



THE
QUILT CIRCLE

**Advanced Regional Networks in Support
of Research and Education**

2026

A Letter From the President

It is my pleasure to welcome you to the 2026 edition of Quilt Circle, where we celebrate the extraordinary and impactful work of our Quilt members, the non-profit regional research and education networks serving community anchor institutions across the country. This collection of stories reflects the depth and impact of Quilt our community grounded in collaboration, innovation, and public service. I hope you enjoy this compilation of Quilt members demonstrating the broad value of their work.

A defining theme throughout this year's edition is connection in action. Across the country, Quilt members are advancing infrastructure and partnerships that enable research, education, and community impact. Artificial intelligence, data-intensive science, cybersecurity, and emerging areas such as quantum networking and computing continue to reshape the demands placed on our networks. In this year's stories, you will see how members are supporting AI-driven innovation, strengthening cybersecurity capabilities, exploring quantum-ready infrastructure, expanding high-performance computing capacity, extending middle-mile connectivity, and deploying next-generation network capabilities, all to prepare our future workforce and enable new discovery.

Equally important is the role of partnership. Quilt members are working together, alongside their member institutions, communities, and national collaborators, to extend the reach and impact of our infrastructure and service capabilities. Whether through multi-state collaborations, coordinated cybersecurity efforts, support for healthcare and biomedical innovation, or partnerships with libraries and public health clinics to close the digital divide, these efforts highlight the essential role RENS play as trusted connectors and stewards of resilient, forward-looking infrastructure.

This edition also highlights important milestones across our membership, with several organizations celebrating decades of service and impact. These milestone celebrations are reminders of a sustained commitment to evolving alongside the needs of the institutions and communities we serve. Across all these stories is a shared purpose to address real-world challenges and expand opportunity.

The role of research and education networks has never been more important. As the pace of technological change continues to accelerate, so does the need for trusted infrastructure, strong partnerships, and a connected national research and education community. Together, we are uniquely positioned to meet this moment and ensure that institutions of all sizes can participate, innovate, and thrive in this digital age.

Thank you to our members, partners, and contributors whose support and leadership continues to move this community forward.

Warm Regards,



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President and CEO

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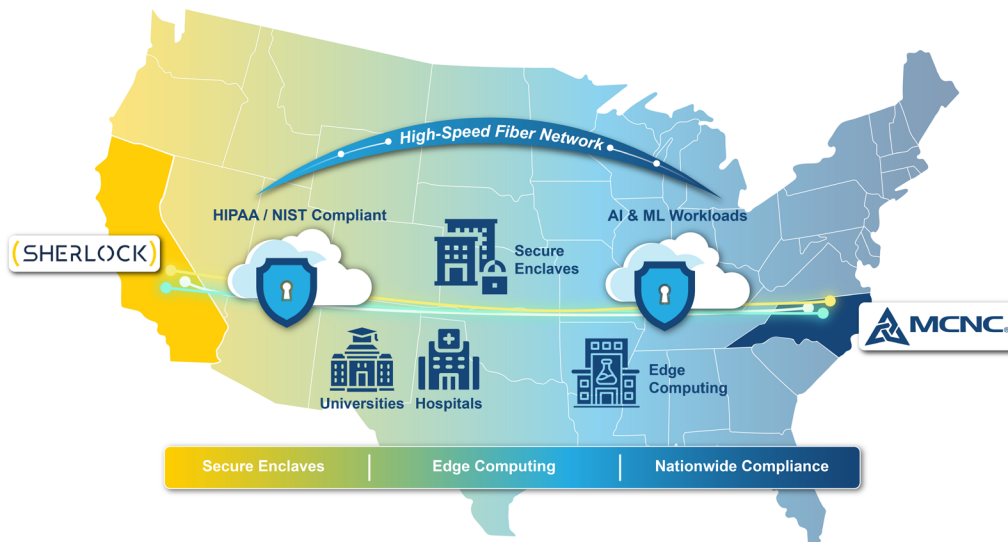
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MCNC and Sherlock building blueprint for secure research clouds



A coast-to-coast blueprint for secure, compliant research cloud services.

A hybrid reality is redefining today's research and academic landscape, where traditional data centers meet the expansive potential of the cloud. For many higher education institutions, the cost and complexity of building compliant, secure environments remains a significant barrier. A groundbreaking partnership between the San Diego Supercomputer Center's (SDSC) Sherlock and MCNC is changing that narrative, offering a turnkey model for RENs across the country to deliver secure cloud enclaves at a fraction of the traditional cost.

Middle Mile to Maximum Value

MCNC continues to evolve into a strategic powerhouse of value-added technology services. An element of this evolution is the integration of Sherlock – marrying its proven regulatory compliance framework and cloud computing capabilities with DataMorph's powerful data engineering platform, and MCNC's extensive high-speed network to provide secure cloud and data solutions to more than 1,000 diverse institutions that MCNC currently serves in North Carolina. MCNC Vice President of Business Development Phil Emer explains

that this partnership allows MCNC to move "further faster" by embedding elite security intelligence directly into the DNA of its research and education network infrastructure.

"We're excited about this relationship," added Emer. "What sets this apart is its forward-looking structure. By duplicating Sherlock's existing capabilities within MCNC's local footprint, it creates a cost-conscious, independent secure enclave that MCNC will eventually be able to manage autonomously."

Enclaves at the Edge

At the heart of this project are secure research enclaves – protected environments specifically designed for sensitive data collection and analysis. These enclaves are essential for meeting stringent compliance standards like HIPAA and NIST. By deploying these capabilities at the "edge" of the network (closer to where the data is generated at hospitals, labs and universities within the REN), these institutions will be able to process AI and machine learning

workloads with lower latency and higher security. The Sherlock-MCNC model proves these environments solve the latency versus security trade-off and are not prohibitively expensive to build.

"Our work with Sherlock is allowing MCNC to build a neutral, high-trust environment that ensures critical data remains protected and research thrives - empowering our community to collaborate fearlessly for the greater good."

Tracy Doaks,
MCNC President and CEO

Infrastructure of Opportunity

This collaboration reimagines MCNC's infrastructure – shifting from a standard internet provider to a dynamic hub of data-driven knowledge and fortified security. The true measure of this project lies in its research throughput and the guarantee of longitudinal data availability. By providing a stable and secure ecosystem, researchers will be able to access and analyze critical datasets over decades, not just days.

"This work with MCNC marks a turning point in research and education infrastructure," said Sherlock Executive Director Sandeep Chandra. "By sharing services and expertise, this will establish a strategic coast-to-coast blueprint for the evolution of the modern REN."

MCNC is a non-profit, client-focused technology organization. Founded in 1980, MCNC owns and operates one of America's longest-running regional research and education networks. With 45 years of innovation, MCNC continues to provide high-performance services for education, research, libraries, health care, public safety, and other community anchor institutions throughout North Carolina. Visit www.mcnc.org.

MDREN democratizing HPC with Advanced Computing Infrastructure Pilot

The Maryland Research and Education Network (MDREN), in partnership with the University of Maryland, Baltimore (UMB) and the University of Maryland, College Park (UMCP), launched the Sharing Advanced Computing Infrastructure Pilot in August 2025. The pilot is scheduled to run through June 2026 to evaluate whether shared advanced computing services can be delivered systemwide in a cost-effective manner.

High performance computing, or HPC, has become essential for modern research – from climate modeling and genomics to AI and materials science. This initiative demonstrates how regional research and education networks can expand beyond connectivity into enabling advanced digital capabilities and shared services. By aligning infrastructure and governance across institutions, MDREN’s pilot positions Maryland as a national model for scaling HPC access equitably across diverse academic environments while ensuring that the entire University System of Maryland (USM) benefits from shared resources and talent across institutions.

“Data generation now outpaces our capacity to analyze it, making HPC a critical component of discovery,” noted UMB’s Dr. Dan Reed. “At this early stage of AI adoption, we are seeing that most institutions lack HPC infrastructure, funding, or support personnel to keep pace.”

Through prior NSF-supported engagements, MDREN identified a recurring challenge where many non-R1 campuses often lack modern advanced computing infrastructure that also had consistent system-level support. This pilot directly addresses those gaps. In addition to computing power, the pilot also evaluates operational requirements, including identity integration, onboarding and offboarding processes, governance structures, training needs, and sustainable cost sharing.

This initiative provides researchers, instructors, and students at the University of Maryland Center for Environmental Science



(UMCES), Towson University (TU), Bowie State University (BSU), and the University of Maryland Eastern Shore (UMES) with access to enterprise grade HPC resources at both UMB and UMCP. The clusters at UMCP provide substantial infrastructure for research activities and quantum initiatives. In addition, UMB has maintained a reliable HPC environment for both research and educational purposes since 2008.

At the mid-point of the pilot, participants included “big data” researchers from disciplines ranging from astronomical modeling to wildlife behavior in the Chesapeake Bay. They also observed faculty

utilizing HPC resources to support instruction in machine learning, neural networks, and the development of large language models.

The goal is to create a scalable model that will strengthen the state’s research ecosystem and maximize public investments. The pilot will also explore MDREN’s role as a research facilitator for smaller institutions, addressing both technical and logistical aspects. Ultimately, this pilot serves as a blueprint for a more inclusive future, ensuring that the next generation of Maryland’s scientists and innovators have the computational power they need to solve the world’s most complex challenges.

The Maryland Research and Education Network (MDREN) provides advanced network services to institutions throughout the State of Maryland and connections to regional and national resources. Visit <https://www.mdren.net/>

WiscNet’s cyberattack simulator prepares K-12 staff in Wisconsin

Something’s gone wrong at Sudden Valley Area Public Schools.

It’s 6:22 a.m. and payroll systems are failing to load. Email is spotty. Food service menus aren’t syncing.

Then, a ransomware note appears: “Your network has been secured by us. Encrypted systems. Encrypted backups. We are professionals. Do not interfere.”

You select your role within a cross-functional incident response team, and it’s up to you to decide your next move that will determine how the school day proceeds while dealing with a cyberattack at the fictional Sudden Valley schools. Mr. Pixels and Steve (we’ll introduce them later) are there to help guide your decision-making as the morning progresses.

This scenario – presented by the GPT-powered WiscNet Cybersecurity Tabletop – is part of a professional learning simulation and interactive storytelling tool that uses personalized, inspired-by-real-life scenarios and a little bit of humor to prepare K-12 staff for cyberattacks.

“My goal was to make a game about a ransomware situation that would require a full response,” said John Pederson, WiscNet’s director of innovation and strategy.

The tabletop’s content is generated by OpenAI GPT-5, which Pederson configured using a set of natural-language instructions to create a gamified experience. Along with his written instructions – which took about three months of initial drafting and are continually in development – Pederson uploaded to GPT the NIST Cybersecurity Framework 2.0, the standard guidance for managing cybersecurity risks.

Some details in this simulator were inspired by an actual ransomware attack that took

place at a tech college in 2019. Pederson wanted to make sure it felt real.

“It does happen in most cybersecurity response situations that somebody will be gone, or somebody won’t know their role, or you’ll need to go to a backup for whatever reason,” Pederson said.

For WiscNet members who need cybersecurity help beyond a training exercise, the tabletop directs users to WiscNet’s Chief Information Security Officer Jason Downey, who is an expert with 25 years of cybersecurity experience. He weekly hosts virtual CISO hours that offer 1:1 cybersecurity counseling for WiscNet members.

The tabletop can be played within a group or individually, and at one point in the exercise, there’s a die roll that introduces an element of chance, mirroring unknowable variables that present themselves during a real attack, like staff panic or further tech failure. The user is asked how to respond at several points during the simulation.

“There’s no right answer for a cybersecurity response,” Pederson said. “What you can do is be prepared, and in this case, he wanted to make preparation fun. Mr. Pixels and Steve are your simulation companions throughout the entire exercise, cheering you on and redirecting you if one of your decisions might send you down a more complicated path.”

Pederson made these two characters – Mr. Pixels is a creative storyteller who is also a chimpanzee, and Steve is a no-nonsense

capibara with cybersecurity incident response expertise – to engage users and add levity to a serious scenario. “This gives it a little bit of personality, a little bit of narrative, a little bit of background, and it lets people use AI – a tool they’re going to use now for a long time in a lot of different ways,” Pederson added.

Pederson said he would love to move AI projects such as the cybersecurity tabletop onto independent hardware, which touches on one of his much larger initiatives: developing pathways to build infrastructure needed to support AI in the future.

“The end goal for me in the rest of my career ... is setting up member organizations in ways that kind of bridge the gap between what the higher eds have in those big science labs and what a K-12 student might use in a computer science class in high school,” Pederson says.



