library Network
  - MLTI WiFi – Network services in K12 schools

# MaineREN

- Dark fiber based network connecting:
  - 7 UMaine System Institutions
  - 5 of 8 private colleges and universities
  - 3 private research institutions
  - Public television/radio
  - State government
  - K12 schools
  - Public libraries



# Maine School and Library Network (MSLN)

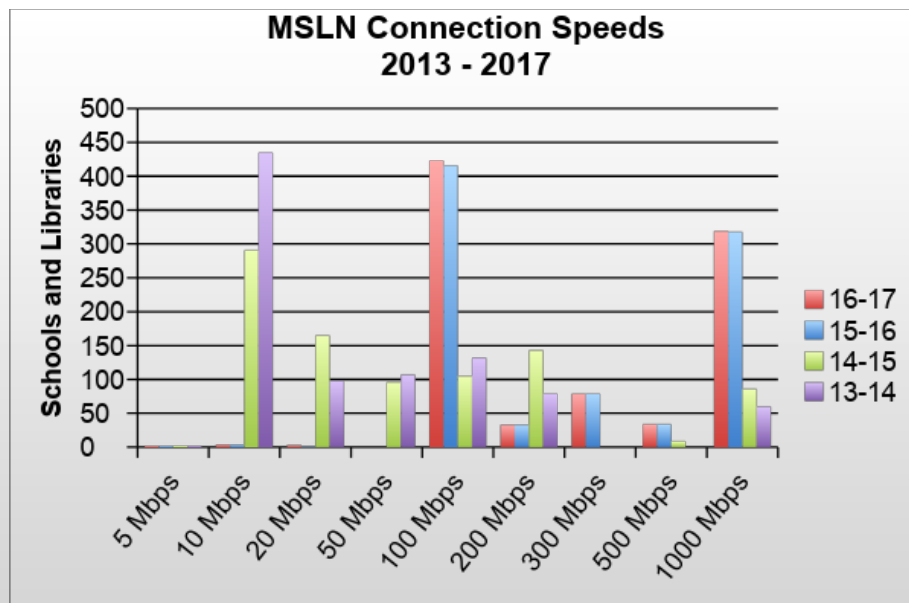
- 99% of K12 Schools
  - 118 districts containing 586 schools
  - 76 independent / private K12 schools

- 85% (225) of public libraries

- 99% of MSLN participants connected with fiber at 100 to 1000 Mbps
  - 4 schools and 3 libraries < 100Mbps

- Median monthly cost of Internet connection: \$3/Mbps

- Median bandwidth per student: 840Kbps



# Maine Learning Technology Initiative

- The Maine Learning Technology Initiative (MLTI) provides professional development and 21st Century tools to Maine's K-12 public schools to support the attainment of Maine's college and career readiness standards
- 100% 7th and 8th grade students and teachers
- 80% of 9<sup>th</sup> -12<sup>th</sup> grade students and teachers
- Over 80,000 teachers and students participate
- Networkmaine designed and now operates WiFi networks in 250 K12 schools in support of MLTI

# Networkmaine supports Rural Broadband

- Networkmaine has played an advocacy role in the deployment of broadband in Maine
  - Former UMS CIO - Chair of the ConnectME Authority
  - Executive Director - advisor to many municipal broadband initiatives
  - Viewed as thought leaders by state legislators and other policy makers
- OTO Fiber Corp. – Old Town, Orono, and the University formed 501(c)3 to deploy FttP infrastructure
  - Northern Border Region Commission grant funding initial buildout
- Networkmaine exploring rural libraries hosting fixed-wireless broadband
  - E-rate - cost allocation or forego?
- Networkmaine has participated in over a dozen USDA RUS/DLT grants.

# UETN

## Utah Education and Telehealth Network

THE QUILT



Utah Education and Telehealth Network

# Utah Education and Telehealth Network

## UETN

- **Purpose:** We connect people and technologies to improve education and healthcare in Utah.
- **Established:** 1989
- **Business Structure:** Administrative supervision provided by the University of Utah. The Utah Education and Telehealth Network Board, which is the governing board for UETN as outlined in state law.

# UETN Connects Utah's Community Anchors

Of the total CAIs in Utah, UEN connects:

- 100% of colleges and universities
- 100% of K-12 School Districts
- 58% of Public Libraries  
(connected to the UETN backbone)
- 70+ sites with Utah Telehealth Network  
(currently merging with the Utah Education Network)

UEN has largely accomplished the goal of providing 1 Gbps/1,000 students by deploying fiber-based WAN services to the urban K-12 schools. 88% of the public libraries that connect to UEN connect at speeds of at least 100Mbps.



