

eduroam for Nebraska

Network Nebraska (NN) is Nebraska's statewide research and education network. Operating a statewide multipurpose backbone and providing statewide internet, peering, related services, and support for eligible participants. Network Nebraska is made possible through a consortium of K-12 and higher education entities working together to provide a scalable, reliable, and affordable suite of services. Participation in Network Nebraska is voluntary and Network Nebraska is 100% self-funded through member fees - no state appropriations.

Network Nebraska is uniquely positioned to support a statewide deployment of eduroam. Administratively, Network Nebraska is run as a partnership between the State Office of the Chief Information Officer (OCIO) and the University of Nebraska (NU). Governance is provided through the Network Nebraska Advisory Group (NNAG) with rural and urban representatives from each sector of education within the membership. Network Nebraska has also partnered closely with the Nebraska Department of Education (NDE) and they are jointly coordinating the *eduroam for Nebraska* pilot with NDE providing seed funding for the first year.

Network Nebraska membership currently includes over 290 entities and 450,000 end users, including the following:

- 99.6% of K-12 public school districts
- 100% of Educational Service Units (ESUs)
- 100% of the University of Nebraska
- 100% of Nebraska state colleges
- 100% of community and tribal colleges
- 54% of private colleges and universities
- 20% of private K-12 schools
- 2% of public libraries

Goals for the *eduroam for Nebraska* pilot include:

- Deploy wide scale implementation of eduroam within the Network Nebraska K-12 community to create an expanse of educational hotspots throughout the state
- Develop a replicable model for implementation, marketing, and support at the district level, including containerized RADIUS services
- Encourage adoption of eduroam at higher education institutions
- Evaluate needs around content filtering and identify potential solutions
- Develop sustainable funding models to continue delivering eduroam beyond the pilot
- Further enhance the value of the Network Nebraska membership

Implementation Strategy

Once accepted into the pilot, Network Nebraska will convene several working groups to move the initiative forward under the auspices of the Network Nebraska Advisory Group (NNAG). The working groups will include a governance committee (GC), a technical advisory committee (TAC), and a communications committee (CC). The members of these committees will be drawn from organizations within the state that have already deployed eduroam and interested members from participating organizations. Potential deployment maps can be found in Addendum B.

The **Network Nebraska Advisory Group** is comprised of eight K-12 members and eight Higher Education members who indirectly represent all 290+ entities of the Network Nebraska consortium. This group is responsible for providing strategic vision and input to the State Chief Information Officer and the University of Nebraska as they administer and operate Network Nebraska.

The **governance committee** will work in partnership with Internet2 and other pilot members to determine how Nebraska's plan fits in with the other selected pilots. Initial outreach is envisioned to be Network Nebraska K-12 members that have readily expressed interest in deploying eduroam or have already initiated pilots of their own. Focus of this committee will quickly pivot towards long-term sustainability for the program and integration with the Network Nebraska membership and financial models.

The **technical advisory committee** will review options for RADIUS deployment(s) to support the wave of implementations and provide technical recommendations and support for member institutions. An early decision will be if the existing K-12 identity federation completed for the Nebraska Cloud initiative can be of value to the eduroam pilot. The TAC will also be responsible for drafting onboarding and support documentation and leading the development of containerized RADIUS services for deployment within K-12 districts where needed.

The **communications committee** will focus on marketing *eduroam for Nebraska* with Network Nebraska members and their constituents. This group will leverage and extend the great work completed by the Utah Education and Tele-health Network (UETN) in this area during their pilot. In addition to marketing and communicating within K-12, an additional focus will be to educate other potential service providers to deploy eduroam throughout the state, targeting locations where K-12 related activities are often held and community facilities. A focused effort on communicating the value of the project and encouraging adoption at higher education institutions throughout the state will also occur.

Scoring Rubric

The following section contains our response to the scoring rubric provided by Internet2, including our self-assessment on the score for each.