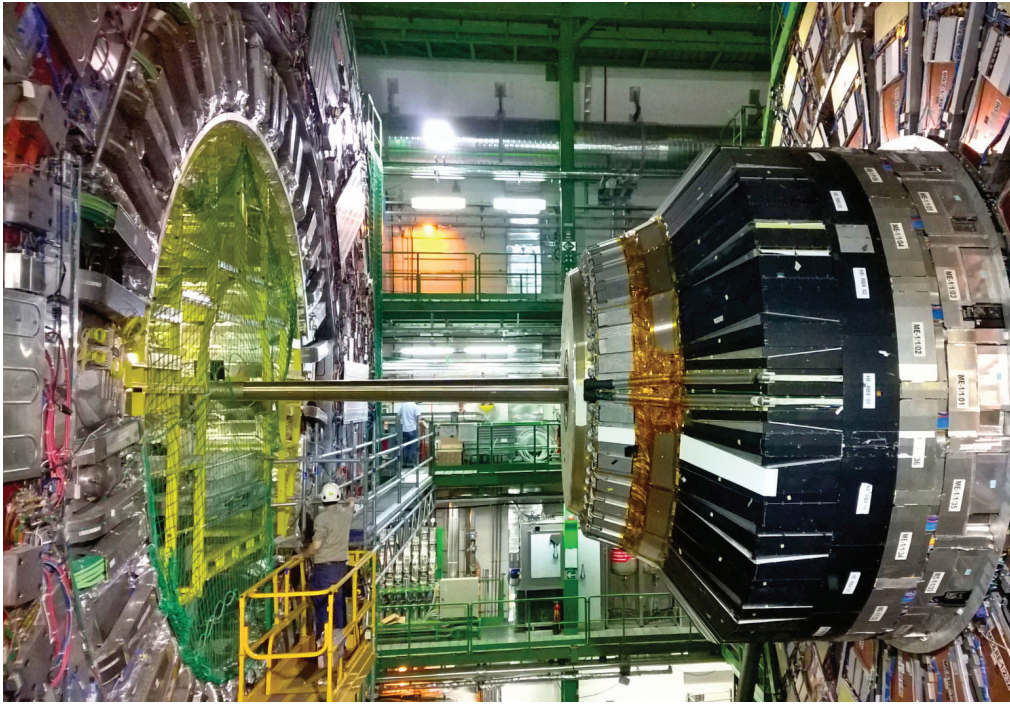
WiscNet
Connecting People and Strategies



Mr. Pixels (left) and Steve (right) are the AI guides through the WiscNet Cybersecurity Tabletop exercise (and they crack a few jokes along the way, too).

WiscNet is a non-profit membership organization that provides research and education networking services to public and private higher education, K-12 school districts, libraries, municipalities, and hospitals throughout Wisconsin. We connect people and strategies to solve common technology challenges and to develop innovative solutions in support of educational, research, and community service missions. Visit <http://wiscnet.net/>

800G per second! UMass Amherst advances next-gen research networking



The Large Hadron Collider at CERN, used for experiments with massive research datasets sent across networks like NET2.

What does it take to move scientific data at speeds fast enough to support breakthroughs in particle physics, genomics, climate modeling, and space science? At UMass Amherst, the answer increasingly lies in building and sharing next-generation research networking infrastructure.

Over the past year, UMass Amherst Information Technology has dramatically scaled its high-performance research capabilities through NET2, a high-capacity network built to support data-intensive, collaborative science. In early 2025, the network was capable of moving data at speeds of up to 400G per second. By the end of the year, that total had doubled to 800G.

This capability was showcased on a national stage at SC25, the world's leading supercomputing conference, where UMass collaborated with partners to demonstrate how ultra-high-speed networks have the power to transform data-intensive science.

Led by Rafael Coelho Lopes de Sá, a principal investigator in UMass Amherst's Department of Physics, the NET2 demonstration showed how massive datasets can be transferred between institutions in real time. As a collaborator on CERN's ATLAS project, Lopes de Sá's work involves moving staggering volumes of data generated by record-breaking experiments with the Large Hadron Collider, the world's largest particle accelerator.

Researchers involved in ATLAS analyze collision data to investigate fundamental questions about the nature of matter, energy, and the forces that govern the universe – work that places extraordinary demands on research networks. This makes high-capacity, low-latency data movement critical.

“UMass is building the kind of networking infrastructure that modern research demands,” said Christopher Misra, Vice Chancellor for Information Technology and

CIO. “Our investment in 800G networking is enabling groundbreaking work that is, without exaggeration, seeking to understand the secrets of the universe. There's no telling what possibilities will continue to open up when researchers aren't held back by the speed of data.”

UMass Amherst's work on NET2 is closely connected to the Massachusetts Green High Performance Computing Center (MGHPCC), where NET2 is physically housed and operated. MGHPCC is a shared facility serving universities, government, and industry partners across the commonwealth, enabling a collaborative model that allows advanced research infrastructure to scale beyond any single institution.

That shared approach is what has made demonstrations like SC25 possible. Teams at MGHPCC provided significant investment to support the 800 Gbps network demonstration, with MGHPCC and UMass Amherst together contributing nearly \$1 million in networking hardware and resources. This included Juniper networking equipment and shared optical infrastructure developed in partnership with institutions such as Caltech.

“We're fortunate to work in the type of collaborative environment where this scale of research infrastructure can be built, maintained and demonstrated,” said Misra. “It takes shared expertise and care to make systems like this work at scale, and that work isn't finished.”

As research continues to generate ever-larger datasets across disciplines and institutions, the demands placed on research networks will only grow. UMass Amherst's work on NET2 and 800G networking shows what it takes to support science at a global scale, ensuring data movement never becomes the limiting factor in discovery.

UMass Net seeks to provide and grow advanced networking facilities between members of the UMass system (Amherst, Boston, Dartmouth, Lowell, and the Chan Medical School in Worcester), other institutions of higher education and partner organizations across the Commonwealth. It is led by MGHPCC founding partner the University of Massachusetts. Visit <https://www.mghpcc.org/>

SoX on the move – strengthening research and education across the Southeast



Spring 2025 SoX Participants Meeting Panel

In 2025, the Southern Crossroads (SoX) team did not slow down – it shifted into high gear.

Building on the success of its outreach tour the previous year, the team once again took to the road, returning to Tennessee with a clear mission to deepen partnerships, spark new collaborations, and continue expanding high-performance connectivity across the Southeast.

The Tennessee tour spanned Murfreesboro and Nashville, strengthening regional partnerships through a series of high-impact campus visits. At MTSU and Lipscomb University, the team collaborated with leadership to align research priorities and network upgrades with upcoming NSF opportunities.

The mission also focused heavily on advancing the state’s HBCU infrastructure. At American Baptist College, discussions centered on leveraging a new NTIA award for research capacity, while a visit to Fisk University showcased the visible progress of ongoing network enhancements. The tour concluded at Meharry Medical College

(a SoX member since spring 2025) where faculty and students explored how advanced connectivity is already accelerating discovery.

Collectively, these visits signal strong momentum for Tennessee’s growing cyberinfrastructure landscape.

Back home, another milestone was underway. In September 2025, the GT/SoX team successfully closed out its second NSF award: CC* Regional: Promoting Research and Education at Small Colleges in the Atlanta University Center and at Tuskegee University through Network Architecture Enhancements. The project united Georgia Tech with Clark Atlanta University, Morehouse College,

Morehouse School of Medicine, Spelman College, Tuskegee University, and the Robert W. Woodruff Library. Together, partners implemented secure 10G and 100G networking, dramatically expanding cyberinfrastructure access, training, and support.

Several HBCU partners from Alabama Agricultural & Mechanical University, Morehouse College, Spelman College, and Tuskegee University participated in a panel discussion centered around the NSF CC* grant with Georgia Tech/SoX during the Spring 2025 SoX Participants Meeting. Panelists discussed how researcher-driven bandwidth needs, proactive collaboration strategies and network assessments shaped their efforts, highlighting challenges such as grant preparation, staffing constraints, and sustaining faculty engagement.

One thing is clear; SoX has no plans of slowing down! SoX is not just expanding a network – it is helping power the future of research and education across the Southeast!



SoX President, Cas D’Angelo, reviews the benefits of direct peerings during visit with American Baptist College

Southern Crossroads (SoX) also known as Southern Light Rail (SLR) is a 501(c)3 organization that serves the Southeastern U.S. Research and Education community. SoX provides high-speed, global connectivity and other commodity services. SoX also serves as the Southeast connector to Internet2, ESnet and other major U.S as well as international research networks. Through its membership in The Quilt, SoX is able to offer low-cost Internet bandwidth throughout the region with Internet Service Providers like CenturyLink, Telia Carrier, GTT, and Cogent. Visit <https://www.sox.net>



The IBM Quantum System One at Rensselaer Polytechnic Institute.



Photo Credit: Meredith Forrest, Kulwicki

Supercomputing center of Empire AI, located at University at Buffalo.



Photo Credit: RPI

quantum algorithms that could lead to “quantum advantage” in fields like chemistry and materials science. The facility at RPI is powered by the NYSERNet network, continuing a 40-year partnership between the organizations.

John Kolb, RPI vice president and NYSERNet board president, stated, “At RPI, the integration of the IBM Quantum System One is part of a broader vision to establish a ‘Quantum Valley’ in New York. Supported by NYSERNet’s robust network, these complex computational

For research and education network (REN) providers, supporting diverse, high-stakes computational workloads is the ultimate measure of infrastructure success. In New York, two landmark initiatives – Empire AI at the University at Buffalo (UB) and the IBM Quantum System One at Rensselaer Polytechnic Institute (RPI) – are redefining the technological landscape. NYSERNet is the vital connection behind the scenes, providing high-speed connectivity and collaborative leadership required to turn these massive investments into accessible research tools.

Empire AI: Democratizing Supercomputing

Empire AI is a nation-leading consortium backed by more than \$500 million in funding to advance AI research for the public good. While the consortium includes institutions like Columbia University, Cornell University and New York University, [UB serves as the critical host](#) for the Empire AI supercomputing center. Nearing the end of its “Alpha” phase, the center is facilitating groundbreaking research into neurodegenerative diseases, sustainable food production and financial

market patterns, among others.

NYSERNet’s role is essential, providing a direct connection for Empire AI’s communications with consortium members. Demonstrating profound network synergy within the research community, 90% of Empire AI consortium members rely on NYSERNet to access these resources as if they were on-site.

Heath Tuttle, Ph.D., vice president and chief information officer at UB, noted: “Hosting Empire AI is a transformative milestone for public-interest research in New York. NYSERNet’s high-speed connectivity acts as the essential bridge, allowing our consortium partners to tap into this massive supercomputing power seamlessly, solving society’s most complex challenges.”

RPI: Setting a Global Precedent

Simultaneously, [RPI has established itself as a global leader](#) by unveiling the world’s first IBM Quantum System One located at a university. Powered by the NYSERNet network and housed in the Voorhees Computing Center, this 127-qubit system allows faculty and students to explore

workflows operate on infrastructure engineered for the scale and rigor of next-generation research.”

NYSERNet: Synergy of Connectivity

For peer REN providers, these projects showcase the importance of “network synergy.” NYSERNet was created by universities to meet growing needs and continues to provide coordination and leadership for initiatives in New York.

NYSERNet CEO Jeanne Casares added, “NYSERNet’s mission has always been to provide the robust, high-capacity infrastructure and services that empowers New York’s research institutions to lead on the global stage. Supporting both the Empire AI initiative and RPI’s quantum leap is a testament to the enduring synergy between our network and the visionary universities we serve.”

By providing specialized connectivity and support for both projects, NYSERNet ensures these facilities are not isolated silos of power but shared engines of innovation for the entire research community.

Since 1985, **NYSERNet** has empowered non-profit communities in New York and beyond with a fast, robust fiber-optic network, providing colleges, museums, health care facilities, schools, and research institutions access to gigabit speeds and secure, cutting-edge technology solutions. NYSERNet’s growing cybersecurity program safeguards the shared digital future of these vital institutions. Visit www.nysernet.org

OSHEAN supports IT makeover at Rhode Island Free Clinic

In the heart of Rhode Island's health care community, the Rhode Island Free Clinic has long been a beacon of support for uninsured and low-income adults. Founded in 1998, the clinic's mission is to provide free, comprehensive medical care and preventive health services to adults who have no health insurance and cannot afford those services; and to serve as an educational training site for aspiring health care professionals.

With a patient volume approaching 10,000 visits per year, the clinic plays a crucial role in bridging health care gaps across the state. Now, thanks to a collaborative effort led by Rhode Island Leaders in Information Technology (RILIT) and OSHEAN, the clinic is undergoing a much-needed IT transformation – one that will strengthen its ability to provide high-quality, accessible medical care for years to come.

This initiative is a testament to what happens when technology leaders come together to make a difference.

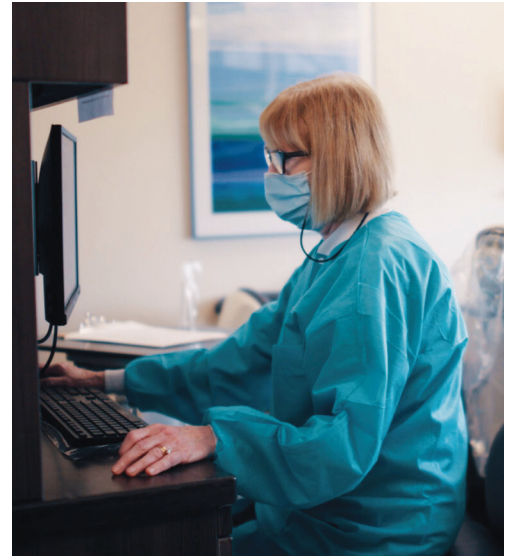
OSHEAN was a founding member of RILIT, a volunteer-driven group of IT professionals dedicated to strengthening Rhode Island's tech community. RILIT and OSHEAN took the lead in revamping the clinic's IT infrastructure, an effort described by OSHEAN CEO David Marble as a "Bar

Rescue" for IT, which included a complete overhaul of the clinic's IP network, wireless infrastructure, firewalls, security protocols, and systems.

