CELEBRATING

# 35

YEARS

OF IMPACT

‘91 — ‘26

MOREnet

# MISSION

**MOREnet serves our member organizations as a trusted partner. We explore and provide technology solutions that enable innovation and opportunity, creating a higher quality of life for all Missourians.**

# VISION

**MOREnet will actively research emerging technologies and drive the innovative application of connectivity and information technology for the benefit of our consortium members and those whom they serve.**

# NOTE FROM OUR COUNCIL CHAIR

I was first introduced to MOREnet more than 25 years ago while working as an instructor for New Horizons Computer Learning Center. MOREnet contracted with our company to provide training courses for its staff and member organizations. During that time, I taught classes on Active Directory, Windows Server Administration, and a variety of other Microsoft technologies. From my very first experience with MOREnet, I was impressed by the scope and breadth of its services. I had the opportunity to meet professionals from school districts and libraries across the state, and the number of training courses offered was remarkable. As I learned more about the organization, I became even more impressed by the wide range of services MOREnet provided to its members.

In 2004, I joined Special School District of St. Louis County, and I was pleased to learn that SSD was a MOREnet member district. In fact, several of my new colleagues attended MOREnet courses that I delivered during my time at New Horizons. Since joining SSD, MOREnet has been an invaluable resource throughout my career as an IT professional. It is more than a service provider; it is a true partner.

When I accepted the position of Chief Technology Officer, I knew MOREnet would play an integral role in my vision for our district's technology journey. Over the years, I have consistently felt supported by the MOREnet team. They have been an invaluable asset to our district, and I have consulted with their staff countless times while planning and implementing technology initiatives. The support to navigate National Data Privacy Agreements provided by MOREnet has been exceptional, and the professional development opportunities available to our staff are outstanding. Equally important, all of these services are delivered with a commitment to exceptional customer service.

I have treasured my time on the MOREnet Council as an opportunity to give back to an organization that has provided me with so much support throughout my career. It is an honor to serve as chairperson. I encourage each of you to take full advantage of the many resources available through your MOREnet membership and to never hesitate to reach out to this talented team of professionals with any questions or concerns.

Here's to a bright future and the continued success of MOREnet and its members!



Doug Austin
Chief Technology Officer
Special School District of St. Louis County

# Who We Are

Established in 1991, the Missouri Research and Education Network (MOREnet) operates as a nonprofit public-sector Research and Education Network (REN). The organization originated from an initial vision formulated and realized by 13 public higher education institutions determined to link together and access the emerging internet via a shared, statewide infrastructure. As one of the nation's very first RENs, MOREnet has spent three and a half decades pioneering organizational collaboration and technological advancement across the state.

Today, MOREnet serves approximately 700 public sector entities throughout Missouri, delivering internet connectivity, essential technical services, support, resources and professional development.




**K-12 school districts public and private**



**Colleges & Universities public and private**



**Public Libraries**



**Healthcare Providers**



**Nonprofit Organizations**



**State & Local Government**

# The Core Foundation

A robust and secure statewide fiber backbone serves as the foundational infrastructure linking these institutions to one another and the world. This network access undergoes continuous performance enhancements, ensuring connected members are able to execute digital operations seamlessly and scale both research and programming with guaranteed network capacity.

# Beyond Connectivity

## A Shared Mission

Operating as Missouri's premier nonprofit technology partner built entirely by and for its members, the MOREnet consortium extends its focus beyond internet access toward the broader empowerment of academia and the public good. As daily operations are deeply dependent on technology, MOREnet's dedicated research drives the deployment of advanced tools and services that enhance cybersecurity, minimize administrative overhead, and maximize the usability of cloud and digital resources. We are excited to celebrate the impact of the last 35 years, including the evolving infrastructure, trusted partnerships, and a constant commitment to keeping Missourians connected.

# 1991

## Founding of MOREnet




Missouri's four-year public higher education institutions expressed a desire to connect to the NSFNET, a precursor to today's internet. This shared vision formed the Missouri Research and Education Network (MOREnet), creating one of the first shared, statewide shared higher education networks in the country. Within two years, two-year public and independent higher education institutions joined the growing consortium. As new institutions joined, MOREnet launched a pilot project with the Missouri Department of Elementary and Secondary Education (DESE), involving 100 K-12 school districts, successfully bringing hands-on training and expert technical consultation directly into Missouri classrooms.

Today, across our consortium members, MOREnet manages nearly 600 connections into our statewide fiber network. These last mile connections have an aggregate member bandwidth capacity of more than 663 Gbps, and that capacity continues to grow each year.

## The Growth of Our Member Consortium

- **4-Year Higher Education Institutions**
- **2-Year Higher Education Institutions**
- **Partnership with DESE**
  K-12 school districts in pilot program
- **Connecting Libraries**
  in partnership with the REAL program
- **Continued Growth**
  Nonprofits, government and healthcare included



**469**

469 public and private K-12 schools serving nearly 830,000 students.



**57**

57 public and independent higher education institutions serving over 230,000 students.



**135**

135 public libraries serving nearly 5.6 million Missourians.



**31**

31 state/local government, health care and nonprofit entities.

# 1994

## MOREnet's first contract with DESE

In 1994, MOREnet secured the first of many contracts with DESE to provide essential network access, training and technical support to public school districts throughout the state. Though educational technology continuously evolves, the primary goals remain the same. Today, MOREnet's partnership with DESE continues in the form of providing training aligned with Missouri's computer science standards, delivering no-cost professional development, coding and AI literacy programs to more than 8,500 educators statewide since the computer science standards partnership was established in 2019.





# The Inception of the REAL Program

Partnering with the Office of the Missouri Secretary of State and the State Library, MOREnet created the Remote Electronic Access for Libraries (REAL) Program to establish baseline connectivity and technology standards for eligible public libraries statewide.



What began with ensuring basic connectivity in 1994 now enables full-scale network reviews and essential upgrades. With the support of House Bill 12 (HB12) and its REAL Program funding, MOREnet provides high-speed connections to over 200 library locations statewide while deploying modern switches, Wi-Fi access points, and firewalls for these essential community anchor institutions. As a prime example, MOREnet network experts recently executed a complete multi-county firewall refresh for Riverside Regional Library's six branches in under 24 hours, ensuring minimal downtime for patrons and staff.

*"The Willow Springs Public Library is a free WiFi hotspot for our small rural town where many people do not have internet access. We can only offer this because MOREnet helped us setup an isolated and filtered network which we could not have done on our own. MOREnet IS our I.T. Department and we appreciate their expertise and help."*

*Willow Springs Public Library*

**Current Day**

## MOREnet Updates Entire Network Architecture of a Six-Branch Library System in One Day

When Frankie Lea Hannan moved from the Carolina Coast to become the director of the Riverside Regional Library system in southeastern Missouri, she was excited for the challenge of leading a six-branch system that spanned three counties. Hannan and her family were delighted by the slower pace of life that southern Missouri offered, but she knew that she would inherit a varied array of responsibilities with her new position as director. She quickly learned that the six branches had outdated equipment, so she made it her first goal to improve both technology and equipment. "Our newest computers were from 2018."