Organizational Requirements

- **Serve K12s, libraries, museums: HIGH**
 - The State of Nebraska and University of Nebraska directly engage with K-12 public school districts, K-12 private and denominational schools, public libraries and museums, and science centers throughout the state. These engagements include, but are not limited to, competitively bidding their fiber Ethernet circuits, providing 24/7 network support services, network security services, research and development of value-added services, and E-rate support.
 - K-12 public and private school representatives actively participate in the Network Nebraska governance committees and advisory groups, alongside their higher education counterparts.
 - Additional infrastructure and programmatic support is being provided to public libraries and museums that are not currently members of Network Nebraska in an effort to cultivate their membership.

- **Can ensure its constituents and their users abide by terms of agreement: HIGH**
 - The State of Nebraska and University of Nebraska require each Network Nebraska entity to sign a Memorandum of Agreement, MoA, upon joining that spells out the terms, duties, and responsibilities of each party. This MoA will be updated to include eduroam.
 - The State of Nebraska and University of Nebraska have statutory authorization to sign contracts and service agreements for fiber Ethernet, backbone, statewide Internet, Zoom videoconferencing, network management, and security services on behalf of its K-12 and higher education entities and manage the contracts on the entities' behalf.

- **Using eduroam internally: HIGH**
 - eduroam is currently implemented across all four University of Nebraska campuses and all outstate locations, including the Nebraska College of Technical Agriculture, county extension offices, and research facilities. The University of Nebraska is an *eduroam native* institution, using eduroam as their primary SSID.
 - Creighton University and Wayne State College, both members of Network Nebraska, also have eduroam deployed at their institutions.
 - Current eduroam pilot locations include:
 - Educational Service Unit #2, #6, and #10
 - Amherst Public Schools
 - Elm Creek Public Schools
 - Pleasanton Public Schools

- **Additional factors which make your organization a good fit for the program: HIGH**
 - The State of Nebraska, University of Nebraska, and Network Nebraska have an excellent working relationship with the Nebraska Department of Education, Nebraska Library Commission, Nebraska Museums Association, Nebraska Public Service Commission, Nebraska Coordinating Commission for Postsecondary Education, Nebraska Educational Television, Educational Service Unit Coordinating Council, Nebraska Council of School Administrators, Nebraska Association of School Boards, Nebraska State Educational Association, and Nebraska Association of Technology Administrators.
 - Being a large geographic state with a relatively small population and a true pioneering spirit, Network Nebraska members are dedicated to collaborating and working closely together in an era of finite resources.
 - Network Nebraska supports the Internet2 Community Anchor Program (CAP) by promoting the Presidential Primary Sources project, and participates in the *Toward Gigabit Library* grant and the *Gigabit Libraries and Beyond* grant.
 - Network Nebraska is an active member in the School, Health, and Library Broadband (SHLB) Coalition and The Quilt, regularly contributing content for the benefit of each member group.
 - The Nebraska ESU NOC group is a regionally diverse, but functionally tight, group of technology professionals who have a very strong working relationship to help to bridge the gap between K-12 schools and state/national educational technology initiatives.
 - The Educational Service Unit Coordinating Council has worked with all ESUs and K-12 public school districts to develop and implement a statewide distributed identity provider system that grants local authentication to state-level service providers known as the Nebraska Cloud initiative.
 - The University of Nebraska has a long-standing track record as an active contributor within the Internet2 community, serving on governance and advisory boards and participating in multiple service validations.

Planning Requirements

- **Roll-out team and roles identified and have cycles: LOW**
 - Project team members and enabling resources have been identified within the University of Nebraska, State of Nebraska Office of the CIO, Nebraska Department of Education, Educational Service Unit Coordinating Council, Educational Service Unit-Network Operations Committee, and the Network Nebraska Advisory Group.
 - A list of individuals that participated in the writing and submission of this proposal can be found in Addendum C.

