



A Vision for a Unified Advanced Regional Network Serving Education, Hospitals, Libraries, and other Community Anchor Institutions

October 3, 2011

I. BACKGROUND

A. Kansas Research and Education Network.

The Kansas Research and Education Network (KanREN) was founded in 1991 to create a statewide backbone network to extend Internet access to all Kansas higher education institutions. The Regents Computer Advisory Committee (RCAC, now known as RITC - the Regents Information Technology Council) began rigorous planning for a statewide education network, involving a team largely drawn from the networking and computing staff at the University of Kansas. Initially, a consortium of 35 Kansas institutions – including the Board of Regents universities, most of the state's community colleges, and several private colleges and universities - established an organization to facilitate the design, assembly, and management of the planned network. This organization became known as KanREN.

KanREN now operates as a registered 501(c) (3) not-for-profit organization serving the Regents Universities, education and research focused organizations, and other Community Anchor Institutions (CAIs, – higher education institutions, K-12, libraries, hospitals, and other entities with a high degree of integration with those entities). It operates on a self-sustaining, cost-recovery model. Members pay exactly what it costs to deliver services. KanREN has consistently led the nation in advanced network-related technology deployments with a focus on stable, scalable, production-ready services and features.

KanREN is governed by its members. Working groups provide an opportunity for member interaction and the introduction of new ideas into the consortium. The Board of Directors evaluates and refines working group recommendations and sets long-term organizational direction, vision, values, and mission. Most importantly, all members have opportunity to vote on major resolutions including rate and fee structure changes. Because all decisions are fully vetted and debated among members, KanREN's services never lose their fiscal responsibility and member focus.

B. Kansas Education Network

Kan-ed is a program created by the Kansas Legislature and administered through the Kansas Board of Regents. The purpose of the program is to expand the collaboration capabilities of Kan-ed's member institutions, specifically K-12 schools, higher education, libraries and hospitals. There are currently 883 entities that meet the statutory criteria for Kan-ed membership.

Through Senate Substitute for House Bill #2035 in 2001 the Kansas Legislature created Kan-ed with the following language: *"The purpose of this act is to provide for a broadband technology-based network to which schools, libraries and hospitals may connect for broadband Internet access and intranet access for distance learning. For that purpose, the state board of regents shall contract in accordance with this act for the creation, operation and maintenance of such network, to be known as the KAN-ED network."*

Governor Graves signed that bill into law on April 20, 2001. It is now codified as Kansas Statutes 75-7223 through 75-7227. The funding of Kan-ed has primarily been from the Kansas Universal Service Fund (KUSF) at a \$10 million level. Kan-ed was funded at \$10 million for three years from two sources. During those three years, \$8 million came from the KUSF and \$2 million came from state of Kansas general funds. For FY12, Kan-ed's funding was reduced to \$6 million from the KUSF.

Kan-ed also receives input from a 15 person Advisory Committee. On that committee three members are selected from four constituencies: K-12 education, higher education, libraries, and hospitals, and three entities representing telecommunication companies. Kan-ed began actual network operations in 2004.

II. CURRENT ENVIRONMENT

Both Kan-ed and KanREN have achieved national recognition for their successes in their focus areas. Both organizations have worked very closely to achieve the needs of all of the community anchors they serve. However, they have historically had different approaches to serving the needs of their membership.

KanREN has built a high-speed network backbone, using physical infrastructure leased from telecommunications providers, which interconnects its members and connects them to the Internet, driven by common research and education needs. Kan-ed has also contracted with telecommunications providers to connect their members to the Internet and then has managed the services (e.g. video, etc) which it procures on behalf of and provides to those connected institutions. Kan-ed has contracted with KanREN to manage the Kan-ed network since the inception of Kan-ed 1.0. KanREN has performed that service in addition to expanding and managing its own backbone. Because of this relationship, the groups have tightly integrated networks, even though they are different physically as well as organizationally.

After listening to legislative and industry input and after careful consideration and analysis, the leadership of both KanREN and Kan-ed now believe that it is possible to capitalize on the strengths of each organization, increase opportunities for collaboration, and operate a single Advanced Regional Network (ARN) to serve the needs of all Community Anchor Institutions (CAIs as defined by United States Unified Community Anchor Network National Project) in Kansas that will benefit from such services.