As a member of the MOREnet consortium, they were able to utilize MOREnet network engineers, to evaluate the network. "We found out that our network did not have a private side for staff and a separate side for patrons", stated Hannan. MOREnet's experts confirmed that made the library system vulnerable, "...because you never know who is going to come in and connect to the network and what they're going to do once they're in." Hannan also found out that their firewalls needed to be updated, and the filters were not working as they should.

As the MOREnet experts walked Frankie through the process, she learned that the library system was eligible for Remote Electronic Access for Libraries (REAL) Program funds available through funding from HB12 and the program through Missouri State Library to upgrade their technology, making the network more efficient and secure for staff and patrons. Once Frankie received board approval, the MOREnet team staged Fortinet switches, access points and firewalls for installation, while also preparing a MOREnet team to reconfigure the entirety of the six-branch system in one fell swoop.

> *"I would recommend this to anyone in a heartbeat."*
> *Frankie Lea Hannan*

Just before the 2024 winter holidays, the team of five MOREnet network experts began the installation process. The team started with the three largest branches and executed their plan; once everything was installed and working as it should, they moved on to the remaining three branches. The entire project was completed in one day. "It was definitely a team effort synchronizing that process with minimal downtime for the branches", stated one MOREnet network engineer, "At the end of the day, seeing the piles of old equipment that had all been replaced was rewarding." In addition to the updated network, the REAL funding also includes five years of management, which leaves Riverside Library with a stronger network and a safer security posture for years to come.

Prior to coming to Riverside, Director Hannan had an IT professional on staff. "I never had to think of the more intricate side of IT. Everyone at MOREnet has been amazing, always willing to step up and help us. I feel like I understand more than I did when we started." The experts at MOREnet are pleased with the results at Riverside, noting, "The REAL funds were a game changer. Having the budget for an install of this magnitude would be very difficult, and at best, it would have needed to happen in stages without the REAL funds." When asked if she would recommend working with MOREnet to others, Hannan was resolute in her response: "I would recommend this to anyone in a heartbeat."

Thanks to funding from HB12 and the Remote Electronic Access for Libraries (REAL) program through Missouri State Library, 133 libraries in the state of Missouri are now using new network and security solutions to improve their bandwidth and protect their locations from data breaches and cybersecurity attacks.

# 1995

## Introducing the Consortium's Shared Online Resources

To power the REAL initiative, the Missouri Secretary of State secured funding, launching shared online research resources across the entire MOREnet consortium.



### Early digital research takes off

MOREnet members logged over 1.4 million EBSCO searches in 1997. Today, that number stands at 181.4 million, reflecting the essential role these digital tools play in modern classrooms and libraries.

In addition to EBSCO, MOREnet actively supports specialized community needs, annually enabling:

- 223,159 HeritageQuest genealogy searches.
- 116,292 LearningExpress Library career and test-prep resources accessed.
- 5,926 Rosen Digital literacy and wellness searches.

**Our library has been a MOREnet member since the beginning and you all have absolutely been our most important technology partner over all those years.**

**Daniel Boone Regional Library**



# 1997

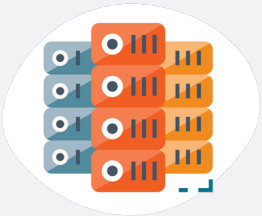
## The Launch of MOREnet2

45 Mbps

MOREnet deployed its next-generation "MOREnet2" network backbone, drastically increasing connection speeds to 45 Mbps. This leap in infrastructure provided member institutions with speeds 30 times faster than the original 1993 network, paving the way for the future of digital research and learning in Missouri.

Current Day

### Value of a MOREnet Connection



**Advantage:** MOREnet's Network Connectivity Fee (NCF) transforms an internet connection into a highly secure, reliable and fully managed technology ecosystem, specifically engineered for Missouri's public sector.

**Symmetrical & Low Latency:** Equal upload and download speeds backed by multiple Tier 1 internet providers create a highly resilient, redundant path designed specifically for research and education.




**Built-in Protection:** The connectivity bundle includes Distributed Denial of Service (DDoS) mitigation and scrubbing to actively defend member networks from cyberattacks.

**Missouri-Based Support:** Members get direct, local access to some of the top network and cybersecurity experts in the state, boasting an impressive 98% help desk case satisfaction rating.





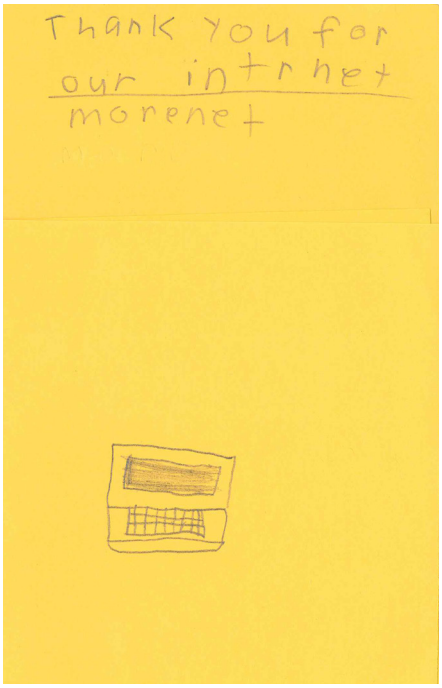
# 1998

## The Start of E-Rate

To help bridge the digital divide, out of the Telecommunications Act of 1996, the FCC established the E-Rate program to offer connectivity assistance; it was rolled out and began funding projects for eligible schools and libraries in 1998.

### Bringing Millions Home to Missouri

MOREnet has the state E-Rate coordinator on staff, and each year we apply for E-Rate on behalf of our connected members, who realize the federal discount right away, even before the reimbursement is distributed to MOREnet. To date, our hands-on support has helped Missouri schools, libraries, and shared networks secure nearly $190,000,000 in federal funding, keeping high-speed Internet affordable.






# 1999

## Unlocking Interactive Video and Multimedia

155 Mbps

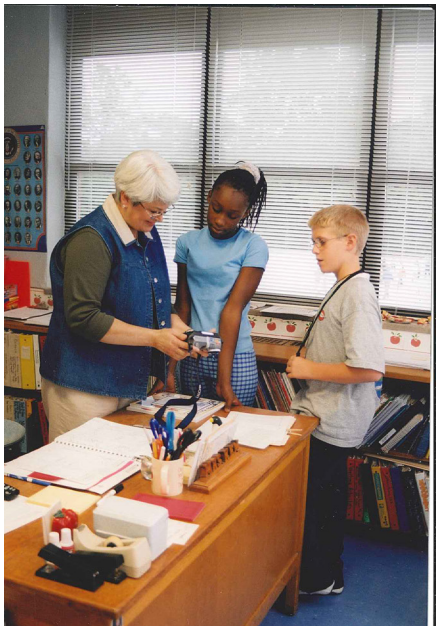
The MOREnet3 backbone initiative increased the backbone to 155 Mbps. This major infrastructure upgrade introduced full-scale interactive video services and additional multimedia applications. The improved connectivity and introduction of H.323 IP based videoconferencing enabled K-12 schools, colleges, and libraries to share courses, access remote specialists, and reduce travel costs through real-time interactive video.