- **Early adopters identified and agree to take part in the plan: HIGH**
 - Several pilots have been identified at K-12 school districts and Educational Service Units.
 - Educational Service Unit #2 in eastern Nebraska
 - Educational Service Unit #6 in southeastern Nebraska
 - Educational Service Unit #10 in central Nebraska
 - Amherst Public Schools
 - Elm Creek Public Schools
 - Lincoln Public Schools
 - Omaha Public Schools
 - Pleasanton Public Schools

- **One or more eduroam pilots/implementations completed (bonus points for K12, museums, libraries already subscribing): MEDIUM**
 - Educational Service Unit #2 in Fremont, Nebraska has installed RADIUS servers and tested eduroam with multiple employees.
 - Educational Service Unit #10 in Kearney, Nebraska has installed RADIUS servers and tested eduroam with multiple employees.
 - Amherst Public School, Elm Creek Public Schools, and Pleasanton Public Schools have installed Windows radius servers and have begun testing eduroam for voluntary Students/Staff.
 - The Nebraska State Museum (Morrill Hall) serves eduroam as a part of the University of Nebraska eduroam implementation.

Constituent Infrastructure Requirements

- **Wired network infrastructure (network connectivity to site, local network): HIGH**
 - Network Nebraska manages and monitors over 300 leased-lit fiber Ethernet circuits that connect each member into Network Nebraska, working with over a dozen middle-mile and last-mile providers.
 - Nebraska K-12 district local area networks are 100% locally or regionally managed with most using Fortinet firewalls to secure the edge between their network and Network Nebraska.

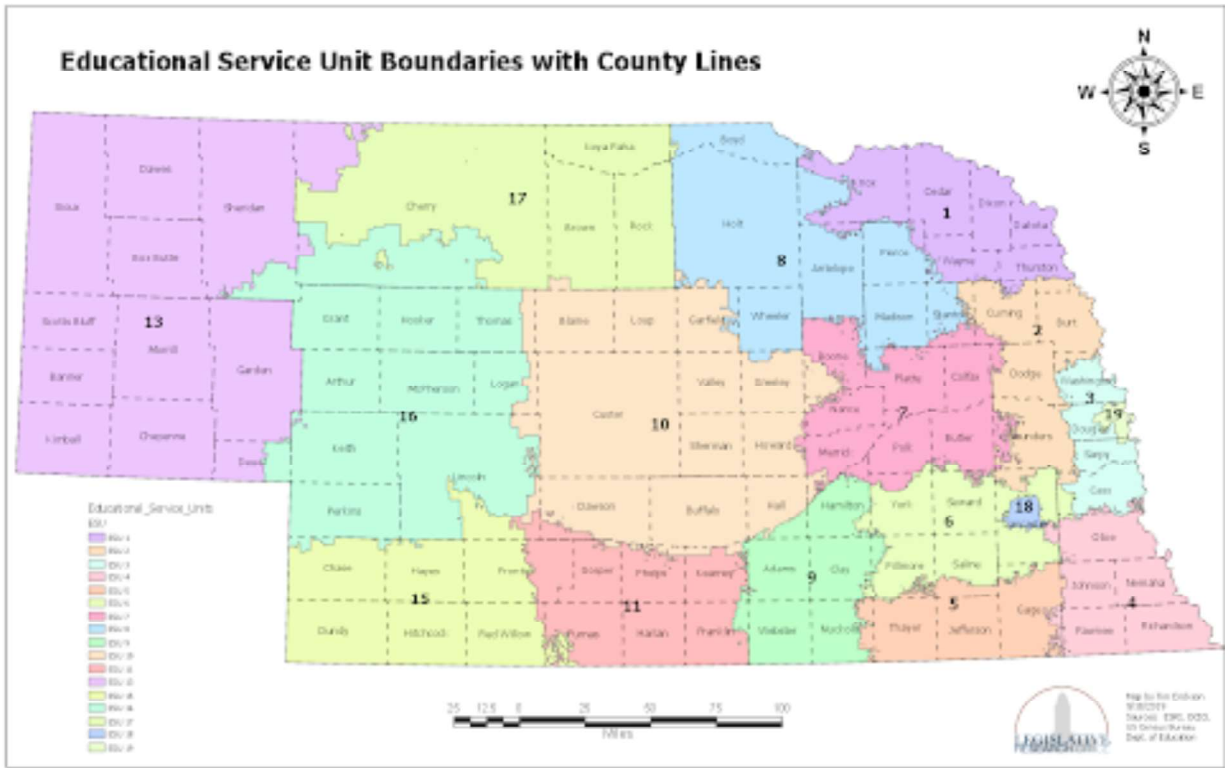
- **802.1x compliant wireless infrastructure (wireless APs, 802.1x compliant, controller or management system for wireless APs): HIGH**
 - Nebraska K-12 districts are 100% 802.11ac or higher, and the majority are using wireless controllers for management.