This project was completed entirely through donations – of time, expertise, and resources – to modernize the clinic's technology. The clinic had been working on a shoestring for years, while providing essential services to thousands of people.

IT is rapidly becoming an essential element of patient care, and the impact of this makeover has been profound. For the Rhode Island Free Clinic, modernized technology means more than just convenience – it means better patient care. The improvements will enable the clinic to streamline patient management for faster, more efficient care; strengthen security to protect sensitive patient data; and improve network reliability to support telehealth and digital medical services. Additionally, as part of this initiative, the clinic has officially become a member of OSHEAN, gaining access to enterprise-grade network connectivity and IT support.

"This is more than a feel-good story – it's mission-level work," said Marble. "It shows the power of what can happen when a coalition of the willing unites to support vital community services."



More than a one-time project, this initiative is a model for future tech / nonprofit partnerships. By removing technological barriers for organizations like the Rhode Island Free Clinic, this network of dedicated volunteers allows them to stay focused on their mission.

"The RILIT is about sharing knowledge, fostering growth, and giving back," said David Hemendinger, Project Lead for RILIT. "We're honored to contribute to a project that delivers life-changing and life-saving benefits to a vital nonprofit providing free, comprehensive medical care and preventive health services to adults in our community."

This initiative reflects RILIT's broader mission to strengthen Rhode Island's tech sector through meaningful collaboration. This successful transition, fueled by members' specialized skills, demonstrates how the tech industry can act as a force multiplier for the state's most essential community services.



For more than two decades, **OSHEAN, Inc.**, has played a significant role in connecting people, institutions, technologies, and solutions across the research and education community in southeast New England. By delivering next-generation broadband infrastructure and technology solutions to member institutions and the communities they serve, OSHEAN empowers health care organizations, colleges and universities, K-12 schools, libraries, government agencies, and other community organizations to build relationships, leverage shared expertise, foster innovation, and advance their missions. Visit <http://www.oshean.org>

Securing and scaling Illinois Century Network for lasting impact

The Illinois Century Network (ICN) serves as a core component of Illinois' research and education networking ecosystem – supporting K-12 and higher education, libraries, state and municipal agencies, and other community anchor institutions. ICN continues to focus on scalable capacity, operational security, and sustained support for education and research-driven connectivity across both urban and rural regions of the state.

ICN SECNet: Isolated Security Overlay for K-12

ICN has deployed and is now onboarding constituents to ICN SECNet, an isolated security overlay designed specifically for K-12 constituents. The architecture combines multiprotocol label switching (MPLS) based segmentation with integrated next-generation firewall and software defined wide area network (SD-WAN) edge capabilities, creating a logically isolated environment within the ICN backbone. This approach allows school districts to operate within a protected enclave while maintaining full access to ICN services and statewide resources. “It’s a rare privilege to create lasting impact. I’m incredibly excited

to see how removing roadblocks to learning, like bandwidth availability, will help our kids compete in a world where every advantage matters,” said Frank Walters, ICN Network Architect.

Security services include traffic segmentation, policy-based controls, and advanced threat detection that are aligned with current K-12 risk profiles. By embedding these services directly into the backbone rather than at the edge alone, ICN reduces operational complexity for districts while improving overall resiliency. As part of the program, ICN provides monthly threat reporting to participating constituents, summarizing non-critical activity, mitigations applied and observed trends.

Coherent DWDM Optics: Scaling to 400 Gbps and Beyond

ICN’s annual bandwidth growth, typically in the 20-to 30-percent range, has recently increased due to more community anchor institutions joining and needing greater inter-institutional collaboration. In response, ICN is transitioning to Coherent optical technologies over standard Dense Wavelength Division Multiplexing

(DWDM), enabling backbone capacities of 400 Gbps per wavelength, with a clear path to higher speeds.

This upgrade significantly increases available capacity on major

transport corridors, particularly between high-density regions such as Chicago, Springfield, and the Metro East/St. Louis area. The move to coherent optics supports current requirements for community college, university, and K-12 collaboration while positioning ICN to accommodate future research workloads, data-intensive applications, cloud integration, and evolving peering requirements through Internet2 and The Quilt.

Regional Technology Centers (RTCs)

ICN’s nine geographically distributed RTCs are a foundational operational component providing localized engineering expertise, implementation services, and day-to-day technical support for participants. RTC staff work directly with institutions to assist with design, deployment, troubleshooting, and ongoing optimization of network services. The distributed RTC model ensures consistent service delivery statewide while accounting for regional needs and constraints. Without this structure, the deployment and operation of advanced services would not be feasible at scale.

Core Mission and Continuity

Since the late 1990s the ICN has maintained a consistent focus on supporting educators, students, researchers, and public-sector institutions. This includes enabling economic development, fostering competition, and addressing the digital divide, particularly in rural communities. By continuing to invest in backbone capacity, integrated security services, and regional operational support, ICN remains aligned with the goals of the Internet2 and Quilt communities: advancing research and education through reliable, scalable, and collaborative network infrastructure.



Introducing the ICN Team.

The Illinois Century Network (ICN) was created in 1997 by recommendation from the Higher Education Technology Task Force to create a single, state-wide educational network. The ICN became reality in May of 1999. Managed by the Illinois Department of Innovation & Technology (DoIT), the ICN is a high-speed broadband network serving K-12 and higher education, public libraries, government entities and more. Serving millions of citizens every day, in every county, the ICN is one the largest and most successful state-wide networks of its kind in the nation. Visit <https://icn.illinois.gov/>

SCN simplifies connectivity for Arizona school district with eduroam

Reliable, easy-to-access internet is a necessity for today's schools, yet students and staff often struggle to log on to Wi-Fi as they move between campuses and locations. Guest networks, separate logins, and access codes often get in the way, requiring separate instructions and causing confusion.

But thanks to eduroam, that's no longer the case for Vail School District in Tucson, Arizona.

Through its partnership with Sun Corridor Network (SCN), Arizona's non-profit research and education network, Vail School District gained access to a shared wireless environment that allows students and staff to connect automatically across participating schools and institutions, including major universities.

The move was led by Mark Breen, Chief Technology Officer for Vail School District, and began when a colleague introduced him to SCN. After learning of its merits as a network designed specifically for education and research – with low latency and access to Internet2 – Breen added SCN as a provider for Vail.

At a conference, Breen later connected with SCN Executive Director Derek Masseth, where the conversation turned to eduroam and its growing adoption nationwide. In states such as Nebraska, eduroam had already been deployed across most K-12 districts, allowing students to connect automatically wherever they traveled. "The kids get on a bus for a game and wherever they go, they're just connecting



automatically," Breen said. "I thought, wow – this is so cool."

With support from SCN, Vail School District made the decision to adopt eduroam as its primary wireless network.

"We decided to go all in," Breen said. "That way, staff and students wouldn't have to remember how to log in. It's just automatic."

People took notice when one of Vail's assistant superintendents connected instantly at a meeting – more than 130 miles from his home campus – at the Mayo Clinic's ASU site in Phoenix. Colleagues who were still struggling to get online asked how he had connected so quickly.

"I don't know," he replied. "I just opened my laptop. I've got this eduroam thing. It just works."

After seeing the impact eduroam has had across the district, Breen is now reaching out to colleagues about expanding it to other institutions, including public libraries. He envisions a future where students can log on effortlessly at airports, community centers, and every school in between. As eduroam scales, every new district, library, or public building that joins increases its value for everyone.

"Vail's work with eduroam is a great example of what happens when we all pull in the same direction," Masseth said. "When schools and networks work together like this, everyone's job gets a little easier. This is what our network was built for!"

Sun Corridor Network (SCN), Arizona's research and educational network, provides gigabit-speed, reliable connectivity, and access to the national research and education community via Internet2. The network creates direct connections between subscribers, provides opportunities for collaboration and information sharing, and makes available national and international educational resources. Sun Corridor Network is a collaborative effort sponsored by the Arizona Board of Regents' three state universities – Arizona State University, Northern Arizona University, and the University of Arizona. Arizona public schools, colleges and libraries as well as state universities and museums, are eligible to subscribe to the Sun Corridor Network. Visit <https://suncorridor.org/>

MOREnet powers up Missouri's future quantum workforce with QCaMP

The Missouri Research and Education Network (MOREnet) is committed to helping Missouri students and educators get in front of the quantum wave – anticipating the demand and opportunities which will require educational programming and workforce candidates.

One of the most persistent barriers to quantum education has been its reputation.

Traditional undergraduate pathways often require deep preparation in physics, advanced mathematics and computing before students ever encounter practical application. While rigorous training remains essential, this model can unintentionally narrow the pipeline.

A different approach is emerging.

Sandia National Laboratories, part of the U.S. Department of Energy, has developed an innovative program that flips the traditional quantum education model. Quantum Computing, Mathematics, and Physics (QCaMP) begins not with abstract theory, but with computing fundamentals and hands-on

experiences that allow learners to engage directly with quantum concepts – even when those concepts feel strange or counterintuitive.

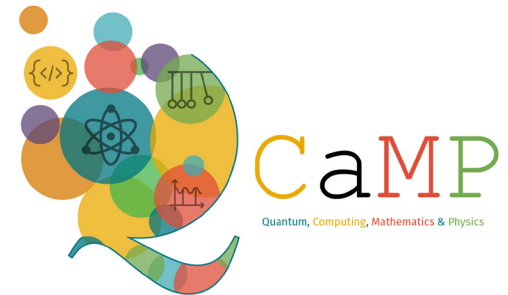
Through immersive camp environments, QCaMP brings high school students and teachers into direct contact with quantum experts and researchers. Participants learn to code solutions, explore quantum problem-solving, and develop intuition through guided experimentation. Importantly, QCaMP also includes age-appropriate lesson plans and activities designed to introduce quantum ideas to middle school and elementary students, broadening exposure well before career decisions are made.

Recognizing the potential of this approach, MOREnet sent two instructors to QCaMP in New Mexico last year. That experience is now shaping the next step in bringing QCaMP to Missouri in 2026 (June 22-26).

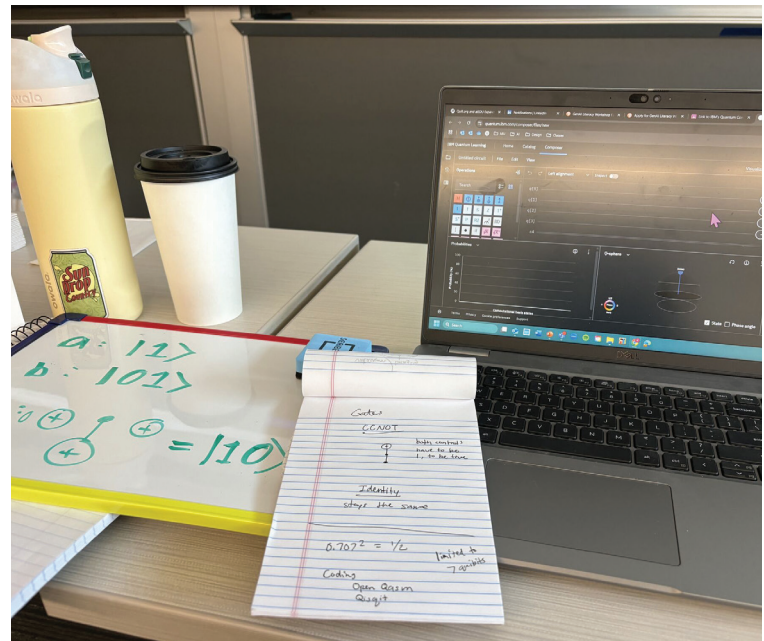
The initial focus will be on K-12 teachers, equipping them with the tools, concepts, and confidence to introduce quantum ideas in their classrooms. In subsequent years, MOREnet

will look to expand participation directly to students; much like their annual high school cybersecurity challenge, which is designed to engage and excite students about future programs and career paths.

Quantum technologies will reshape research, education, and national infrastructure. To sustain and grow the program, MOREnet is actively pursuing external funding and partnerships, ensuring that quantum exposure becomes a durable part of Missouri's education ecosystem rather than a one-time initiative. By investing early in people, partnerships and access, MOREnet is helping ensure Missouri's research and education community is positioned not just to adopt quantum technologies – but to help lead their development.