### Retiring a Legacy, Leaving a Lasting Impact

After three decades of enabling virtual education—from mid-1990s pilot projects to massive multi-site broadcasts—MOREnet officially retired its dedicated videoconferencing bridging service in June 2022. As modern cloud-based platforms took the lead, MOREnet shifted focus to high-capacity bandwidth and network security. The legacy of MOREnet's videoconferencing lives on: 30 years of video pioneering built the technical foundation and institutional trust that allowed Missouri schools to shift practically overnight during the 2020 pandemic. We were immediately able to assist our members to pivot from traditional, room-based video devices to procure and deploy web-based videoconferencing solutions tailored for remote classrooms and virtual meetings.

## The Evolution of eMINTS



Building on a promising 1998 pilot program in St. Louis, the University of Missouri, the Department of Elementary and Secondary Education and the Missouri Department of Higher Education officially launched Enhancing Missouri's Instructional Networked Teaching Strategies (eMINTS)—a collaborative effort to enhance classroom teaching through technology. MOREnet oversaw this new initiative, functioning as its primary administrative and technical backbone.

### The Partnership Today

Eventually, eMINTS transitioned to become the eMINTS National Center, a non-profit program within the UM College of Education. The program remains a vital part of MOREnet's ecosystem today, highlighted by a dedicated eMINTS learning track featured at MOREnet's Annual Conference.

# 2003

## Quadrupling the Core

622 Mbps

Another network upgrade delivered a fourfold increase in bandwidth from 155 Mbps to 622 Mbps.

From the Archive

First published in May 2006 (Issue 6 of the MOREnet Working newsletter), this archived article captures a historic, first-of-its-kind milestone: MOREnet partnering to bring the world's first permanent high-speed internet connection inside a fragile Ice Age cave.

## From Fossils to Fiber to the Future

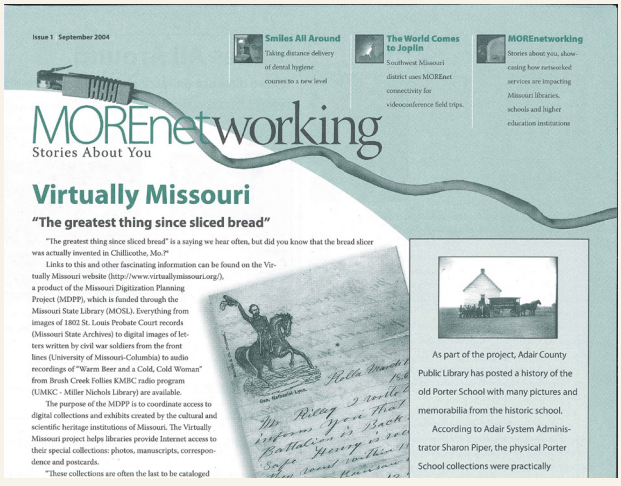
### Technology brings Riverbluff Cave to the outside world

Discovered during construction blasting on Sept. 11, 2001, Riverbluff Cave, located in Springfield, contains Ice Age artifacts that are hundreds of thousands of years old. The environment inside the cave is still so fragile that researchers do not allow many people into the cave. But thanks to a collaborative effort by Springfield-Greene County Library, Ozarks Technical Community College, and the Missouri Research and Education Network (MOREnet), Riverbluff Cave, the oldest known cave in North America, is linked to the outside world with a high-speed Internet connection and video-conferencing capabilities.

Now that the cave is online, researchers and educators from around the world have access to real-time video and communication from inside the cave. Lead paleontologist Matt Forir said, "Now we can give talks to anybody, anywhere in the world."

"That was the ultimate goal," said Bill Giddings, Director of Education and Library Programs at MOREnet. "To give Matt a mechanism to provide a connection to everybody, literally, whether it's students in a junior high science class, a group of library patrons meeting somewhere in the state, college students taking a geology course, or professors doing research."

This is the first permanent connection of this kind to a cave, and making it happen was no small feat. A crew from Ozarks Technical Community College, led by


Issue 1 September 2004

Smiles All Around
Taking distance delivery of dental hygiene courses to a new level

The World Comes to Joplin
Southwest Missouri district uses MOREnet connectivity for videoconference field trips.

MOREnetworking
Stories about you, showcasing how networked services are impacting Missouri libraries, schools and higher education institutions

MOREnetworking
Stories About You

Virtually Missouri

"The greatest thing since sliced bread"

"The greatest thing since sliced bread" is a saying we hear often, but did you know that the bread slicer was actually invented in Chillicothe, Mo.?

Links to this and other fascinating information can be found on the Virtually Missouri website (http://www.virtuallymissouri.org/), a product of the Missouri Digitization Planning Project (MDPP), which is funded through the Missouri State Library (MOSL). Everything from images of 1802 St. Louis Probate Court records (Missouri State Archives) to digital images of letters written by civil war soldiers from the front lines (University of Missouri-Columbia) to audio recordings of "Warm Beer and a Cold, Cold Woman" from Brush Creek Follies KMBC radio program (UMKC - Miller Nichols Library) are available.

The purpose of the MDPP is to coordinate access to digital collections and exhibits created by the cultural and scientific heritage institutions of Missouri. The Virtually Missouri project helps libraries provide Internet access to their special collections: photos, manuscripts, correspondence and postcards.

"These collections are often the last to be cataloged

As part of the project, Adair County Public Library has posted a history of the old Porter School with many pictures and memorabilia from the historic school.

According to Adair System Administrator Sharon Piper, the physical Porter School collections were practically

Richard Anderson, Coordinator of Network Hardware and Telecommunications, was up to the task. They laid 1,600 feet of armored direct burial fiber-optic cable to connect the cave to the nearby Field House. This cable provides a stable connection from the cameras and other devices in the cave to the MOREnet network.

"The process has been very enlightening, to actually see that we can get fiber-optic material in this environment. It's awesome to look ahead to what this is going to be able to do for the education community as far as lectures and streaming video out of the cave," Anderson said.
Riverbluff Cave is estimated to be about 830,000 years old. Forir and his team have found mammoth bones, bear claw marks, snakes, turtles, bits of vegetation and even some Ice Age bugs, all of which are opening new windows to the past. Scientists are discovering new information about the climate and animals from more than 600,000 years ago.

Among the first to get a live presentation from the cave were about 2,000 science and math teachers at the 2006 Interface conference at Tan-Tar-A at Osage Beach in February.

Forir loves to let people know that this kind of science and research is happening right here in Missouri.

Now, teachers and researchers from throughout the state can contact Forir to do a presentation. "These interactive sessions can be sent to anyone who has videoconferencing capabilities," explains Annie Busch, Director of Springfield-Greene County Library, whose vision brought the collaboration together.