- **Identity store (an authentication server, users accounts populated onto server): HIGH**
 - All K-12 districts maintain an identity store for user accounts and authentication, with approximately 90% participating in the Nebraska Cloud initiative for federated identity services throughout the state. The Nebraska Cloud initiative was a direct result of the InCommon Quilt effort to establish federated identities within the K-12 community in 2014.

- **RADIUS Server (server running a variant of RADIUS, configurations made to the local network to allow it to route authentication requests): MEDIUM**
 - At least 64.15% of the K-12 students within the state attend a district with an active RADIUS implementation.
 - All higher education participants within Network Nebraska actively use RADIUS.
 - The ESUs are actively working on a scalable plan and evaluating multiple architectures to onboard RADIUS services for K-12 districts to support eduroam.

Addendum A: Educational Service Units

This image reflects the Educational Service Units within the state. The Educational Service Units will play a key role in the deployment and support for the *eduroam for Nebraska* project.

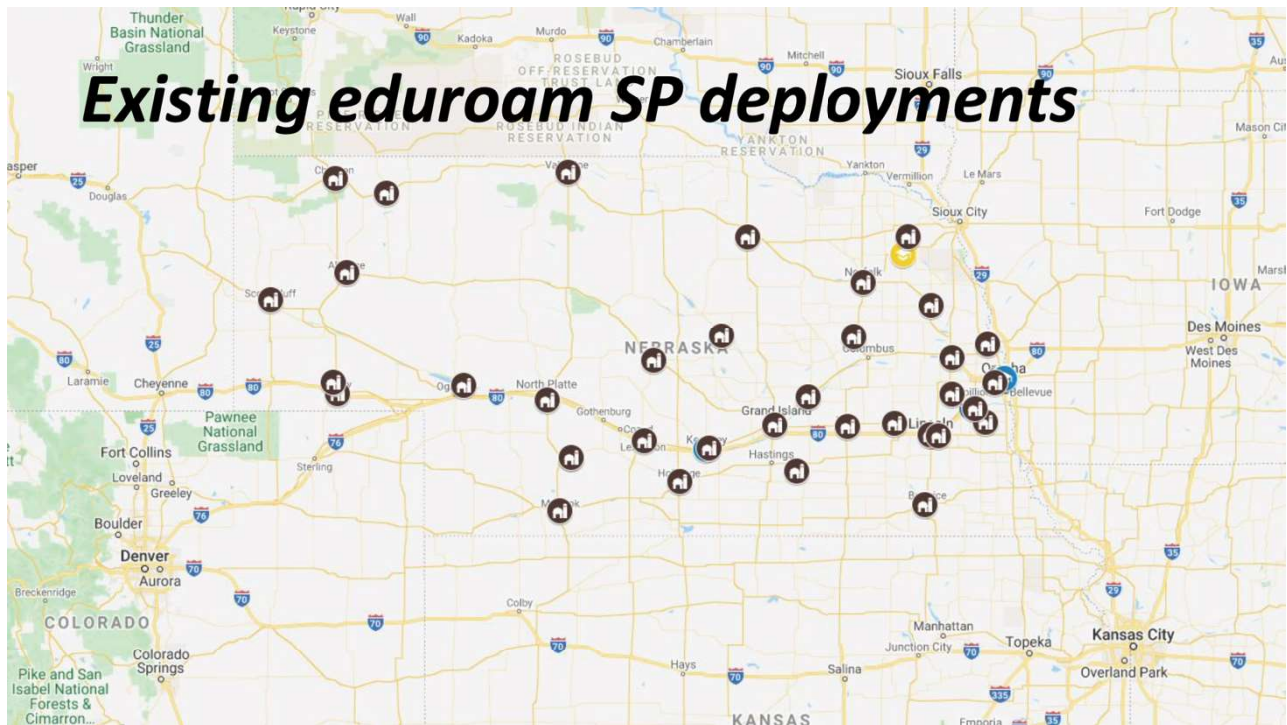


Addendum B: Potential Deployment Maps

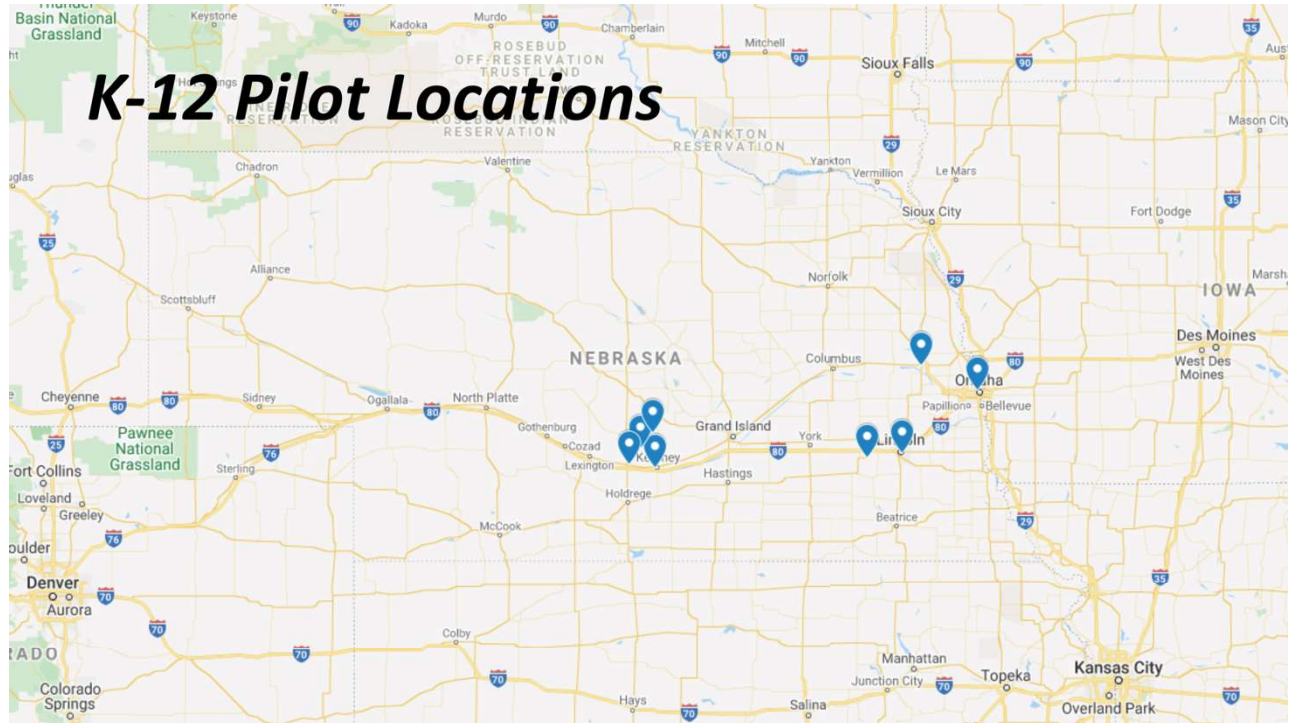
The following maps reflect the potential scope of deployment within the *eduroam for Nebraska* pilot. More potential deployment maps are available in a [Google Map](#). Details on each map are noted in the captions.