Kate Horstmann (left), Technical Integration Specialist at MOREnet, and Megan Gretzinger, Executive Director of Technology at Lee's Summit R-7 School District, attend the Quantum, Computing, Math, and Physics Camp (QCaMP) at the University of New Mexico in 2025. MOREnet is sponsoring a camp for Missouri K-20 educators in June 2026

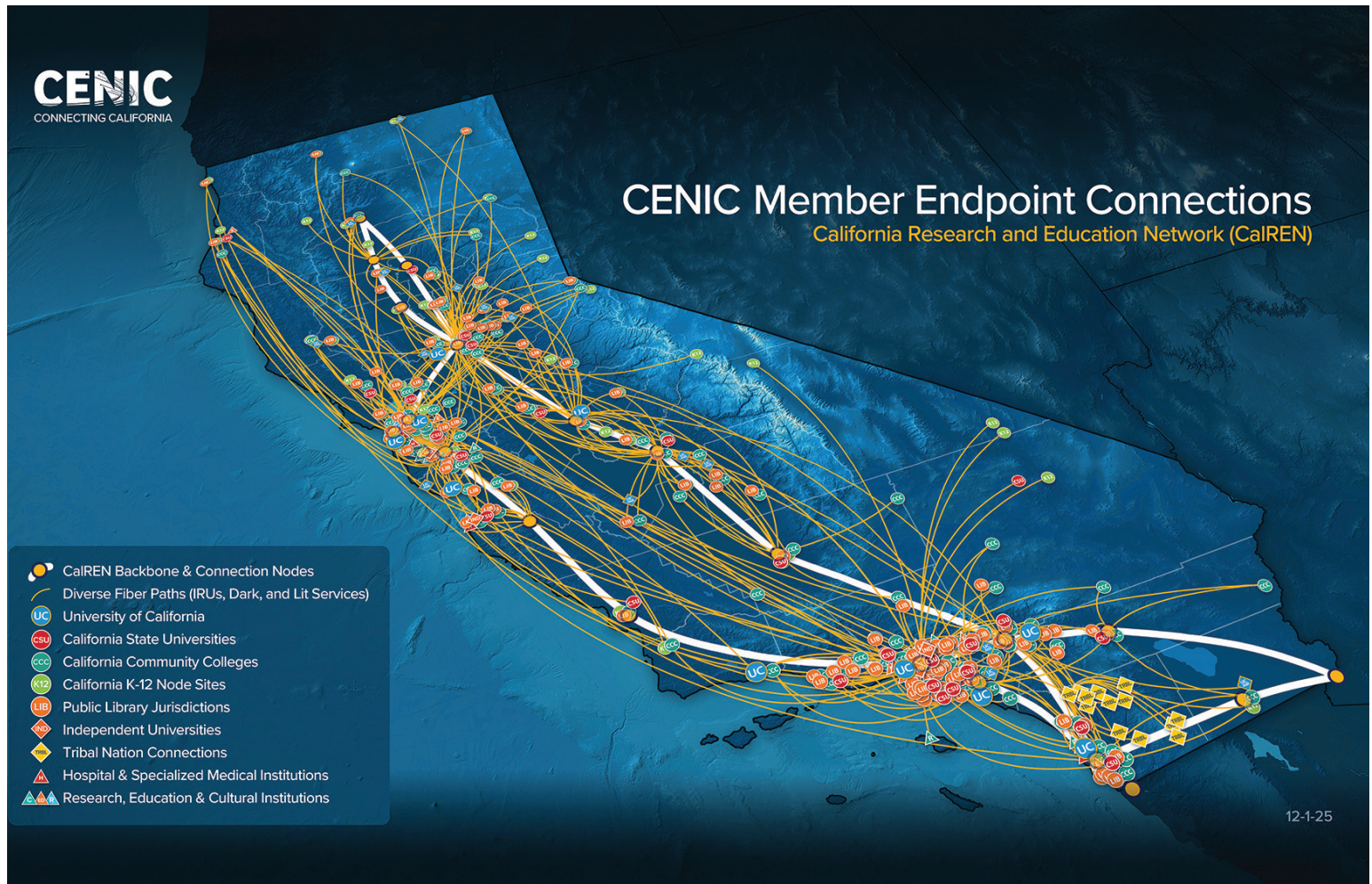


Taking some notes at QcaMP in 2025.

The Missouri Research and Education Network (MOREnet) is both a data network as well as a human network. It 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.

Visit <http://www.more.net>

CENIC connectivity opens a world of possibility



Illustrating CalREN's reach, and CENIC's members by segment and location.

CENIC's 8,000-mile California Research and Education Network (CalREN) is the foundation for all services and benefits to its members, but it's only part of the story.

The CalREN backbone doesn't just extend to member institutions across California; it also connects to other research and education networks in the U.S. and beyond – to distributed international peering facilities, to major cloud providers, and to the commercial internet. CENIC not only connects to these networks and facilities but also participates in the discussions and governance with the providers that make them possible, representing the interests of California's research and education communities around the world.

On the CENIC website, there is a comprehensive Network Maps page (<https://cenic.org/publications/maps>) with maps for each of their member

communities, partner networks, peering facilities and exchanges, showing how more than 12,000 institutions connect to CalREN, to each other, and to colleagues all over the globe. Reaching out from the CalREN backbone, thousands of circuits purchased at bulk rates and managed by CENIC extend to virtually every part of California, extending backbone connectivity to thousands of schools, colleges, universities, libraries, and other research and cultural organizations. CENIC's Interactive Endpoint Map (<https://maps.cenic.org/nodesites/>) then shows just how each segment of the CENIC membership connects to CalREN – here you can zoom in to see finer levels of detail and even click "CREATE PNG" to save an image for your own use. You can also download segment-specific Endpoint Maps that show how an institution connects to the CalREN backbone.

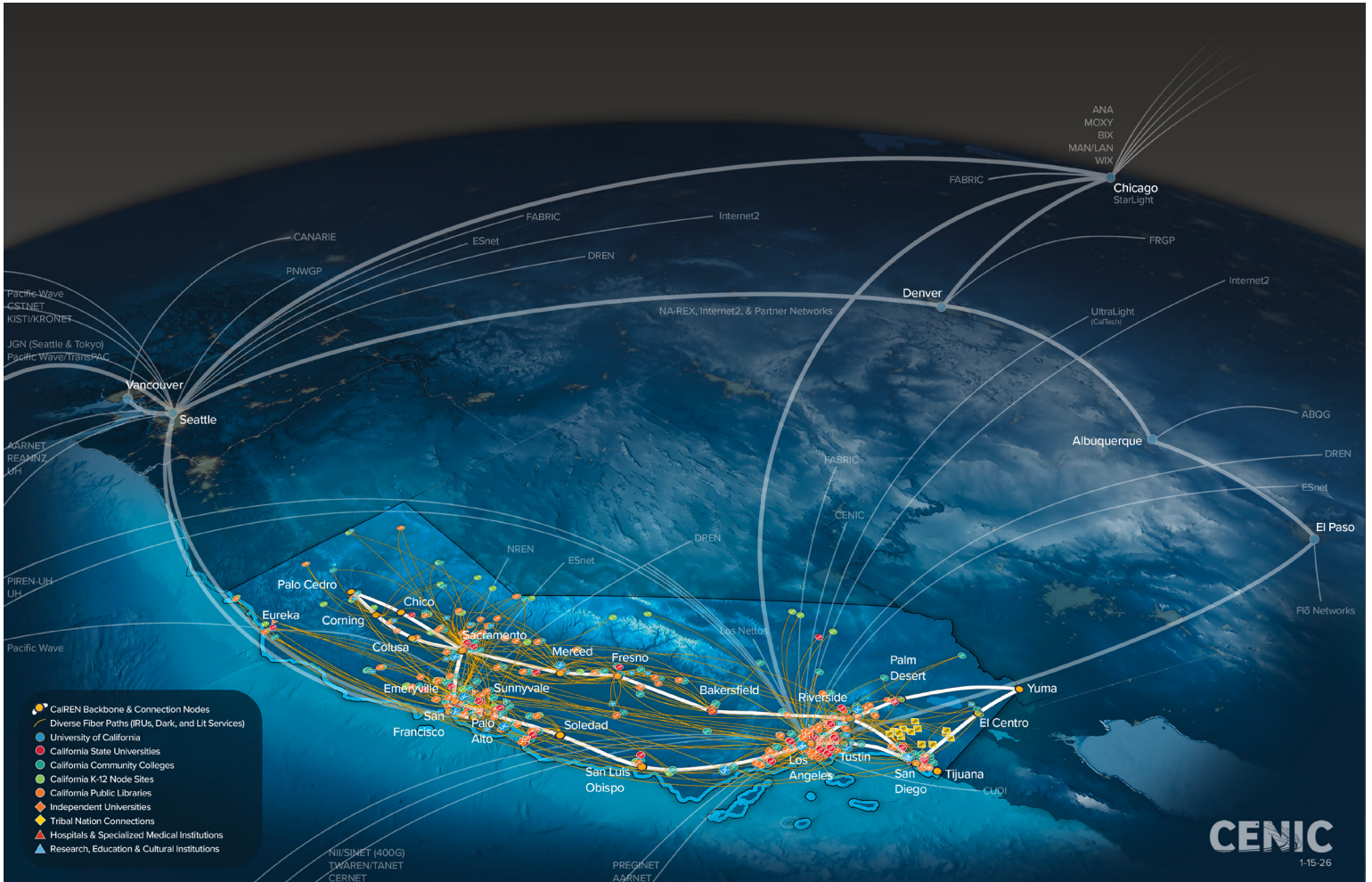
In addition to CENIC-specific maps, the Network Maps page previously noted also includes maps of the Pacific Wave International distributed peering exchange – a joint project of CENIC and the Pacific Northwest Gigapop (PNWGP). There's also a map of the Western Regional Network – a collaboration of CENIC, PNWGP, Front Range GigaPoP (FRGP), University of New Mexico, and the University of Hawaii. Other partner maps there include The Quilt, the Asia Pacific Oceania Network (APONet), the Guam Open Research and Education eXchange (GOREX), the Pacific Islands Research and Education Network (PIREN), and the North America Research and Education eXchange (NA-REX).

An increasing number of CENIC members also are participating in the CENIC AI Resource (CENIC AIR), the California portion of the National Research Platform (NRP). Many participating institutions

voluntarily contribute computing and storage resources for the entire community. These resources are interconnected and accessed over CalREN via a Science DMZ that CENIC's engineering team can help institutions implement. On the CENIC AIR Champions Map, learn which

CENIC member institutions are hosting compute and storage resources for use by participants and find advice from campus decision-makers, IT leadership, and faculty about participating and using these resources.

Thanks to these partnerships and many others, a high-performance network path to colleagues throughout the country and world is available to all CENIC members.



CENIC connects California to the world – advancing education and research statewide by providing the world-class network essential for innovation, collaboration, and economic growth. This non-profit organization operates the California Research & Education Network (CalREN), a high-capacity network designed to meet the unique requirements of over 20 million users, including the vast majority of K-20 students together with educators, researchers, and others at vital public serving institutions. Visit www.cenic.org

LONI enables AI-accelerated coastal flood forecasting



Coastal flooding is one of the most complex and costly natural hazards facing the United States today. Along the Gulf Coast, communities are increasingly exposed to compound flooding driven by the nonlinear interaction of storm surge, rainfall, river discharge, waves, and rising sea levels. These processes operate across multiple spatial and temporal scales, making accurate prediction extremely challenging – yet timely and reliable forecasts are essential for emergency response, infrastructure planning, and longer-term resilience.

Traditional high-resolution numerical models can simulate these processes with high fidelity, but at a steep computational cost. Running a single hurricane scenario at kilometer-scale resolution across land, rivers, and the coastal ocean can require days to weeks of computation, limiting their usefulness for real-time decision making or large ensemble analyses.

A research team led by Dr. Z. George Xue, Professor in the Department of Oceanography and Coastal Sciences in the Center for Computation and Technology at Louisiana State University, is addressing this challenge by combining high-performance computing with artificial intelligence to transform how coastal flood risks are modeled and communicated. Leveraging LONI's advanced HPC infrastructure, the team has developed an integrated land–river–ocean modeling framework capable of resolving compound flooding processes across the northern Gulf of America with unprecedented detail. These simulations consume millions of CPU core hours annually and would not be feasible without access to LONI's parallel computing resources.

More recently, Dr. Xue's group has taken a major step forward by embedding AI-based surrogate models into their modeling workflow. Trained using the vast libraries

of LONI-generated simulations, these AI models can reproduce high-resolution flood dynamics orders of magnitude faster than traditional numerical approaches. This breakthrough enables near real-time flood prediction and supports probabilistic hazard assessments that were previously computationally prohibitive.

Beyond forecasting, the team is collaborating with the LSU Digital Twin team (Derick Ostrenko) to pioneer the use of digital twin technologies for coastal systems. By coupling LONI-powered simulations with

immersive visualization and virtual reality platforms, complex model outputs can be transformed into intuitive, decision-ready products for emergency managers, planners, and community stakeholders. These digital twins allow users to explore “what-if” scenarios – such as alternative storm tracks or infrastructure designs – and directly observe their impacts on flooding and coastal vulnerability.

Dr. Xue's work exemplifies how LONI's cyberinfrastructure enables researchers to push beyond traditional modeling limits, integrating physics-based simulation, AI acceleration, and advanced visualization into a unified framework. As coastal hazards intensify under a changing climate, such approaches are critical for translating computational power into actionable knowledge that helps protect lives, property, and ecosystems across Louisiana and beyond.