Researchers are using this connection to collaborate with people on-site for collecting samples, viewing formations and artifacts, and real-time interaction and collaboration. Educators and researchers alike are lining up to get a glimpse inside and share this amazing piece of history.



# University of Missouri Telehealth Network becomes a member

Backed by the robust MOREnet infrastructure established when the Telehealth Network joined in 2006, MTN had a two-gigabit backbone infrastructure that consisted of six major circuits connecting several major populations in the state. They connected more than 202 sites in 62 Missouri counties. To understand the real-world value of a stable, high-speed network, a featured story in MU Children's Hospital's Imagine Magazine (2013) provides a powerful example. This innovative pilot program shows how technology bridged the distance between parents and their babies in the NICU.



From the Archive

# Home Away from Home

Because Molly and Danny Myers have a 2-year-old son, Will, they were not able to stay at the hospital for days at a time. However, the couple piloted a program that allows families to check in on their newborn from home. The Telehealth Love and Care service, or TLC, is a free video service that allows parents and guardians to use a computer to see their babies in the NICU when parents and guardians cannot be at the hospital. Twenty iPads are available in the NICU for families. The iPads run an application called Vidyo, which is a Web-based videoconferencing system similar to Skype.

> *"It was amazing. I don't think anything can replace physically being there, but being able to see them helped tremendously."*
>
> *Molly Myers*

"It was amazing," Molly said. "I don't think anything can replace physically being there, but being able to see them helped tremendously. I was able to talk with the nurses, the resident physicians and the physicians taking care of my babies. It provided such a good peace of mind that everything was OK when I couldn't be there."

The goal of the project is not to give clinical care through video, but to let parents and guardians of children in the NICU have the chance to see, hear and talk to their babies who are in the NICU. The Myers used the service to say goodnight to their two girls, Layla and Suzi, and to let their son see his new sisters. Because it was respiratory syncytial virus (RSV) season, Will was not able to visit the NICU frequently.

The TLC iPads are equipped with speakers that are set at the appropriate decibel level so the volume cannot hurt the baby's ears. Parents can talk or read to their baby, and hearing a mother's voice allows the baby to become acclimated and develop the mother-child bond.

"Some of our babies are in the hospital for two, three or even four months, and after a while, mom either has to go back to work, or they live far away, or other kids have school or other demands on their time," said John Pardalos, MD, director of neonatology at MU. "They can't come to Columbia every day or every week to see their baby. Through this, they'll still feel bonded to their newborn and they can check on their baby, but they do not have to drive several hours to maybe see their baby for only a few minutes."

After two months in the NICU, Layla and Suzi were discharged with a clean bill of health.

# 2009

## Deploying the Next Generation Network

10 Gbps

A complete migration of the entire network backbone to a fiber-optic infrastructure established MOREnet's Next Generation Network. This technological evolution scaled system capacity to 10 Gbps, fueling rapid advancements in research and digital learning.

From the Archive

## Next Generation Network 2008 Press Release

Over the last several years, growth of bandwidth demand for MOREnet has been significant. Indeed, in fiscal year 2008 alone, bandwidth demand grew by more than 40 percent. In an effort to combat this significant and accelerating growth, we began planning the Next Generation Network (NGN). NGN is a cooperative project between the University of Missouri and MOREnet that will stabilize network backbone costs over the next 20 years while preserving our ability to increase bandwidth at a minimal cost.



The planning phase of the NGN project is complete, and implementation has begun. The implementation will be complex. In the next four to six months, MOREnet technicians will install equipment in 26 locations throughout the state, increasing backbone capacity from 1 Gbps to 10 Gbps.

During this same period, we will relocate the Kansas City and St. Louis hub facilities to carrier-neutral sites that will allow us to take advantage of direct network to network connectivity with content providers. These direct peering relationships will slow the growth on the Internet circuits and lower our cost per megabit.

Our goal during the transition is to minimize impact to MOREnet members. We have taken great care in developing the strategies and operational plans to minimize outage risks. We will do our best to minimize disruptions during the transition.

NGN provides a tremendous opportunity for MOREnet members and will solidify the network infrastructure for years to come.

# 2010–2012

## Evolving the Model, Expanding the Mission

MOREnet expanded its services to cities and counties across Missouri while transitioning from a state-appropriations funding model to a membership-funded framework—redefining operations to ensure long-term sustainability. During these pivotal years, a rollout of 13 new solutions strengthened the consortium to meet members' evolving technical and administrative needs.

Throughout these structural adjustments and continuing today, exceptional member satisfaction ratings remain a constant benchmark, driven by a continuous commitment to serve as a trusted partner and provide tailored solutions for members' unique institutional goals.



Current Day

## Quick to Respond

I have been so grateful to MOREnet for the help they provide when I have E-Rate questions. Chris Schneider is AMAZING, he always has answers for me and is so quick to respond to my questions.

Justin Johnson
Liberal R-II

## Professionalism and Courtesy

I have always been pleased by the responsiveness and care provided by MOREnet staff whenever I've contacted them with any question or issue. Thanks for providing valuable services and doing it with professionalism and courtesy.

Kyle Vann
Missouri Southern State University

## Help to Understand and Explain

MOREnet staff/techs are always professional, provide layman explanations and resolutions to issues - that is important to Riverside Regional because we do not have an IT service inhouse. As director I am the first to identify and address an issue. MOREnet professionals always step in and help me understand what and how it needs to be resolved.

Frankie Hannan
Riverside Regional Library

## Life Savers

We had a power supply on a new Fortigate firewall go down with no redundancy, therefore NO NETWORK. The guys at MOREnet walked me through setting up a temporary Open Source Firewall using an old desktop that I was able to use for a couple of days while the new power supply came in. We then ordered a second power supply from MOREnet in order to ensure that issue didn't occur again. Life savers!!!!

Nathaniel Karr
Summersville R-II

## Important Technology Partner

Our library has been a MOREnet member since the beginning and you all have absolutely been our most important technology partner over all those years. Congrats on the 35 years!

Nathan Pauley
Daniel Boone Regional Library

# Fueling Innovation Through Research Grants

From the Archive

MOREnet awarded nearly $1 million in grant funding to three member institutions. These three-year projects aimed to improve outcomes through STEM-based activities and virtual learning.

This feature from the FY14 Annual Report highlights the first-year results of these projects as they build a roadmap for statewide success.

## A Year of Innovation: Research Projects Begin to Establish Blueprint for Other Members

In FY13, after reviewing several proposals, MOREnet awarded nearly $1 million in grant funding and in-kind support to three members. Two K-12 schools and one library spent that year implementing projects designed to improve outcomes through the adoption of new technologies and STEM-based activities.

Fulton 58 is seeing success with their MIT-inspired Fab Lab, Grandview R2 is laying the groundwork to share best practices for infrastructure and policies for 1:1 initiatives and University City Public Library is getting traction with MakerSpace, encouraging local citizens to utilize technology to advance their learning and careers.