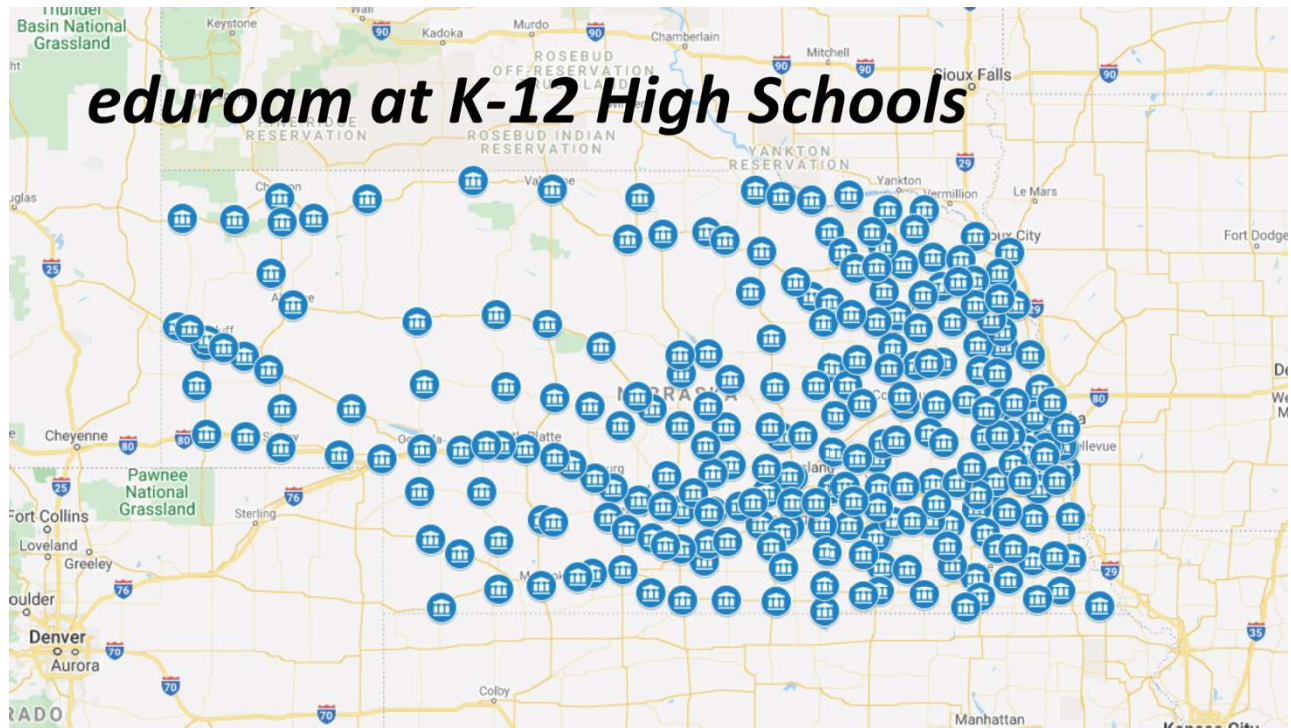
Existing eduroam deployments at the University of Nebraska, Creighton University, and Wayne State College.