The Louisiana Optical Network Infrastructure (LONI) is a state-of-the-art fiber optics, high-performance computing, and distributed storage network cyberinfrastructure. LONI is a membership-driven organization operating as a managed service provider (MSP) to deliver innovative and reliable solutions for its members. The resources provided by LONI enable greater collaboration on research that produces results faster and with greater accuracy. LONI is owned and operated under the authority of the Louisiana Board of Regents. Visit <https://loni.org/>

OneNet celebrates 30 years of connecting Oklahoma



In 2026, OneNet proudly celebrates 30 years as Oklahoma's trusted research and education network.

Through ongoing efforts to expand research connectivity across the state, OneNet has earned recognition as a key player in the national research and education network community. Over the past three decades, OneNet's mission has remained clear: to drive progress in research, education, health care, and government services.

From K-12 schools and career technology centers to colleges and universities, OneNet is a cornerstone of Oklahoma's education system. Their impact, however, extends far beyond the classroom. By delivering high-speed connectivity to libraries, research labs, health care providers, and government agencies – local, state, federal, and tribal – OneNet bridges the gap between Oklahomans and the world.

OneNet's Beginnings

In the early 1990s, Oklahoma's state legislature envisioned an integrated state

network that would leverage both public and private infrastructures. This vision led to a public-private partnership model and ultimately led to the creation of OneNet.

In 1992, voters approved \$14 million from a \$350 million statewide capital bond issue to fund the development of this network. A comprehensive business plan established OneNet as a division of the Oklahoma State Regents for Higher Education (OSRHE) and by 1996, the network was fully operational. Today, OSRHE continues to provide administration and leadership, and OneNet's infrastructure remains integrated with Oklahoma's higher education institutions, with network equipment housed on campuses across the state.

OneNet's Infrastructure

OneNet's original design was a hub-and-spoke infrastructure, with hubs in Oklahoma City and Tulsa and spokes extending to all corners of the state. At the time, the network supported a bandwidth of 45 Mbps. Fast-forward three decades, and OneNet now delivers core bandwidths ranging from 100

Gbps to 400Gbps, powering the high-speed connectivity essential for Oklahoma's most critical organizations.

OneNet completed a major network upgrade last year, expanding capacity to 400G. The first milestone was achieved in February with an upgraded 400G connection to the Great Plains Network. This vital link transports subscriber traffic from Oklahoma to Internet2's 400G network and onward to the global internet.

With upstream connectivity now approaching 1Tbps through GPN, Internet2 and other partners, OneNet is better equipped than ever to support their subscribers' growing bandwidth requirements. As part of this upgrade, they also replaced equipment at many statewide hub sites, moving from 10G capacity to new infrastructure that supports between 100G and 400G. This investment not only boosts current performance but also lays the groundwork for future upgrades to 800G and even 1.6T as technology continues to evolve.

These recent enhancements significantly improved overall speed and reliability of the network – ensuring OneNet remains ready to meet the demands of tomorrow's data-intensive computing.

Watch OneNet's 30th Anniversary video!



As a division of the Oklahoma State Regents for Higher Education, **OneNet** advances research and education in communities across Oklahoma by delivering high-speed, affordable connectivity and technology solutions to research, education, health care and government institutions. OneNet serves colleges and universities, research centers and laboratories, public and private schools, libraries, tribal organizations, hospitals and clinics, and local, state and federal governments. Visit <https://onenet.net/>

KeystoneREN expands access to CI resources with PA Science DMZ

The small campus landscape in Pennsylvania is vast, spanning a large geographical territory and several large urban areas across Philadelphia, Harrisburg, State College, and Pittsburgh. However, the majority of Pennsylvania colleges and universities sit outside major metro areas, often with limited access to affordable cost-effective cyberinfrastructure (CI). Through expansion of the KeystoneREN statewide network, several additional campuses are now able to take advantage of advanced, up to 400G capable, connectivity and efficiency to participate in research activities that leverage advanced networking.

Through a new Campus Cyberinfrastructure (CC*) award from the National Science Foundation (NSF Award # 2503025) the PA Science DMZ infrastructure will provide CI resources to three additional campuses, Allegheny College, West Chester University, and Harrisburg University of Science and Technology. The original 2023 PA Science DMZ project (NSF #2346589), led by PI-Wayne Figurelle, Assistant Director for Innovation and Outreach, Institute for Computational & Data Sciences (ICDS), Penn State University, with Co-PIs Frederick Adkins, Professor of Mathematical and Computer Sciences, Indiana University of Pennsylvania; Jason Simms, Research Computing Manager, Swarthmore College; and Grant Dull, Executive Director at KeystoneREN, addresses critical cyberinfrastructure and connectivity gaps across participating institutions: Swarthmore College, Indiana University of Pennsylvania, Lafayette College, Digital Foundry at New Kensington, and Penn State University.

Additional PA Science DMZ activities this past year include a new research collaboration speaker series for PA Science DMZ campus faculty and researchers to share their research, develop collaboration opportunities, and highlight how the PA Science DMZ capabilities are supporting their evolving data intensive research needs.

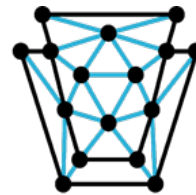
“Overall, the PA Science DMZ regional cyberinfrastructure has connected researchers, cryo-EM instruments, and high-performance computing to enable rapid transfer and analysis of large datasets and will expand access to additional structural biology studies to accelerate scientific discovery” shared Dr. Daniela Fera from the Department of Chemistry and Biology at Swarthmore College. “The PA Science DMZ cyber infrastructure allows us to move those raw images directly to this high-performance computing cluster that is very useful for not only transferring the data but also analyzing the data so that we can get a high-resolution, three-dimensional model.”

KeystoneREN also launched a new Research Computing Community of Practice to support the Research Computing and Data (RCD) professionals at PA Science DMZ campuses and beyond and to foster collaboration in the state and region.

The PA Science DMZ CyberAccelerate outreach program brings resources to a broad set of PA campuses. In September 2025, a CyberAccelerate Workshop Day was

held at Bucks County Community College in Newtown, bringing state and national experts to speak and share resources with regional faculty and IT staff. KINBERCON 2025 included a dedicated KeystoneREN Advancing Cyberinfrastructure track and a two-day CyberAccelerate workshop, which also featured a student poster competition session held to promote and encourage student involvement in PA-based research and educational activities. CyberAccelerate events planned for 2026 include roadshows, workshops, and more student-centered activities helping to bring faculty, students, and IT staff together in use and understanding of how enhanced CI capabilities made possible through the PA Science DMZ promotes data intensive research innovation and discovery.

To find out how KeystoneREN and the PA Science DMZ can best support researchers and educators at small to mid-sized campuses, visit <https://pa-science-dmz.keystoneren.org/> or contact information@keystoneren.org.



KeystoneREN

Research • Education • Network



KeystoneREN, as Pennsylvania's statewide hub for research and education networking, leverages advanced cyberinfrastructure and researcher engagement programs and support to offer cost-effective connectivity advancing our region's most important work. Visit www.keystoneren.org.

Link Oregon leading state's expanding quantum ecosystem

Quantum technologies are steadily moving from scientific labs into commercially relevant applications in cybersecurity, materials discovery, climate modeling, and other fields essential to U.S. competitiveness. Link Oregon and its university partners are making early moves in this landscape, helping cultivate regional expertise, attract federal and private investment, and build the talent pipeline to sustain a quantum enabled economy.

At the federal level, the National Quantum Initiative – now up for reauthorization – and the CHIPS and Science Act signal long term commitment to building U.S. quantum capacity. States that act early will hold a strategic advantage. Oregon's strengths align well with national needs: a collaborative research culture that supports cross institutional quantum initiatives; a robust, high-capacity statewide fiber network operated by Link Oregon; manufacturing expertise; a long-standing commitment to equitable access to avert a future quantum divide; and a growing base of quantum capable talent emerging statewide from public universities, community colleges, and industry.

Several institutions are already working to shape Oregon's quantum trajectory. Link Oregon, the state's research and education network, provided legislative testimony in May 2025 underscoring the importance of broader statewide and regional investment and collaboration in quantum, and indicated the availability of fiber on Link Oregon's network ready to support quantum classical networking experiments. Quantum research is accelerating across our member universities. The University of Oregon was selected by the National Science Foundation in December 2024 to host a Quantum Virtual Laboratory focused on optical quantum technologies – an investment that positions the state as a hub for next

generation research. The Oregon Institute of Technology launched the Quantum Computing Innovation Center (QCIC) in 2024, emphasizing applied research, hands-on training, and industry aligned workforce development. With its upcoming NVIDIA-powered supercomputer, Oregon State University is ready to enhance research initiatives in this area.

Link Oregon has articulated a clear vision for a statewide quantum networking testbed that leverages existing dark fiber to create a secure, scalable environment for quantum research and experimentation. Alongside our research university partners, we are collaborating with Lawrence Berkeley National Laboratory – operator of the Quant-Net testbed in California – to explore pathways for developing next generation network operations infrastructure that could enable hybrid classical/quantum networking models, including a pilot quantum testbed in Oregon.

Q RISE, a statewide working group led by Link Oregon and its university partners, is also looking beyond infrastructure and research to strengthen workforce development and grow the pipeline of next generation quantum expertise through university curriculum offerings. “Quantum momentum in the real world will require that we push multiple levers

in parallel – the research, the infrastructure, the workforce pipeline”, said Professor Ram Durairajan from the University of Oregon and Chief Scientist at Link Oregon. “The Q-RISE effort is an important early step in Oregon's quantum readiness.”

With coordinated state and federal investment, sustained collaboration, and strategic use of existing infrastructure and resident research talent, Oregon's quantum ecosystem will be a key component of the nation's quantum future.



Professor Brian Smith, director of the Oregon Center for Optical, Molecular and Quantum Science at the University of Oregon, has been selected to pilot a National Quantum Virtual Lab by the NSF.

Link Oregon is a federally tax-exempt 501(c)(3) Oregon non-profit organization and the Research and Education Network (REN) for the state of Oregon, serving the public and non-profit sectors. We operate a statewide middle-mile fiber infrastructure spanning over 2,500 miles that delivers state-of-the-art broadband services to our member organizations. We collaborate with a vast network of ecosystem partners, spanning commercial telecom providers, legislators, broadband policy leaders, digital equity advocates and non-profit affiliates who are vital to our mission to expand high-speed broadband connectivity across the state for a future-ready Oregon. Visit www.linkoregon.org

CEN keeps advancing Connecticut's network of the future



The Connecticut Education Network (CEN) is laying the foundation for a more connected, resilient, and equitable digital future. Through the CEN CONNECT program and strategic partnerships, CEN is strengthening core infrastructure, expanding access to underserved communities, and supporting the institutions that rely on high-performance connectivity.

CEN CONNECT is a multi-year investment advancing middle-mile broadband infrastructure for municipalities, K-12 schools, higher education, libraries, and health care facilities. Funded through Gov. Ned Lamont's Connecticut Plan for the American Rescue Plan Act (ARPA) and administered by the U.S. Department of the Treasury, the program extends connectivity into the communities most in need.

The program is delivered through three coordinated initiatives:

Next Generation Infrastructure (NGI):

This represents comprehensive modernization of the network, delivering a native 400G backbone with scalable hand-offs. In 2025,

CEN reached major milestones, including statewide site surveys, optical upgrades, and the deployment of network automation. CEN Executive Director Ryan Kocsondy noted that core sites already are installed, and large-scale member upgrades are now underway. "NGI is about future-proofing infrastructure," added Kocsondy. "It ensures institutions can support growing research and public service demands for years to come."

Connecting Connecticut's Communities Initiative (C3I):

C3I focuses on expanding fiber to libraries, municipalities, and charter schools. More than half of eligible sites have committed to participate. Municipal sites receive resilient, dual-path connections, while other organizations are connected via point-to-point services.

Community Wi-Fi: This initiative helps close the digital divide with \$10 million dedicated to expanding public Wi-Fi as well as eduroam adoption. Projects from the 2025 application rounds are currently underway and will reach substantial completion by mid-year.

In parallel with its infrastructure investments, CEN continues to grow its partnership with the Connecticut National Guard. Cyber Nutmeg 2025, hosted at Central Connecticut State University in October, served as a critical forum for advancing cybersecurity awareness and coordination. "As we face increasingly sophisticated cyber challenges," explained Captain Joel Fulsang, Cyberspace Operations Officer of the Connecticut National Guard, "Cyber Nutmeg offered a comprehensive experience, featuring critical threat briefings from the FBI, Homeland Security, and the Connecticut Intelligence Center (CTIC)."

The event brought together 336 attendees and 20 sponsors from government, education, and IT sectors. By convening practitioners and leaders around shared challenges and practical defenses, Cyber Nutmeg helped to continue strengthening cross-sector relationships to support cybersecurity readiness throughout the state – an essential complement to CEN's ongoing investments in network infrastructure.

The Connecticut Education Network (CEN) is the state's premier open-access, high-capacity internet, cloud, cybersecurity, and network services provider. Established in 2000, CEN has been a leader in advancing the capabilities of its members, ensuring equitable access to secure and dependable connectivity that supports education, research, government, digital citizenry, aggregation, and collaboration. Visit <https://ctedunet.net/>

OARnet leads quantum networking and security initiatives

In Ohio, OARnet is leading efforts to develop quantum networking technologies that could provide the next generation of cybersecurity for the state fiber-optic network.