### FIRST YEAR RESULTS

**Fulton 58 MIT-Inspired Fab Lab**

- Engaging students: Attendance in Introduction to Engineering Design was 2.7% higher than the Fulton High School average
- Improving grades: Introduction to Engineering Design students achieved a 99.3% passing rate
- Increasing engagement: Fab Lab students received only 3 discipline referrals during the school year
- STEM exposure: Student interest exceeded both projections and capacity, filling three classes
- Knowledge mastery: Beyond classroom instruction, a group of students also designed, fabricated, built and programmed competition robots

**University City Public Library MakerSpace**

- Enhanced computer exploration program for kids and teens, including a Robotics Workshop
- Installed 3D printer, scanner with the modeling software: TinkerCad, MakerBot, Thingiverse and Autodesk123D
- Added A/V MakerSpace to all public library computers
- Implemented lynda.com – an online resource available from library network - over 350 courses served to-date on job training and skill enhancement
- Developed layout and plan for a recording studio in the library
- Ordered vinyl cutter, laser cutter and Minecraft server for gaming exploration
- Investigating Arduino class with Arch Reactor and Lego Mindstorm Program with University City Robotics Team

**Grandview R2 1:1, Flipped Classrooms and Virtual Teaching**

- Determined infrastructure needs as a checklist for other schools
- Improved device ratio from 10:1 to 3:1 with BYOD in elementary school
- Trained teachers on watch.more.net, a full-media repository, in addition to Moodle Learning Management System and how they integrate to provide powerful lectures and web-based learning
- Writing and setting policies to help others achieve success more quickly



Fulton Fab Lab




Grandview R2 Devices

# 2014

## Breaking the 100 Gbps Barrier

100 Gbps

MOREnet established themselves among the first Research and Education Networks (RENs) in the country to support 100 Gbps with the 2014 network upgrade.

From the Archive

## MOREnet Anticipates Needs of Future Technology

### Completes Network Equipment Upgrades to be One of Few in the Country

With this equipment upgrade, MOREnet becomes one of the few networks in the country to support 100 gigabit optical paths. In addition, this lays the groundwork for the MOREnet network to meet future demands and support capacities of up to 1 terabit per second per optical path in an efficient and cost-effective manner.

Dr. Gordon Springer, the scientific director of the University of Missouri Bioinformatics Consortium weighed in on the update, "These connections are enabling my ability to carry on research I have wanted to do for more than 20 years. Additionally, the capacity to move large quantities of data is of strategic importance for the State's research and education institutions in the years to come."

"MOREnet's upgrade dramatically expands capacity to access Internet2's Advanced Network services at 100Gbps and beyond. This network project enables the University of Missouri's researchers to better detect and treat autism, for example, while also supporting other Missouri researchers and connecting collaborators throughout the nation and the world," said Rob Vietzke, Internet2 vice president of network services. "This is another key building block that expands Missouri's support for large-scale science, technology, engineering and mathematics for future discoveries. The Internet2 community is delighted to have MOREnet as a leading national contributor to the nation's innovation platform."

Hank Niederhelm, Director of Infrastructure at MOREnet concludes, "We've seen tremendous growth in Internet bandwidth demand by our members in recent years and being able to position our statewide network to meet the continued demand is important to our members. Deploying a leading-edge network infrastructure capable of supporting very high bandwidth capacities will help Missouri to keep pace with new advances in education technology and research and we are excited to play a part in this."

# The MILL Redefines Hands-On Learning



Culminating three years of targeted research into member needs, successes and challenges, MOREnet officially launched the Immersive Learning Lab (the MILL). This hands-on, prototype environment serves as a dynamic space for educators to explore diverse makerspace equipment and cutting-edge, student-centered learning tools.

Experiencing new technology at the MILL first lets teachers make a more informed decision about how and when to use it. Andy King, EdTech Program Manager at MOREnet, gave an example when introducing the concept to education leaders.



"Early on, there was so much excitement around Lego Mindstorms. Although they are an amazing tool to teach coding, teachers quickly realized they only accommodate 2-3 students at a time, and it isn't feasible to complete a project in an hour- it's more like several hours. Through hands-on exploring, we realized this particular tool is better used for smaller groups of students in a library or after-school setting." King added, "On the flip side, we continue to be impressed by the versatility of the Sphero Robot. It has use cases from kindergarten through twelfth grade, and one robot can accommodate several students for short lessons or more in-depth learning objectives."



What began as an exploratory makerspace now serves as the launching pad for next-generation technology literacy. In June 2026, MOREnet hosted Missouri's inaugural Quantum Computing, Mathematics, and Physics (QCaMP) cohort at the MILL. Partnering with Sandia National Laboratories, MOREnet trained K–12 educators to demystify quantum principles, equipping teachers with practical tools to prepare Missouri students for the future of technology, cybersecurity, and workforce readiness. The initiative prioritizes practical engagement, computational fundamentals and guided experimentation over abstract theoretical proofs. Through immersive camp environments, participants interacted directly with quantum researchers, learned entry-level quantum coding and developed conceptual intuition through tactile exercises.

Current Day

# The Critical Role of Quantum Computing in Workforce Readiness and Security

Preparing for the quantum era is not just a challenge for theoretical physicists; it requires a practical shift across many career sectors. By introducing quantum fundamentals to K–12 classrooms today, MOREnet is helping ensure Missouri students develop the digital literacy, analytical thinking and security awareness needed for high-paying careers in a tech-driven economy.

> *"Some of the best moments happened when the participants began asking questions. The experts took their time answering, explaining concepts in different ways until the group reached those rewarding "aha" moments. Those conversations were one of my favorite parts of the week. The participants were curious and comfortable asking for clarification when they needed it. They also supported one another as they worked through ideas that were new to many of them."*
>
> *Kate Horstmann*
> *MOREnet Technology Integration Specialist and 2026 Missouri QCaMP Cohort Facilitator*

Building upon the success of the inaugural session, MOREnet plans to expand its quantum education offerings in 2027 and beyond. Future iterations aim to increase educator cohorts, secure external funding partnerships and introduce direct student-facing events modeled after MOREnet's annual cybersecurity competitions.




Participants in 2026 Quantum Camp

# 2019

## Inaugural Cybersecurity Challenge Launches

To confront the cybersecurity talent shortage, MOREnet launched the Missouri High School Cybersecurity Challenge, sparking student interest and building vital skills for cybersecurity careers.

> *"We hope that introducing Missouri students to cybersecurity through game-like exercises will spark interest in students to explore a career in the cybersecurity field. Through trial and error, students are learning techniques bad actors could use to gain access to sensitive information. With this knowledge, they can work toward keeping networks and valuable personal information safe."*
>
> *Natasha Angell, MOREnet Executive Director*

**45** teams competed in 2019

**111** teams competed in 2026

**1100** total high school students have participated since 2019

Current Day

## Beyond the Win: Developing Leaders through the MOREnet Missouri Challenge

When Arthur Schieszer was in middle school, he caught the cybersecurity bug. A self-described "tinkerer," Arthur was always curious, but it wasn't until he discovered CyberPatriots that his hobby transformed into a career path. "The spark came when I realized cybersecurity isn't just defensive," Arthur recalls. "I saw I could be on the offensive side—performing penetration testing and ethical hacking."