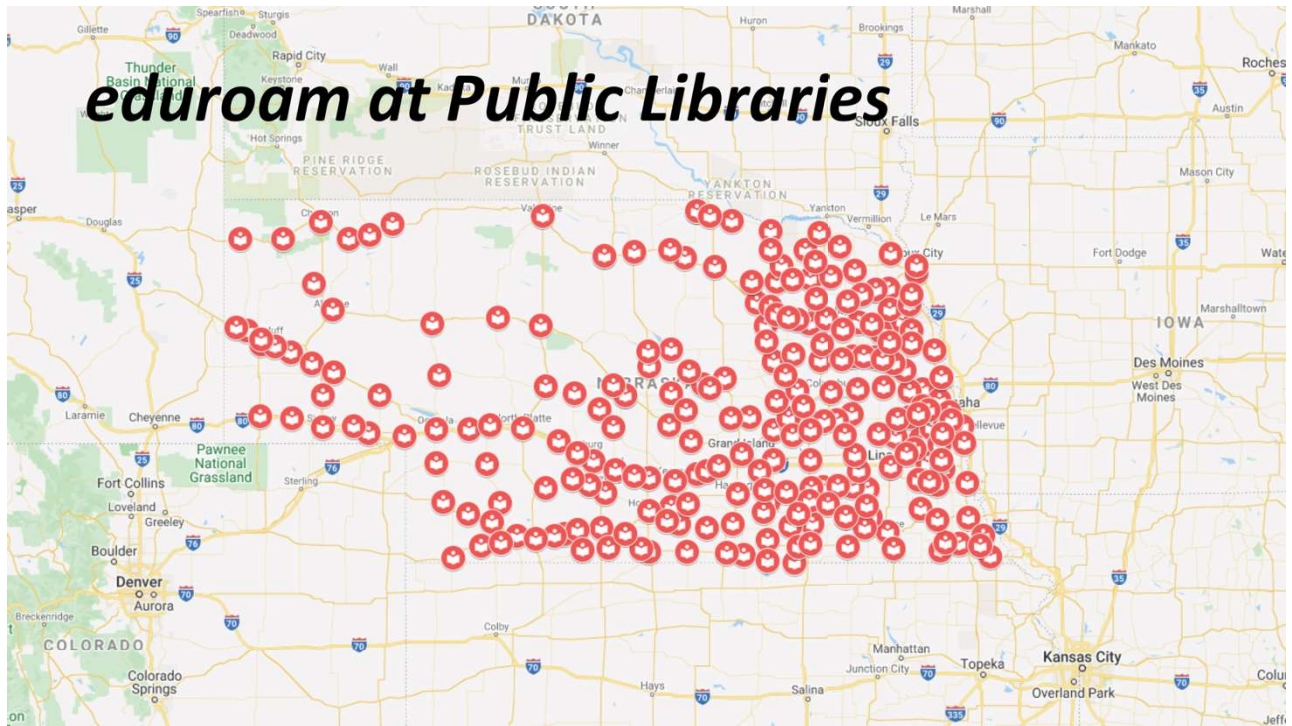
Existing eduroam service provider deployments, including University of Nebraska Extension Offices.



Existing eduroam pilot sites.



Potential eduroam deployments at K-12 high schools.



eduroam at Public Libraries

Potential eduroam deployments at Nebraska Public Libraries.

Addendum C: Proposal Contributors

The following individuals contributed to this proposal and will be involved in the *eduroam for Nebraska* pilot project:

University of Nebraska

- Andrew Buker, AVP for Infrastructure, Information Technology Services
- Brett Bieber, Director of Security Engineering, Information Technology Services
- Brian Cox, Lead Wireless Network Engineer, Information Technology Services
- Greg Gray, Assistant Director for Network Services, Information Technology Services
- Neil Brown, Director of Network Services, Information Technology Services

Nebraska Office of the Chief Information Officer (OCIO)

- Ed Toner, CIO, Network Nebraska Executive Sponsor
- Tom Rolfes, Education I.T. Manager
- Ben Nelson, Project Manager

Educational Service Unit Coordinating Council (ESUCC)

- Scott Isaacson, Technology Director, ESUCC
- Andy Boell, Technology Analyst, Northeast Nebraska Network Consortium (ESUs 1,2,7, 8 & 17)
- Tim Klein, Technology Infrastructure Coordinator, Lincoln Public Schools (ESU 18)
- Ben Wilson, Network Manager, Lincoln Public Schools (ESU 18)
- Rick Mollard, Network Administrator, ESU 10
- Cody Ernesti, Director of Technology, ESU 2

Nebraska Department of Education (NDE)

- Dr. Dean Folkers, Information Systems Officer

Network Nebraska Advisory Group (NNAG)

- Scott Jones, Director of Technology, ESU 16; *Outgoing* K-12 Co-Chair
- Ron Cone, Director of Technology, ESU 10; *Incoming* K-12 Co-Chair
- Tom Peters, Information Technology Manager, Central Community College; Higher Ed Co-Chair

Nebraska Information Technology Commission (NITC)—Education Council*

- Gary Needham, Director of Technology, ESU 9; K-12 Co-Chair
- John Dunning, CIO, Wayne State College; Higher Ed Co-Chair

*Unanimous resolution of support for the *eduroam for Nebraska* pilot proposal;
8/26/2020