OARnet has partnered with Ronald Reano and Ezekiel Johnston-Halperin, professors and co-directors of The Ohio State University's Center for Quantum Information Science and Engineering (CQISE), to create a testbed for technologies such as quantum key distribution (QKD). The partnership has been supported by \$1.75 million in state and federal funds.

"QKD links are a stepping-stone for a much larger entanglement-based quantum network that will ultimately become the quantum internet," Reano said.

In 2025, the project announced that it had achieved a major milestone with the successful demonstration of quantum key distribution between two Columbus, Ohio, locations. The quantum link interconnects a transmitter, named Alice, located at OARnet, with a quantum receiver, named Bob, located at Ohio State's ElectroScience Laboratory. Through optical fiber, Alice transmits single photons that are encoded by a QKD protocol. This process allows Alice to share a secret key for encryption with Bob to which only they have access.

Cybersecurity is a top concern for OARnet and its thousands of clients in Ohio. OARnet maintains and delivers services across the state's 5,500-mile network to support the connectivity relied upon every day by Ohio's higher education, K-12 education, state and local government, public broadcasting, health care, and research communities. Quantum technology researchers anticipate that QKD could provide more resilient security than current cybersecurity protocols.

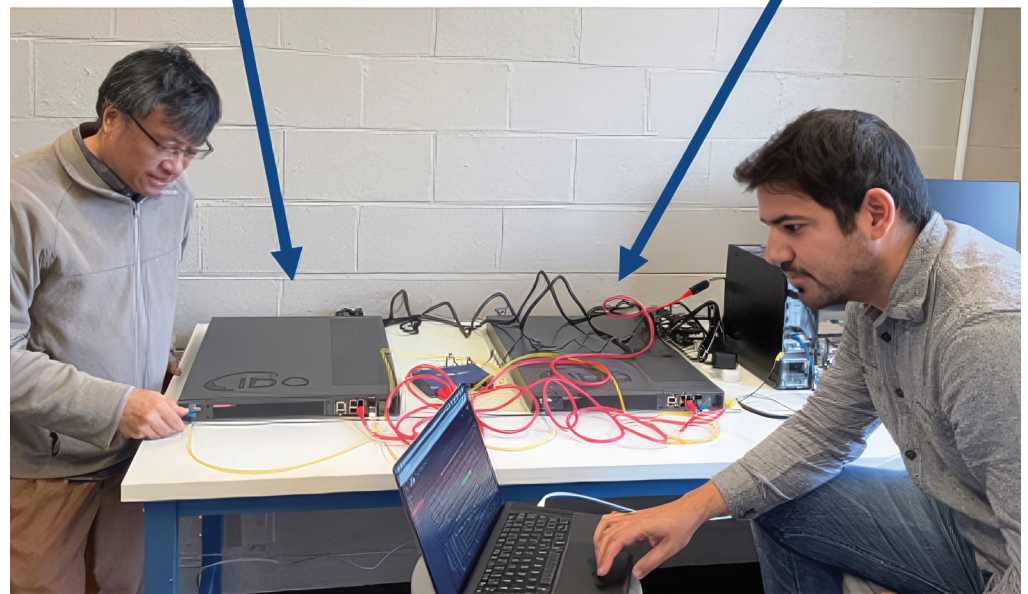
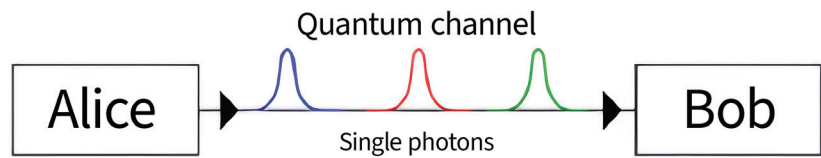
"Working closely with researchers at Ohio State has allowed us to think strategically

about the future of quantum information as it relates to information security on the campus as well as statewide," said Pankaj Shah, executive director of OARnet. "Quantum is no longer just an abstract notion for us, which is very significant as we consider the interplay between classical and quantum technologies."

The team is working on transmitting single photons from Columbus to Dayton, Cleveland, and Chicago. Researchers also will explore the application of the technology to the financial and medical sectors, which transmit highly-sensitive information that requires long-term security over many years.

In addition to its work in Ohio, OARnet leadership is engaging in national discussions and initiatives with other experts involved in quantum networking technology development.

Shah and OARnet Chief Technology Officer Mark Fullmer, as well as Reano, participated in the Quantum Partnership Workshop at The Institute for Underground Science at SURF (Sanford Underground Research Facility) in South Dakota in 2025. The event brings together leaders from across the Midwest to explore advances in quantum networking, education, and emerging technologies. Fullmer and Reano also visited quantum networking researchers at the State University of New York, Stony Brook University, and the Brookhaven National Laboratory to explore further partnerships and collaborative initiatives between New York and Ohio. The OARnet and Ohio State team of scientists and engineers participate in regular meetings with their New York peers about quantum networking research advancements and experimental testbeds.



Professor Ronald Reano and Postdoctoral Researcher Wendson de Sa Barbosa prepare the "Alice" transmitter and "Bob" receiver at Ohio State's ElectroScience Laboratory while preparing to establish a quantum key distribution (QKD) link with OARnet using underground optical fiber. Credit: The Ohio State University

The Ohio Academic Resources Network (OARnet), a division of the Ohio Department of Higher Education's Ohio Technology Consortium (OH-TECH), serves the state's government, education, health care and public broadcasting communities. Through innovative public-private partnerships and a state-of-the-art fiber optic network, OARnet expands access to affordable broadband and delivers critical networking and technology services for academic and commercial R&D. Visit <http://www.oar.net>

FLR fights back on DDoS attacks, boosting cybersecurity protection in Florida

Florida LambdaRail (FLR) continues to invest in robust, proactive network security to protect research and education traffic from increasingly sophisticated cyber threats. Near the end of last year, FLR provided a comprehensive update on current security activities and announced a significant evolution into their approach to Distributed Denial of Service (DDoS) mitigation.

FLR's current security program is built on three pillars: infrastructure protection, visibility, and rapid response. FLR engineers have implemented host-based intrusion prevention systems (IPS) for Network Operations Center (NOC) systems and expanded the use of Splunk as a centralized Security Information and Event Management (SIEM) platform. FLR also employs global routing integrity through initiatives such as RPKI (Resource Public Key Infrastructure) and MANRS (Mutually Agreed Norms for Routing Security). By utilizing tools like Nautobot with Internet Routing Registration (IRR) integration, FLR has significantly improved routing accuracy. Simultaneously, Kentik provides FLR members with the deep traffic visibility required to distinguish between legitimate research spikes and malicious activity.

Historically, FLR has leveraged a cloud-based volumetric DDoS scrubbing service provided via Internet2 using Radware. This approach relies on BGP (Border Gateway Protocol) to divert malicious traffic to an off-site scrubbing center. While this has served the network well, it presents several operational hurdles such as latency and complexity since activating scrubbing via BGP can be cumbersome for some

members and introduces inherent delays. It also has caused capacity constraints, where this contracted service may be limited to just 1 Gbps of clean traffic, which is often insufficient against modern, high-volume attacks. Finally, there was the "hit-and-run" problem; since many modern attacks are short-duration bursts this typically means by the time a member identifies the attack and triggers the diversion, the damage is often already done and the attack has concluded.

FLR worked with Cisco last year to proof out their new "always-on" DDoS service. The result was the unveiling of *FLR Secure: DDoS Edge Defense* in November. It is now among the first solutions of this type to be deployed nationally, a next-generation, agent-based program that represents a paradigm shift in handling malicious traffic. Instead of redirecting traffic to a distant center, monitoring agents run directly alongside routers to detect patterns in real time. When a DDoS threat is identified, the system pushes mitigation rules directly to FLR's core routers. This "edge protection" approach allows for unlimited clean bandwidth and near-instantaneous response times, as traffic is

filtered at the perimeter of the FLR network rather than being rerouted.

The platform also features a centralized, multi-tenant controller with a dedicated graphical interface. This design is built for the future, eventually allowing individual members to monitor activity that may be affecting their specific subnets and participate directly in mitigation decisions. While initial responses will be manually triggered to ensure precision, FLR plans to enable advanced automated responses with more operational experience with the platform.

FLR Board Chair Jason Ball, Associate Vice President and Chief Information Officer at Florida Atlantic University, said that these exciting advancements reflect FLR's unwavering commitment to protecting member networks and ensuring high-performance, uninterrupted connectivity across Florida's research and education community. "Our institutions will be better protected and more efficient as a result," he added.



FLR

Florida LambdaRail

Florida's Research and Education Network

Florida LambdaRail (FLR) is Florida's independent statewide research and education fiber-optic network. FLR is owned and operated on behalf of its partner institutions and affiliates and is dedicated to producing knowledge and prosperity within the state through education and research activities that drive our members' 21st century economy initiatives. Visit <https://www.flrnet.org/>

FRGP keeps connecting Colorado and Wyoming with hundreds of gigabits

Front Range GigaPop (FRGP) made significant advancements over the past year to enhance connectivity and bandwidth for various research and education institutions across Colorado and Wyoming.

The first of series of projects aimed at expanding networking capabilities was the successful integration of fiber and optical Wavelength Division Multiplexing (WDM) gear. This initiative, powered by Zayo and Adtran, was designed to support the National Laboratory of the Rockies (NLR) at its expansive new campus. “This project,” explained NLR Network Engineering Manager Steve Menken, “is just one example of how vital FRGP is to NLR network operations – allowing us the ability to extend network access to all our Colorado locations to support mission research.”

Another cornerstone achievement was the completion of the 400G wave ring for the University of Colorado Denver. This advanced wave ring enhances the university’s networking capabilities, providing a robust infrastructure to support high-demand applications, data center interconnection, and research projects. With the increasing use of data-intensive tools and applications in academia, this upgrade is crucial for facilitating seamless data transfers and communications that

ultimately empower students, faculty, and researchers to achieve their goals.

Adding to these accomplishments, FRGP also focused on supporting Colorado State University (CSU) as it transitions to the Pac-12 Athletic Conference. The organization successfully dedicated additional bandwidth to accommodating the traffic generated by this shift. This upgrade is particularly important as schools attending major conferences often face increased demand on their networks due to heightened visibility and engagement from fans, alumni, and research activities associated with their athletic programs.

Angie Asmus, Director of Networking and Telecommunications at CSU within the Division of Information Technology, said FRGP played a critical role in helping CSU achieve the connectivity needed to broadcast games as part of the being in the new conference. “Through close collaboration, FRGP engineers were instrumental in designing a creative, cost-effective solution that leveraged existing infrastructure rather than requiring an entirely new build,” said Asmus. “Their technical expertise and problem-solving approach ensured we could test and validate connectivity to meet broadcast requirements in preparation for the upcoming 2026 athletic season. This

partnership was essential in making our PAC-12 transition possible.”

In a further bid to enhance network performance, FRGP also activated a dedicated 400G Internet2 connection. This significant improvement has bolstered throughput for research and education across member institutions, ensuring the GigaPoP can effectively cater to the growing needs of its stakeholders. Additionally, FRGP has made sustained progress on the routing, switching, and perfSONARs (Performance-focused network measurement tools), as well as DTNs components as part of the NSF CC* FRGP Western Slope project.

The comprehensive advancements made by the Front Range GigaPoP over the past year exemplify its dedication to fostering a technologically advanced environment for research and education in Colorado and Wyoming. By implementing state-of-the-art solutions and strategic partnerships, FRGP continues to strengthen the backbone of collaboration among educational and research institutions. As the digital landscape evolves, FRGP remains a pivotal force in ensuring that the region’s academic and research communities are equipped with the necessary tools to thrive in an increasingly data-driven world.



Since 1999, the **Front Range GigaPoP (FRGP)** has advanced the research and educational goals of government, nonprofit, research, and educational participants in the region by establishing and maintaining a unique multi-state network infrastructure. The FRGP is owned and controlled by the FRGP participant research and education community. Visit <https://frgp.net/frgp/index.shtml>

GP-STOR's arrival accelerates the next era of Great Plains research



Derek Weitzel, University of Nebraska – Lincoln; Matthew Keeler, University of Missouri; Ryan Johnson, University of South Dakota

The Great Plains Scalable Tiered Object Repository, better known as GP-STOR, is a new regional cyberinfrastructure investment designed to transform how researchers across the Great Plains store, move, and analyze data.

Funded in part by the National Science Foundation (NSF Award OAC-2502799), GP-STOR delivers a resilient, distributed storage platform that empowers data-intensive research while building long-term capacity across a diverse set of institutions. At its core, GP-STOR provides 13 petabytes of redundant Ceph Object Storage paired with 384 terabytes of high-speed Solid-State Storage, enabling researchers to manage everything from massive simulation outputs to real-time instrument and sensor data. The solid-state tier is designed to handle streaming workloads efficiently, making it an excellent choice for artificial intelligence and machine learning tasks that require fast data access.