In high school, Arthur competed in his first Missouri Cybersecurity Challenge hosted by MOREnet. The event was an eye opener, exposing him to the vast landscape of the field and the depth of what he had yet to master. His team from Summit Technology Academy dominated, securing second place in 2023 and first place 2024.

"MOREnet's capture-the-flag (CTF) stands out because of the sheer variety and difficulty," Arthur says. "Some of those problems are perfect for newcomers and some would likely still be a challenge for me today!"

Now a university student tackling the rigors of computer science and mathematics, Arthur hasn't forgotten his roots. He recently returned to his alma mater to mentor the 2026 Summit Tech CTF team. For Arthur, mentoring is about paying it forward. He avoids giving easy answers, preferring to walk students through the problem-solving process with thought-provoking questions and encouragement.

"I enjoy giving students the kickstart they need," he says. "You want to teach them how to find the answers, because the ability to research makes up for any lack of knowledge. If you do it for them, they don't learn. If you teach them how, it makes all the difference."

Reflecting on his competitive journey, Arthur notes that the challenges provided more than just technical skills; they provided perspective. "Every challenge puts me in a valley for a while, showing me exactly where I need to grow." Beyond the technical "valleys," the events served as a valuable networking tool. "It's one of the best ways to meet people. I wouldn't have my internship this summer if it wasn't for the connections I made through cybersecurity challenges."

When it comes to daily security, Arthur's advice is practical: start by using an ad blocker and a professional password manager. For students? "Be curious. Ask for help. Rely on all your research skills, not just AI."

As for the future, Arthur is staying grounded. While he is considering pursuing a master's degree after completing his undergraduate degree in computer science, he's leaving room for the unexpected. "I would never have dreamt I'd experience what I have so far," he says. "It makes it hard to even imagine what the next five years might hold."



Beyond the thrill of the leaderboard, the Challenge serves as a powerful professional springboard. While traditional exams test memory, a CTF environment tests agility. Students aren't just identifying vulnerabilities; they are learning to navigate the high-stakes pressure of a digital defense scenario. This "trial by fire" builds a unique kind of resilience, teaching participants how to pivot when an initial solution fails, a mindset that makes them immediately more valuable in the workforce.

> *"MOREnet CTF provides an authentic, high-impact experience that is hard to replicate in the classroom. It is a competition that brings together technical skills, teamwork and real-world application in a way that's engaging and meaningful for students. For us, it's not just a competition - it's a culminating experience that reinforces everything we teach and gives students a clear vision of what's possible in the field."*
>
> *Christina Wiseman-Buckner*
> *Summit Technology Academy*

For many, this competition is the spark that turns a general interest in technology into a dedicated career path. This transformation comes at a critical time: Missouri is experiencing tremendous growth in the sector. Cities like St. Louis, Kansas City, Columbia, and Springfield are seeing major expansion in cybersecurity opportunities across healthcare, finance, manufacturing, and technology sectors. By participating in the MOREnet Challenge, students aren't just playing a game—they are auditioning for the careers that will define Missouri's economic future.

## Benefits of the Challenge



**Real-World Experience**



**Career Discovery**



**College & Career Prep**



**Team Building**



**Competition & Fun**



**Innovation Skills**

# 2020

## The Virtual Shift

The arrival of the COVID-19 pandemic triggered an immediate, statewide transition to remote work and virtual learning, prompting MOREnet to launch rapid response efforts that included critical technical support, infrastructure adjustments and digital resources to stabilize member institutions.

Our charge was to support the critical decision by our members to shutter doors to their brick-and-mortar institutions, assisting them as they relied heavily on the technology they had in place to run their organizations. MOREnet experts enabled community anchor institutions to quickly divert resources to new technologies that were needed to be successful in this unprecedented time.

It took only three days for MOREnet to move our own classroom training online, while quickly adding additional topics to help academia and public sector cope with remote work and virtual learning. We hosted a series of virtual round table discussions with members to facilitate ideas and develop solutions with one another on how to best approach this new era.

In just six weeks, our staff worked with members to create an environment of shared resources to make learning happen across all institutions.

**Over 220,000 Zoom meetings with 2.1 million people**

**Ten "how to" classes on Zoom and Google Classroom**

**Donated Zoom licenses to telehealth providers around the state to ensure they could continue health care appointments and internal training in rural areas**

**Assisted multiple members in adding a VPN to their firewalls so essential staff had the ability to securely complete their work from home**

**Worked with EBSCOhost, who donated additional databases to expand resources to member schools and libraries for remote learning**

**Facilitated alignment of wireless access points to reach beyond walls, attempting to bridge the digital divide by offering internet in library and school parking lots**

# Launch of the Missouri Student Privacy Alliance

As schools adopt hundreds of EdTech apps, districts face an overwhelming compliance burden—independently negotiating custom data privacy agreements with every vendor. To eliminate duplicate work and safeguard student data, MOREnet launched the Missouri Student Privacy Alliance (MOSPA) in July 2020 as a complimentary service for K-12 members. Partnering with the Student Data Privacy Consortium (SDPC), MOREnet introduced the Missouri National Data Privacy Agreement (MO-NDPA), establishing standardized legal protections statewide.

## Impact of joining MOSPA



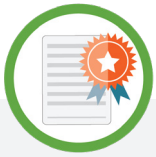
**Join a community of stakeholders with similar needs**



**Gain access to the Resource Registry and the NDPA**



**Leverage partnerships to cut down on repeated processes**



**Ensure you are following student data privacy best practices**



**Stay aware of projects with real-world impact on privacy**




### Today:

What starts as a standardized legal framework now functions as an automated, district-wide privacy ecosystem. Through the SDPC Resource Registry and piggybacking agreements, Missouri schools streamline vendor contracting from weeks to minutes. Today, integrated partnerships with The Education Cooperative (TEC) deliver full-service vendor redlining and contract management for districts that elect this add-on, removing administrative strain from Missouri schools.

## Resources added through TEC partnership



Streamlined NDPA Processing



Vendor Negotiation



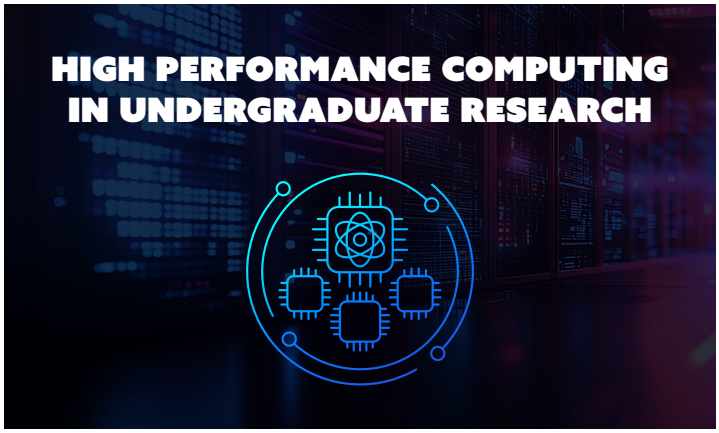
Legal Support



Access to wider range of agreements

# Awakening High-Performance Computing

In 2022, MOREnet received a National Science Foundation (NSF) Campus Cyberinfrastructure (CC*) Area 5 Planning Grant.