# UETN Serves Education and Healthcare Statewide

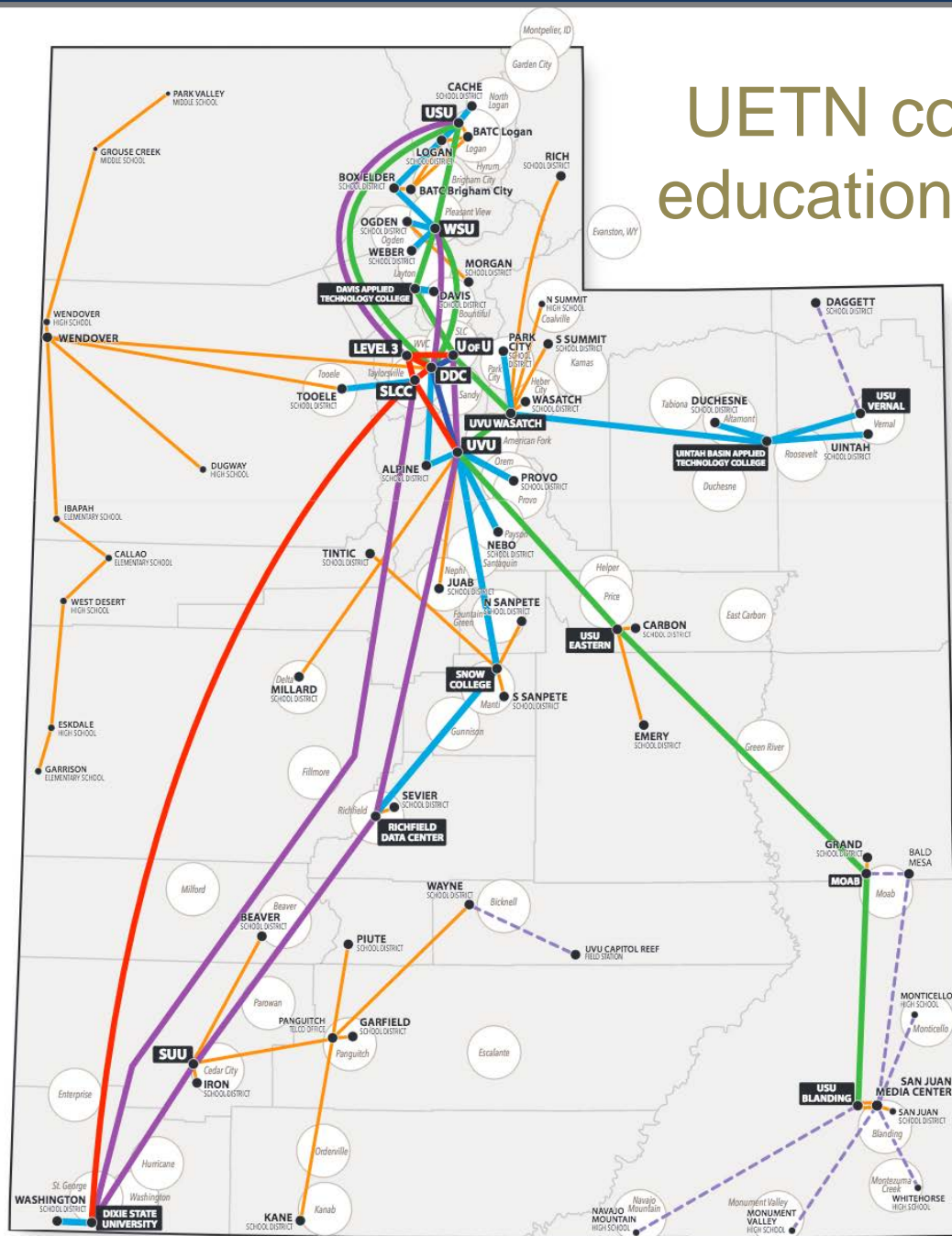
UETN SERVES:	AND ITS:	IN SUPPORT OF THEIR MISSION TO PROVIDE:
<u>Utah Public K-12 Education</u>	644,476 students 34,557 educators 1098 schools  <i>(USBE Fingertip Facts, 2016-2017)</i>	<ul style="list-style-type: none"><li>• Educational Equity</li><li>• Quality Learning</li><li>• System Values</li></ul> <i>(USBE Excellence for Each Student, 2017)</i>
<u>Utah System of Higher Education</u>	179,476 students 35,844 faculty and staff 8 institutions  <i>(USHE Data Book 2017)</i>	<ul style="list-style-type: none"><li>• Affordable Participation</li><li>• Timely Completion</li><li>• Innovative Discovery</li></ul> <i>(Utah: A State of Opportunity, USBR 2016)</i>

UETN SERVES:	AND ITS:	IN SUPPORT OF THEIR MISSION TO PROVIDE:
<p><u>Utah System of Technical Colleges</u></p>	<p>38,985 students 14,029 trainees 8 technical colleges</p> <p><i>(Annual Report, 2016)</i></p>	<ul style="list-style-type: none"> <li>• Technically-skilled workers to Utah employers</li> <li>• Promotion of local and statewide economic development</li> <li>• Market-driven technical education</li> </ul> <p><i>(Annual Report, 2016)</i></p>
<p><u>Utah Public Libraries</u></p>	<p>135 public libraries and branches Serving 3 million Utahns</p> <p><i>(Utah State Library Division, 2016)</i></p>	<ul style="list-style-type: none"> <li>• Development, leadership and delivery of exceptional library services</li> </ul> <p><i>(Utah State Library Division, 2016)</i></p>
<p><u>Rural and Urban Healthcare</u></p>	<p>More than 70 hospitals, clinics, and health departments</p> <p><i>(UTN Site List, 2016)</i></p>	<ul style="list-style-type: none"> <li>• Access and availability</li> <li>• Care, disease prevention and promotion of wellness</li> <li>• Efficient use of resources</li> </ul> <p><i>(UTN member mission statements, 2016)</i></p>