GP-STOR differs from centralized storage systems by being distributed across three main locations: the University of Missouri, the University of Nebraska, and the University of South Dakota. This geographic distribution enhances availability, provides redundancy, and strengthens regional resilience. This architecture directly addresses the challenges of supporting advanced cyberinfrastructure in rural and emerging research regions, where access to high-performance data platforms has historically been limited.

GP-STOR is designed with researchers in mind. Users can access data through a web-based interface, Globus endpoints, OSDF Origin nodes, and mounts on the Open Science Grid and National Research Platform, reducing friction between data storage and computation. By supporting seamless integration with existing national cyberinfrastructure, the platform allows

research teams to focus on discovery rather than data management.

Beyond technology, GP-STOR also is investing in people. Virtual office hours, video walkthroughs, training sessions, and hands-on documentation are helping cultivate an engineering and facilitation workforce capable of deploying and sustaining advanced research platforms across the region. Students and early-career researchers gain practical experience using modern data infrastructure in both classroom and research settings.

As GP-STOR moves from early adopter onboarding to full public access, it stands poised to strengthen campus research capacity, support key regional industries such as agriculture and materials science, and accelerate discovery across the Great Plains. Get more at <https://gp-stor.org/>.

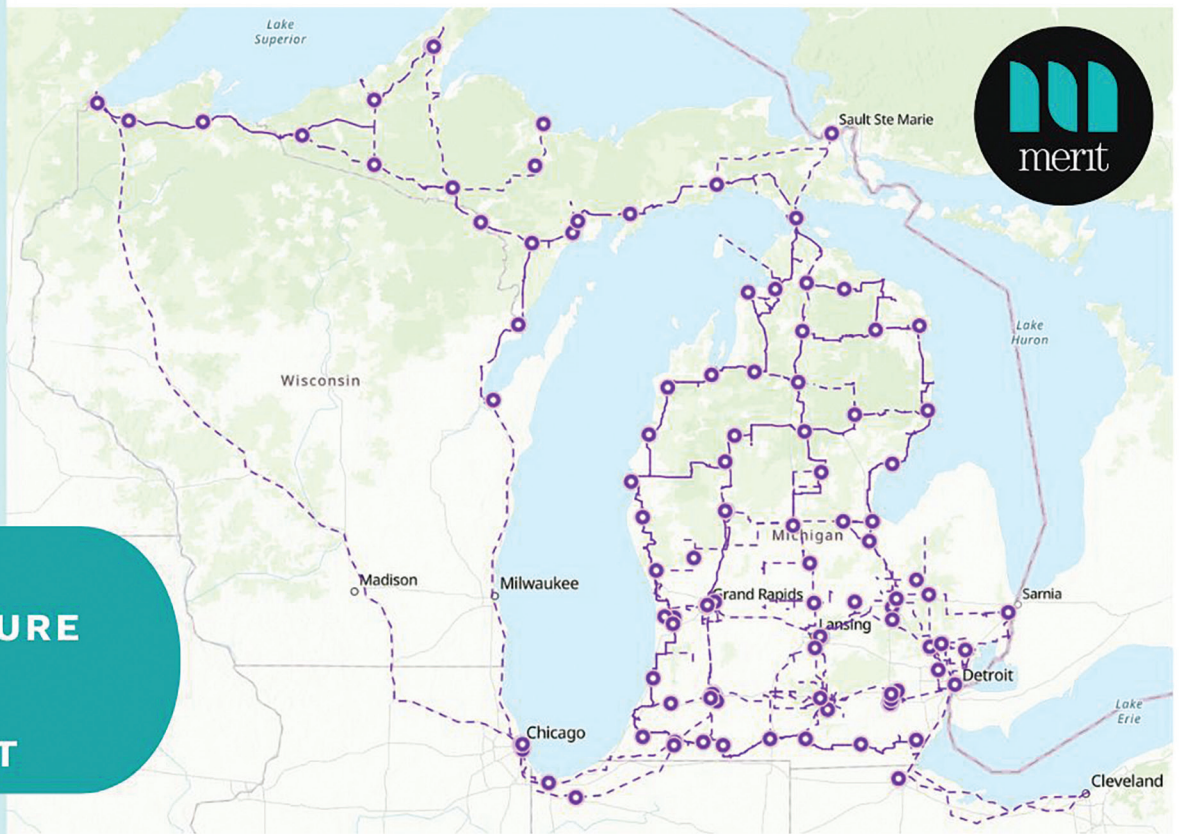
The Great Plains Network (GPN) is a consortium aggregating networks through PoP connections, helping to advance research, foster collaboration, and support cyberinfrastructure development for universities and state research and education networks across the Great Plains. The Great Plains Network was founded by researchers for researchers to increase networking speeds and enable access to national cyberinfrastructure. GPN was one of the first GigaPoP connections to Internet2 and has remained diligent in its mission to support research and the missions of its member institutions over the past 30 years. Visit <https://www.greatplains.net/>

Merit retires 'string of pearls' for new high-performance architecture

Project RISE

THIS MAP INDICATES MERIT OPTICAL NODES (PROJECT MOON-LIGHT). PROJECT RISE INCLUDES UPGRADES AT ADDITIONAL ADJACENT ROUTE/SWITCH DEVICES IN MERIT'S NETWORK.

ROUTING INFRASTRUCTURE SYSTEMS ENHANCEMENT



One of the most ambitious technological shifts in regional networking is unfolding across Michigan.

Merit Network, one of the nation's longest-running research and education networks, is moving away from its legacy "String of Pearls" architecture to embrace a new high-performance future.

Project RISE (Routing Infrastructure Systems Enhancement) is a complete modernization of Merit's routing and switching environment. By deploying next-generation 400G equipment, Merit is eliminating the site-to-site dependencies and operational complexities that once limited growth. This new architecture also supports a vast range of Ethernet capabilities – from 10G to 400G – ensuring that the state's anchor institutions will be able to scale their bandwidth both reliably and confidently.

This upgrade perfectly complements Merit's recent completion of the MOON-Light initiative, a federally-funded project that enhanced the state's optical plane. While MOON-Light focused on the middle-mile fiber infrastructure across 74 counties, Project RISE provides the intelligent routing "brain" required to handle massive data loads with greater resiliency and security.

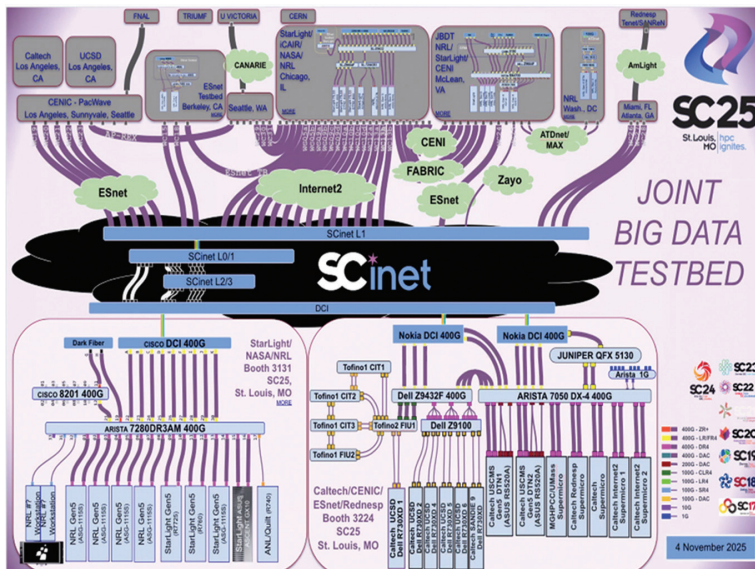
For K-12 schools, libraries and health care providers, Project RISE is more than a speed boost; it is a necessity for survival in the AI era. Legacy monolithic designs often struggled to support modern metro Ethernet services, such as Layer 2 and Layer 3 VPN overlays. The new architecture removes these barriers, enabling enhanced performance, superior network monitoring, and increased equity and access.

At its heart, Project RISE is about community empowerment. By modernizing critical infrastructure, Merit is ensuring that the state's research ecosystem remains a global leader. This investment ensures that Michigan's academic and public institutions are not just connected for today's needs but are prepared for the 800G demands of tomorrow.

Through Project RISE, Merit continues its 55-year legacy of ensuring that geography is never a barrier to discovery, opportunity, or innovation.

Merit Network, Inc. is an independent non-profit corporation governed by Michigan's public universities. Merit owns and operates America's longest-running regional research and education network. In 1966, Michigan's public universities created Merit as a shared resource to help meet their common need for networking assistance. Since its formation, Merit Network has remained at the forefront of research and education networking expertise and services. Merit provides high-performance networking and IT solutions to Michigan's public universities, colleges, K-12 organizations, libraries, state government, health care, and other non-profit organizations. Visit <http://www.merit.edu/>

MREN accelerates new era of scientific discovery



With international, national and regional partners, the Metropolitan Research and Education Network (MREN) annually collaborates with SCinet to create a global testbed to support experiments and demonstrations for the ACM/IEEE International Supercomputing Conference for High-Performing Computing, Networking, Storage, and Analysis – better recognized last year as SC25. Within the Network Research Exhibition (NRE) program, these activities focus on developing new architectures, services, technologies, and techniques for large-scale, data-intensive science research.

For SC25 in St Louis, Missouri, SCinet, MREN, the StarLight International/National Communications Exchange Facility in Chicago, and other research partners designed, implemented, and operated a global testbed to showcase multiple innovations related to science. This consortium supported over 20 SCinet NREs. Focal sciences included high-performance networking and computational science, in part based on AI/ML/DP, for high energy physics, bioinformatics, fusion energy, synchrotron experiments, HPC-based research, radio astronomy, astrophysics,

atmospheric science, oceanography, and large-scale modeling and simulation.

Global science research requires gathering, analyzing and transporting extremely large volumes of data, using high-capacity end-to-end flows at terabytes among sensor sites,

instruments, analytic sites, HPC centers, and data repositories. The Large Hadron Collider (LHC), for example, generates more than 200 petabytes per year, distributed over the LHC Optical Private Network to Tier 1 sites worldwide. The future High-Luminosity LHC is expected to generate 10 times that data volume.

Consequently, for SC25, a key theme was investigating and demonstrating prototype 1.2 Tbps international WAN services as well as 400 Gbps and 800 Gbps WAN services. A prototype LHC Tbps WAN service, the first international SCinet 1.2 Tbps WAN service, was implemented from the University of Victoria in Canada across the CANARIE R&D Network to the Pacific Wave in Seattle, to the Pacific Northwest GigaPoP, over 3*400 NA REX paths to the StarLight facility in Chicago, to the StarLight booth at the SC25 show floor. The SCinet WAN testbed also included 2.4 Tbps between StarLight and the Joint Big Data Testbed Facility (JBDT) in Virginia (managed with the NASA Goddard Space Flight Center and the Naval Research Lab), 9.6 Tbps paths between the StarLight Facility and the SC25 StarLight booth, an extension of the ESnet 400 Gbps testbed to the StarLight booth, and

two coherent optical channels (at 400 Gbps and 800 Gbps) between StarLight and the StarLight booth at the venue.

With its research partners, MREN used this testbed to successfully stage demonstrations for the Global Research Platform with 1.2 Tbps, 800 Gbps and 400 Gbps path services based on Software Defined Networking (SDN); dynamic provisioning with the StarLight International Software Defined Exchange (iSDX); programmable dynamic L2 WANs, in part based on AI/ML/DL; advanced services for Global Petascale Science; dynamic Data Transfer Nodes (DTNs) including AIDTN-as-a-Service; 800 Gbps WAN Disk-to-Disk transfers; dynamic systems provisioning among open exchange points including SENSE SDN for End-to-End Networked Science at Exascale with the Network Services Interface (NSI) and the National Research Platform; high-fidelity visibility for 400 Gbps science data flows with packet marking, analytics, and automated responses, with real time analytics using FPGAs; high-performance WAN transport protocols; measurements for real-time, high-performance telemetry based on FPGA analytics; data plane programming; and the SCinet “Data Tsunami” that generated more than 12 Tbps.

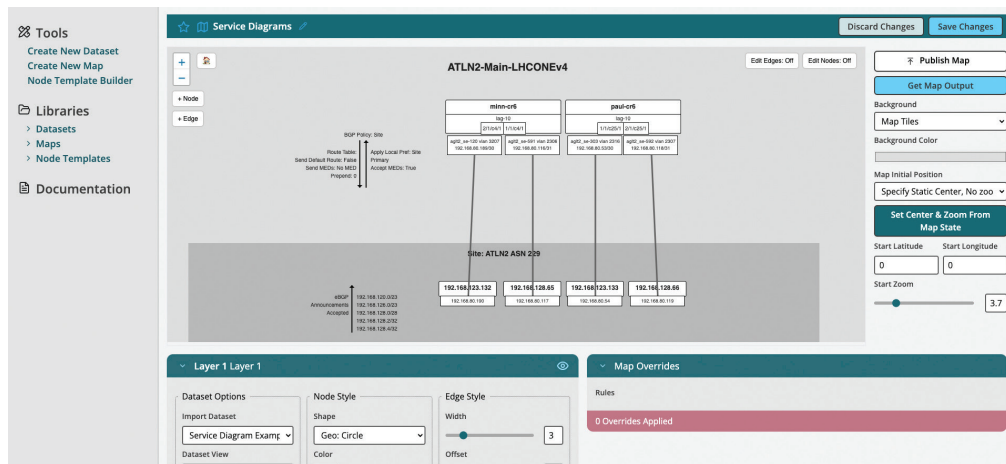
MREN also supported a prototype 4,000-mile, 800 Gbps WAN service for the OFC conference in San Diego in March 2025. Working with SCinet once again this year, MREN is planning for SC26 in Chicago this November with plans to explore emerging Gen6 DTNs and CX9 800 G smart NICs; OFC 2027; the Data Mover Challenge (Supercomputing Asia Conference); the CERN Data Challenge; and extensions to an optical fiber-based metro area quantum networking testbed developed with Argonne National Laboratory, Fermi National Accelerator Laboratory, and Northwestern University.