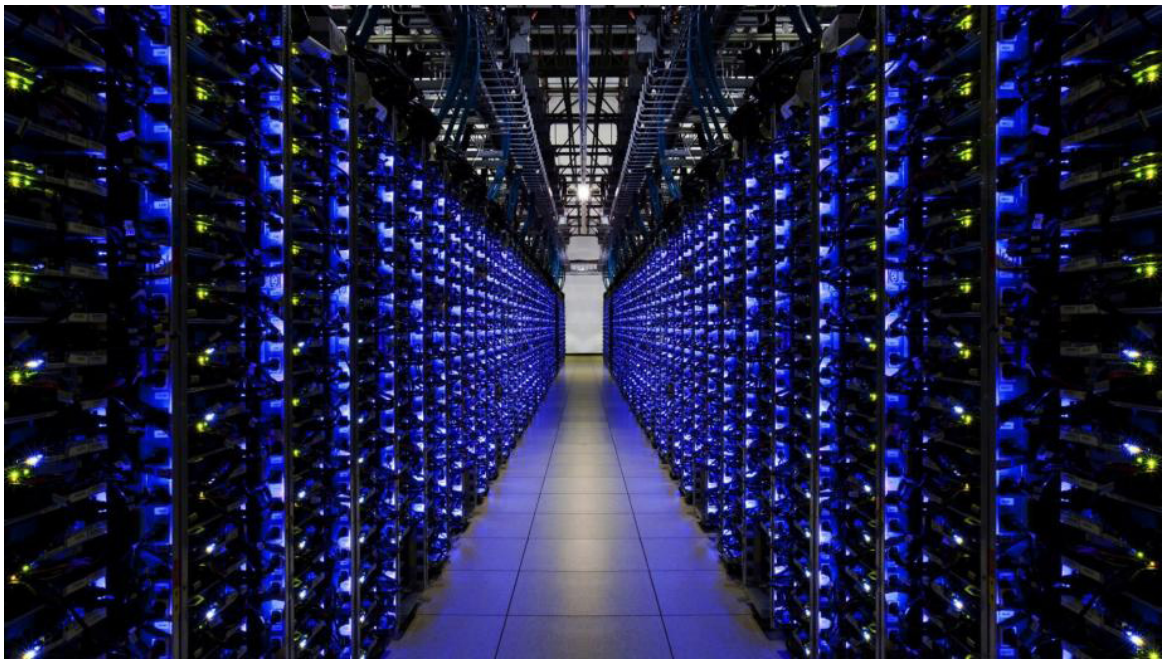



What began as a planning grant administered by MOREnet quickly evolved into a powerful, continuing statewide partnership. Following the initial planning phase, a follow-on NSF CC* regional grant funded the creation of Computational Infusion for Missouri Undergraduate Science and Engineering (CIMUSE).

This collaborative effort, composed of several Missouri universities, is supported by MOREnet and the University of Missouri Research Support Services team.

Today, CIMUSE provides Missouri's Primarily Undergraduate Institutions (PUIs) with the specialized infrastructure needed to process large-scale data and perform complex calculations far beyond the capacity of standard hardware.

The collaborative group maintains a 12-node high-performance computing cluster housed at the University of Missouri-Columbia. The goal is to continue to bring the supercomputing experience directly to undergraduate STEM students through classroom instruction and research.



# Unifying Data for College and Career Success

MOREnet received its first grant for Ed-Fi data integration and interoperability, focusing directly on College, Career and Military Readiness (CCMR) outcomes. This milestone established seamless, real-time data interoperability between student information systems (SIS) and student assessment applications. A second grant for Ed-Fi data integration was awarded in 2024.

**Current Day**

Today, the research, progress and frameworks built over two consecutive grant projects culminate in a permanent, powerful addition to our service catalog. Our K-20 Interoperable Data Solution (KIDS) empowers educational organizations to transform their data landscape. Our KIDS offerings enable the automated creation of intuitive decision-making dashboards, giving educators the actionable insights necessary to champion student success.

## MOREnet KIDS

*K-20 Interoperable Data Solution*



**Secure Cloud-Based Rostering Solutions**



**Expert Support from MOREnet**



**Intuitive Dashboards for Actionable Insights**

# Evolving Solutions for a Maturing Digital World

As adaptive learning and digital connectivity mature, MOREnet continuously evolves its service catalog to meet the changing needs of Missouri institutions. Newer solutions include:

## Regional Support Service

Onsite support for school districts and libraries who need to supplement technology staff

## Akamai Secure Internet Access

Cloud-based secure web gateway with real-time threat intelligence

## Advanced Backup Solutions

Utilizing Datto's suite of Saas, Kaseya and SIRIS, members can ensure business continuity and disaster recovery.

## Endpoint Detection and Response

Four different solutions offer members discounted pricing to detect suspicious system behavior and block malicious activity.







Current Day

# The 3 a.m. Alert: How a Small School Found an Instant IT Team

For a technology director, a 3 a.m. intruder alert is the stuff of nightmares, especially when you're hours away from your district at a technical conference. This was the reality for newly appointed Tech Director Kyle Cornett of South Harrison R2. As a "one-man show" responsible for six buildings and nearly 800 students, Kyle had inherited a network with a firewall so outdated it no longer received patches—a vulnerability he had not yet been made aware of due to a communication breakdown during a leadership transition.

## A Lounge Turned Command Center

The vulnerability became real during MOREnet's Annual Conference. While Kyle was away, a security alert went off in the middle of the night. A teacher's device—carrying malware that had sat dormant for years—had suddenly woken up, making it look like a physical intruder was in the building.

"I walked downstairs for breakfast, and I found my Member Service Advisor, Ginger, and I said, 'I think we just had an attack at school. I'm not there, what can we do?'" The response was a masterclass in membership value. "Within probably 10 minutes, there were 15 people down there in the lounge helping me try to figure out what had happened," Kyle said. While some were in the room, others were remotely analyzing DNS and network traffic to ensure the threat was contained.

## Finding a Fast Solution

The immediate crisis was averted, but the underlying problem remained: an ancient firewall that couldn't protect the district. Knowing the device was "plum out of date", the MOREnet team went to work.

"The team at the Annual Conference was awesome. They loaned us a FortiGate... and said, 'Here, borrow this until you can purchase a new one or find a different solution,'" Kyle said. But they didn't just hand him the hardware and walk away. "They even spent hours on a Zoom call to help implement the new FortiGate once I was back at our school. It was just amazing, the help I received just by asking."