# UEN Value Proposition

- UEN has implemented high speed “future-proof” WAN connections for all schools and nearly all library community anchor locations in the state.
- The statewide WAN makes use of leased private carrier infrastructure for connections and UEN has been successful in expanding fiber into costly and hard to serve rural areas
- UEN is responsible for the first (backbone) and middle (aggregation) mile portion of the network as well as the vast majority of last-mile network connections, funding, and management.

# UETN connects 1500+ sites education and telehealth sites



Name	COMMUNITIES SERVED BY UTAH TELEHEALTH NETWORK (UTN)
<span style="color: red;">—</span>	100 GIGABITS/SECOND BACKBONE
<span style="color: blue;">—</span>	40 GIGABITS/SECOND BACKBONE
<span style="color: purple;">—</span>	20 GIGABITS/SECOND BACKBONE
<span style="color: green;">—</span>	10 GIGABITS/SECOND BACKBONE
<span style="color: cyan;">—</span>	10 GIGABITS/SECOND ETHERNET
<span style="color: orange;">—</span>	1 GIGABIT/SECOND ETHERNET
<span style="color: purple;">- - -</span>	200 MEGABITS/SECOND ETHERNET MICROWAVE
NAME	POINT OF PRESENCE (POP)



Utah Education and Telehealth Network

# Utah's Master Plan – [uen.org/digital-learning](http://uen.org/digital-learning)

## UTAH'S MASTER PLAN



## ESSENTIAL ELEMENTS FOR TECHNOLOGY- POWERED LEARNING

COMMUNICATION ★ TECHNICAL SUPPORT ★ INSTRUCTIONAL DESIGN  
INFRASTRUCTURE ★ PROJECT MANAGEMENT ★ DEVICE & SOFTWARE  
PROFESSIONAL DEVELOPMENT ★ POLICY & PROCEDURE ★ PROCUREMENT  
DIGITAL CONTENT ★ RESEARCH & PROGRAM METRICS ★ LEADERSHIP

## STATEMENTS OF SUPPORT

"The Essential Elements plan aggregates some of the best thinking of Utah leaders and others throughout the nation. In my roles as a member of the Task Force, a member of the UETN Board and as IT director of the Jordan School District, I support this vision of elevating learning opportunities for students of Utah."

**CINDY NAGASAWA-CRUZ**, Information Technology Director, Jordan School District; Board Member, UETN

"The Utah Digital Teaching and Learning Task Force has thoroughly explored pertinent issues and has created a fair and equitable plan that I support. I encourage all concerned to read the plan and consider lending their support."

**BRYAN BOWLES**, Superintendent, Davis School District

"By providing this funding through a qualifying grant program, each district and charter school has the opportunity to craft its own unique application that will uniquely benefit its students. There is no one-size-fits-all in this plan."

**BEN DALTON**, Superintendent, Garfield School District

"Schools throughout Utah are already looking for ways to improve student learning through technology. They want to finish what they started, and this plan provides them with the needed support and funding."

**TERRY SHOEMAKER**, Superintendent, Wasatch School District

"As a former Utah school superintendent and current CEO of UETN, I believe the master plan is well-suited to both urban and rural schools. Students, educators and the public all stand to benefit. I highly recommend that the state move forward with this initiative."

**RAY TIMOTHY**, CEO and Executive Director, Utah Education and Telehealth Network

"I'm impressed with the collaborative nature of this plan and the hard work that each Task Force member has put into the initiative. We have utilized knowledge from experts around the state to create a document that has great potential for success."

**FRED DONALDSON**, Executive Administrator, DaVinci Academy of Science and the Arts

"There are few opportunities for change that are truly transformative in public education. The use of technology to change the delivery of instruction culture and improve the teaching craft is one such opportunity. The Utah Master Plan, Essential Elements for Technology Powered Learning, is our opportunity to transform Utah."

**DAVID L. THOMAS**, Chair, Digital Teaching and Learning Task Force; Vice Chair, Utah State Board of Education

"It has been an honor to serve on the Digital Teaching and Learning Task Force. The time has been well spent collaborating on the vision and direction for 21st century schools in Utah. It is exciting to visualize and support the future for Utah education."

**RICK L. ROBINS**, Superintendent, Juab School District

"As Tooele School District's Director of Information Technology, I am very comfortable with this plan and the direction of the Digital Teaching and Learning Task Force. Additionally, the Utah Technology Coordinator's Council has endorsed the plan and intends to lend its full support."

**JIM N. LANGSTON**, Director of Information Technology, Tooele County School District

[uen.org/digital-learning](http://uen.org/digital-learning)



Utah Education and Telehealth Network

# Contact Information

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