The Metropolitan Research and Education Network (MREN) is an advanced, high-performance, regional network supporting organizations in seven states in the upper Midwest. MREN's primary focus is on providing advanced digital communications for leading-edge research and educational applications, primarily communication services for data intensive science. MREN is a founding member of the Pacific Research Platform initiative (PRP), which is an NSF-support project, developing a regional Science DMZ that extends from the West Coast to the StarLight facility. Visit <http://www.mren.org/>

ESnet introduces TerraNova network mapping software



The TerraNova mapping software user interface.



ESnet network engineers produce site service diagrams such as this one to depict how routers managed by different organizations exchange information.

TerraNova, a new open-source software from Energy Sciences Network (ESnet), addresses a long-standing problem with data network mapping: keeping maps accurate amidst frequent changes. This adaptable map generator can be used for both high-level and very detailed network cartography, improving situational awareness for engineers and network stakeholders by ensuring everyone has access to schematics with the appropriate level of detail.

A network map panel plugin for Grafana is currently available (grafana.com/grafana/plugins/esnet-networkmap-panel); the full TerraNova suite is slated for open-source release this year. ESnet has been using the

plugin to provide the mapping for my.es.net, a custom, public visualization of current and historical ESnet network traffic. With the full suite, network engineers will have access to more robust, adaptable tools to provide a consistently accurate and up-to-date view of their network while also being able to visualize the same data in multiple formats for different purposes and audiences.

Once embedded, TerraNova maps can be set to refresh automatically, which means any presentation, website, or customer portal can feature an accurate network map created that same day. The ease of map production reduces the tendency for obsolete versions to linger. Other TerraNova features include

the ability to pull data automatically from existing sources such as the bundled Google Sheets plugin or a custom Python adapter for the organization's institutional network database. Users also can create maintainable network traffic maps tailored to specific use cases, in combination with the software's map definition outputs (wireframes) and the Grafana plugin, for real-time and historical operational visualizations. TerraNova also has multiple geographical and logical layout options, an easy interface for network engineers to maintain and update, multiple file formats for exported maps including SVG, Grafana and embed code, and different map views where previous versions can be named and automatically saved for historical archives.

Internal ESnet testers have found numerous use cases for TerraNova. Network engineers co-designing research data flows have saved time when dialing in schematics. The software allows engineers to create a rough draft, show it to stakeholders, quickly refine it as needed based on feedback, and then publish it and/or reuse it in multiple places, with consistent representation across multiple websites and tools. Other ESnet teams are using TerraNova to demonstrate the interconnectedness of all the institutions on a specific project to see where there might be bandwidth contention and then proactively address it.

"Visualizing a network has always been hard, but doing it well provides a lot of benefits, especially in building understanding and facilitating conversations across communities that are not familiar with how a network works," summarized ESnet Executive Director Inder Monga. "We are pleased to offer this open-source tool to the national R&E networking community. We hope our colleagues find that TerraNova can serve as a single, trusted map resource that can be referenced, maintained, and updated automatically; thus helping all of our networks serve science as seamlessly as possible."

ESnet is the U.S. Department of Energy (DOE)'s sole high-performance networking user facility, serving as the "data circulatory system" for tens of thousands of scientific researchers at all 17 national laboratories, 28 user facilities, and other scientific instruments in the U.S. and Europe, and peering with more than 270 research and education (R&E) and commercial networks. Visit www.es.net.

MetrANOVA Consortium hitting its stride after SC25 success

Last year’s Quilt Circle introduced the new MetrANOVA consortium, which is actively building a free, open-source pipeline for flow analysis, complete with enterprise-level features for the R&E networking community.

In November 2025, the team deployed an early version of MetrANOVA at the International Conference for High Performance Computing, Networking, Storage, and Analysis (SC25), where it helped measure and visualize traffic on the SCinet network. The software is expected to be available in 2026, with details available on the MetrANOVA website.

“Being able to test MetrANOVA on the world’s fastest and most complex temporary network was a unique opportunity to see not only how the software held up in a demanding environment, but also how we could better visualize network data from a wide array of network equipment manufacturers,” said Doug Southworth, SCinet volunteer and Engineering Scientist at MetrANOVA member Texas Advanced Computing Center (TACC). “One of our core goals is for anyone to be able to deploy MetrANOVA on any network and gain valuable insights. What better place to test that than SCinet?”

The MetrANOVA team is currently focusing on three key deliverables:

1. A scalable software stack for all sizes of network-based systems, leveraging existing open-source components.
2. Full-featured measurement stack for network metrics, including flow data and network device statistics.
3. Proven deployment patterns, including techniques for controlled data sharing and transparent testing results.

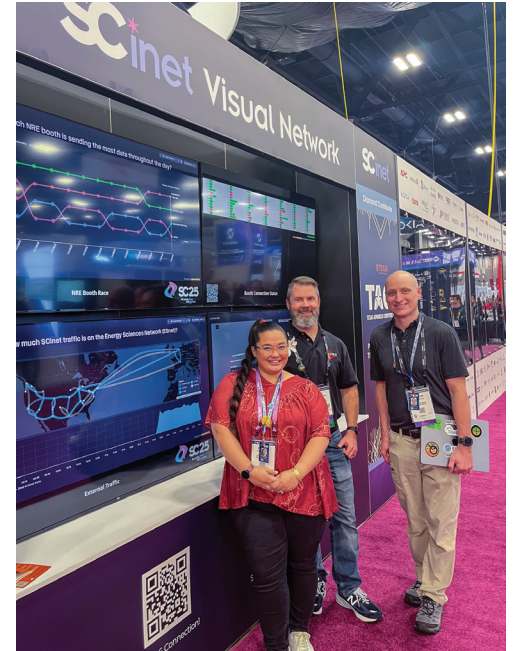
Available on GitHub (github.com/MetrANOVA), these technical components, design patterns, and educational resources are designed to drive innovation in network observability and connect users to a global network of peers.

The working group last year also produced the 2025 MetrANOVA Datastore Comparison, which details an evaluation of various database technologies (datastores) – including ClickHouse, Elasticsearch, MongoDB, OpenSearch, and TimescaleDB – for the project’s long-term storage and access of time-series data. They also outlined MetrANOVA’s approach to enabling flexible, secure, and policy-based sharing of operational network data among participants, primarily focusing on federated data-sharing communities, in a MetrANOVA Data Sharing Considerations whitepaper. Both documents are available from the website. Indiana University and ESnet are both in the process of deploying the MetrANOVA stack.

The MetrANOVA team in 2026 is planning the beta release of a container-based version of the software stack (supporting both Docker and Kubernetes), as well as an analysis of SNMP (Simple Network Management Protocol) vs Streaming Telemetry-based measurement on different platforms. They are also seeking more participants, both as members (organizations) and affiliates (individual volunteers).

“We’re looking for developers, testers, power users, and anyone who wants to help

develop documentation –you name it,” said Edward Balas, MetrANOVA Consortium Lead and ESnet Measurement and Analysis Group Lead. “This is a great opportunity to contribute to a global effort and network with fellow engineers.”



MetrANOVA members (From Left) Katrina Turner, ESnet; Andy Lake, ESnet; and Doug Southworth, Texas Advanced Computing Center, show their implementation of MetrANOVA’s tools to measure and visualize SCinet at SC25 last November in St. Louis.



The same group also shared the latest developments in a MetrANOVA presentation at the SCinet booth.

The **MetrANOVA** consortium focuses on Advancing Network Observation, Visualization, and Analysis. Energy Sciences Network (ESnet), GÉANT, GlobalNOC at Indiana University, Internet2, and the Texas Advanced Computing Center launched MetrANOVA in 2024. Visit www.metranova.org to learn more and join in the effort.

About Us

The Quilt is a national coalition of non-profit U.S. regional research and education networks representing 43 networks across the country. Participants in The Quilt provide advanced network services and applications to over 900 universities and thousands of other educational and community anchor institutions. Our goal is to promote consistent, reliable, inter-operable and efficient advanced networking services that extend to the broadest possible community and to represent common interests in the development and delivery of advanced cyberinfrastructure that enables innovation through our education and research mission.

Our Mission

The Quilt: A collaboration of U.S. research and education networks committed to innovation and advancement of these purpose-built networks that empower our public service missions.

Our Name

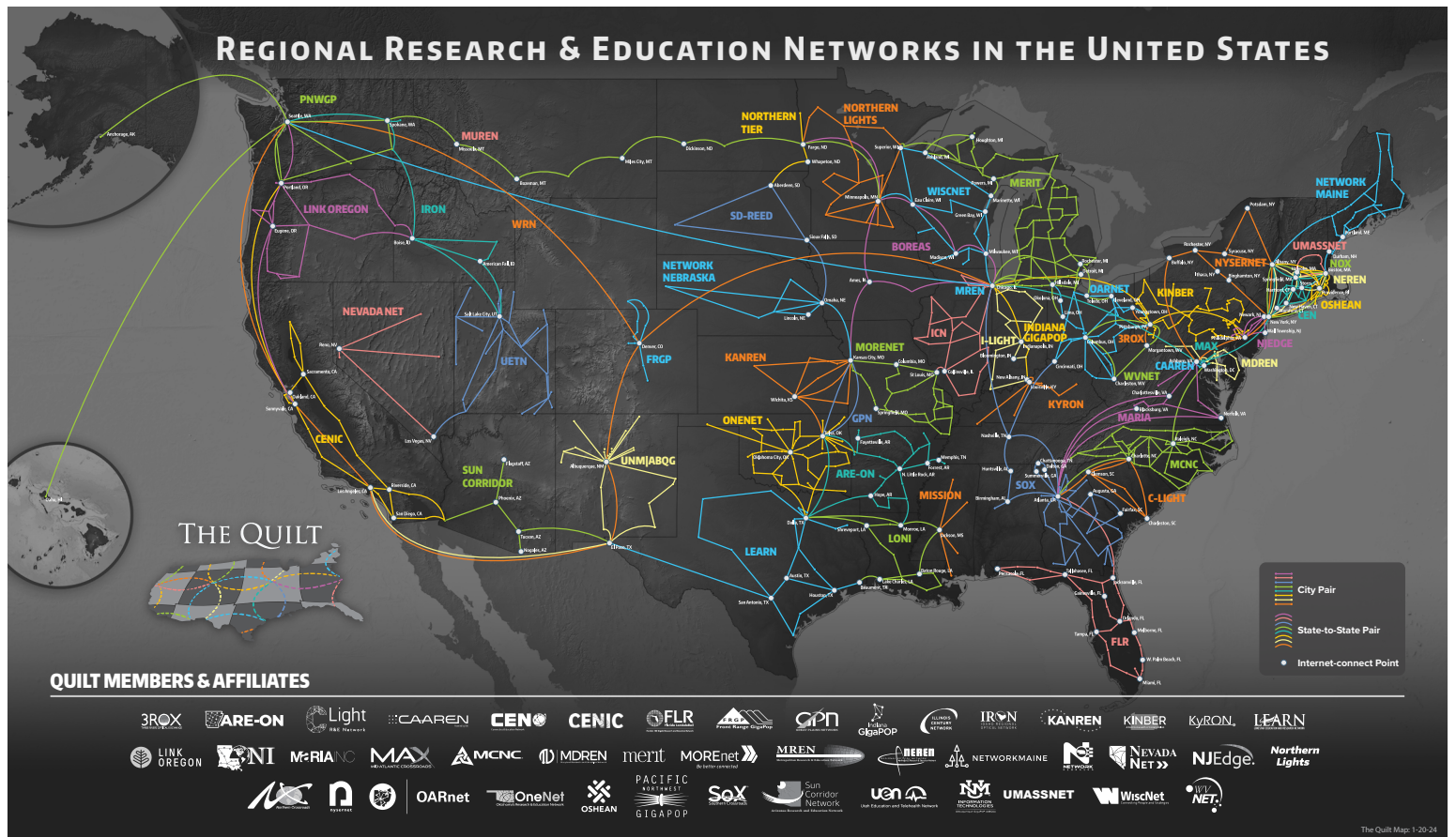
Just like the various fabric patches of a quilt highlight different colors, patterns and textures, each regional network reflects the diversity and the unique qualities found in different parts of the country and the different institutions that particular network serves. Yet all regional patches must be stitched together seamlessly, coherently and interoperably to serve a larger purpose and community.

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Acknowledgements

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THE QUILT