## Bridging the Communication Gap

For a new tech director, convincing a school board to spend thousands of dollars on invisible infrastructure can be difficult. The district's Full Membership Service Package with MOREnet changed that dynamic. Having direct access to the highly skilled LAN services and Cybersecurity teams, who provided professional documentation and a prioritized punch list of security needs, MOREnet gave Kyle the third-party backing he needed to secure funding for a new managed firewall solution.

"It made my job easier... being able to hand that to them and say, 'This is why I need funding for a firewall. This does not meet Missouri standards.' It's not just the new guy crying wolf. It's having the backing of somebody that everyone recognizes."

## The Value of Not Being Alone

In a rural district, the IT department is often just one person wearing a dozen hats, Kyle notes, from grant writing to fixing Chromebook keyboards that students accidentally switched to Spanish. Kyle describes his job, "If it's technology-based in any way, shape, or form, I take care of it. The whole nine yards—network, implementation, AI training, almost everything". Aside from one part-time administrative support staff, the technical weight of the district rests entirely on his shoulders.

> *"One-man tech teams are kind of isolated, I wish there were four of me. But having [MOREnet] taking care of our firewall among other solutions is something I don't have to worry about. It is fantastic."*
>
> *Kyle Cornett*
> *South Harrison R2 Tech Director*

"One-man tech teams are kind of isolated," Kyle admitted. "I wish there were four of me. But having [MOREnet] taking care of our firewall among other solutions is something I don't have to worry about. It is fantastic."

In addition to the MOREnet support, he noted his appreciation for the community gained from MOREnet. He's transitioned from being a solitary army of one into having a statewide circle of peers who understand the specific headaches of school IT. Whether it's troubleshooting a niche hardware bug on the technical listserv hosted by MOREnet in five minutes or trading implementation secrets over a lunch table at MOREnet's Annual Conference, Kyle now has a shared brain trust at his disposal. Kyle believes the MOREnet community transforms every challenge from a solo struggle into a collaborative fix, ensuring that no tech director in a small district has to "beat their head against the wall" alone.

For Kyle, the MOREnet membership service package and Internet Connectivity isn't just about a high-speed connection; it's the extension of his local team. It's the peace of mind that comes from knowing that no matter how complex the challenge is, there is always an expert team (whether physical or virtual) ready to pull up a chair and find a way forward.

# Expanding Secure Wireless Roaming with eduroam

Internet2 accepted MOREnet's application to serve as Missouri's official eduroam Support Organization (eSO), bringing the total number of participating states in this national initiative to 11.

## Connecting Communities Safely

As an eSO, MOREnet collaborates directly with Internet2 and the broader eSO community to expand access to secure, seamless global Wi-Fi roaming across Missouri's research and education sectors. The program allows students, teachers and staff to connect automatically to secure, authenticated internet access at any eduroam enabled organization worldwide by simply using their home institution credentials.

Active Access Points: MOREnet has helped to enable eduroam access at more than 70 member locations since January 2026 including K-12 schools and public libraries statewide, complementing the access already provided by legacy higher education eduroam locations in several communities, and more planned rollouts are underway.

Bridging the Gap: Participating locations include key school districts and public libraries, with multiple library branches functioning as community eduroam hotspots.

The reach of eduroam extends far beyond local campuses. When Missouri student Grant Pierce took a summer internship in Frankfurt, Germany, eduroam's single sign-on access kept him safely connected to his university classes across hundreds of European hotspots.






Current Day

# Secure Wireless Access for University of Missouri Student in Europe

When University of Missouri-Columbia business student Grant Pierce landed a summer student internship in Frankfurt, Germany, he knew he couldn't pass up the opportunity of a lifetime. Living in Germany offered the perfect chance to put his years of language study to use, sharpen his skills, gain quality work experience and travel throughout Europe on the weekends.

> *"I wanted to give myself every opportunity to stay safely connected to the University and my professors while overseas."*
>
> *Grant Pierce*

Alongside his daily internship duties, Grant tackles remote university coursework to stay on track for his spring 2027 graduation. To ensure he has a reliable fail-safe option to access his classes, Grant connected his devices to eduroam before leaving the Columbia campus in May.

"I wanted to give myself every opportunity to stay safely connected to the University and my professors while overseas," Grant said.

Though Grant has only lived in Europe for a few months, his weekend travels have already taken him to several countries. He appreciates escaping the hassle of chasing down new Wi-Fi passwords and logins.

"If I need Internet while in a city, I know I can always find a secure connection close by," Grant shared. "I actually just checked my upcoming travel and discovered Paris alone has over 250 eduroam hotspots, which completely eliminated any stress about finding a place to work during my trip!"

Eduroam is a secure, global roaming wireless access service that delivers seamless Wi-Fi access for students, educators, staff and researchers worldwide. As a support organization for eduroam since January 2026, MOREnet is rapidly expanding eduroam access at K-12 schools and public library locations across the state of Missouri. As eduroam access expands, MOREnet aims to ensure users across the state have the same seamless experience of using eduroam for secure, reliable connectivity.

# MESSAGE FROM OUR EXECUTIVE DIRECTOR

Thirty-five years ago, a vision took root in Missouri. What began as a pioneering effort to connect thirteen institutions of higher education through an emerging framework called the Internet has grown into a vibrant, statewide consortium serving more than 700 members including K-12 schools, public libraries, higher education institutions, state and local governments, healthcare entities and nonprofits throughout Missouri.

In our 2024 impact report, we reflected on the core pillar that has always driven us: helping you be better connected. As we celebrate our 35th anniversary this year, that foundational commitment remains unchanged. Looking back across three and a half decades of shared progress, we see that connection is about far more than fiber, bandwidth and technologies – it is about the extraordinary strength of our consortium.

Together, we have weathered shifting technology landscapes, bridged digital divides, and continuously adapted to meet the evolving needs of both our larger and local communities. The true power of MOREnet has never just been the network itself, but the collective wisdom, collaboration, and trust of the individual members who comprise it. By standing together as a consortium, we ensure that every community in Missouri, regardless of size or zip code, has access to world-class digital infrastructure, resources, expertise, and support.

Today, we are preparing for a new era of applications, infrastructure and technical skills. The rapid evolution of emerging technologies, from artificial intelligence, quantum networking and automated systems to next-generation network resilience and modern digital learning tools, presents unprecedented opportunities for all of us. As your trusted partner, MOREnet is committed to exploring these frontiers alongside you. We are actively researching, testing, and curating modern solutions so that your organization and users can confidently embrace technological advancements, prepared to do so with safety, security, and purpose.

As you read through the pages of this year's report, I hope you join us in celebrating both how far we have come together and where we are headed next. Whether we are strengthening our statewide backbone network, launching innovative service offerings, or providing hands-on technical guidance, our mission remains dedicated to empowering your success.

On behalf of the entire MOREnet team, thank you for 35 incredible years of partnership, leadership, and trust. We look forward to continuing our pioneering efforts, ensuring Missouri remains connected, secure, and ready for what comes next. Our history proves what is possible when we collaborate and our future is brighter than ever.



With gratitude and excitement for the future,

Natasha Angell
Executive Director
MOREnet


MOREnet
Be better connected.