III. VISION FOR A SINGLE STATEWIDE NETWORK

Kan-ed and KanREN believe that it is possible to serve the CAI community with a single Advanced Regional Network. The network will focus on the needs of these institutions and the collaborative nature that exists between them. As such, it would not attempt to either broaden scope or directly compete with commercial service.

It is envisioned that KanREN will continue as an organization and the KanREN backbone network will form the core of the Regional Network. KanREN will continue its long tradition of collaboration with commercial telecommunications providers to extend the reach of its network access layer in order to connect more CAIs.

Kan-ed will also continue to exist but its structure and services will change. For many small, rural institutions (e.g, rural school districts), the real need focuses more on assistance in funding and assessment of their needs rather than a direct connection to the regional network. The continued use of federal funds provided by the E-rate program is expected.

Both Kan-ed and KanREN agree that many institutions may be more efficiently served by obtaining service directly from a local telecommunications provider. In other cases, integration and collaboration with other CAI's will mean a direct connection to the regional network will best achieve their goals. A sliding scale based upon need will be developed to assist with connectivity costs.

Finally, the benefit to all citizens of Kansas of having fast, reliable access to Kansas' educational institutions, hospitals, and libraries is without question. KanREN and Kan-ed believe that KanREN should work with Kansas telecommunications providers to interconnect their networks (and therefore all of their customers) to the regional network so that traffic between Kansas citizens and Community Anchor Institutions need not travel via the commercial Internet. By working with telecommunications providers, this groundbreaking concept will keep more "Internet" traffic in Kansas, improve performance for Kansans, and reduce out-of-state spending for community institutions, local telecommunications providers, and the State of Kansas. This is the same concept that forms the very core of the Internet itself.

IV. ADVANTAGES OF RESTRUCTURE

KanREN and Kan-ed partner with many public and private telecommunication entities. Under the proposed vision for restructure, institutions currently served by Kan-ed and KanREN will benefit from being even more tightly integrated. In addition, each institution

will be better served by having its needs addressed in a manner that best fits its goals. Small institutions will connect to the Internet through local telecommunications providers. Larger institutions (or those with special needs) who need the services of a regional network will be able to connect to KanREN's cutting-edge backbone. All entities will continue to have access to Kan-ed's video collaboration infrastructure, which is serviced by KanREN today, and it will be physically moved into the KanREN backbone.

Funding from the KUSF will still be needed to help institutions afford connectivity. Kan-ed will be the administrator for distribution of the KUSF funds while KanREN will provide the needs assessment and implementation support for the institutions. Funding will be required to support both "start-up" costs for connection to either a local provider or the KanREN backbone as well as on-going connectivity and maintenance fees. Unfortunately, the concept of completely free connectivity cannot be realized. Together Kan-ed and KanREN will have even greater buying power, leveraging open-market competition within the telecommunications industry.

V. PRINCIPLES OF OPERATION

Both Kan-ed and KanREN have agreed on a core set of principles that will be used to guide the process. The following principles will continue to support institutions to the maximum extent possible by the state, reward provider initiatives that reduce ongoing future costs, and pave the way for economical upgrades to higher speeds as needed:

- Funding assistance for rural, underserved, and/or very small eligible entities Internet needs.
- Funding support for the Advanced Regional Network general operations and cost offset for connected institutions.
- Maintaining the current video infrastructure, growing and adapting with technology evolution.
- Providing assistance for institutions not connecting to the ARN in making service decisions regarding Internet services.
- Working with Kansas telecommunications providers to provide last and/or middle mile connections between the regional network and anchor institutions.
- Providing settlement-free connections between Kansas providers and the Advanced Regional Network to improve access to community institutions for all Kansans.
- Funding Regional Network connection projects that use high bandwidth fiber-based solutions, reducing both recurring and upgrade costs.
- Making ARN connections only through the use of optical transport (fiber) technologies that will scale to very-high speed connectivity (e.g., no T1 circuits).

VI. TIMELINE FOR IMPLEMENTATION

KanREN and Kan-ed are committed to taking on this challenge and finding the most effective path forward that will provide appropriate service to eligible entities in a cost efficient fashion. However, significant challenges and numerous details have yet to be worked out before moving forward with this vision. Planning and implementation of such a vision is expected to be a two-year process.

VII. CONCLUSION

KanREN and Kan-ed both believe that this new vision and the proposed changes will provide more equitable service and lower connectivity costs for the anchor institutions of Kansas. At the same time, research capabilities of the educational institutions in Kansas (both K-12 and higher ed) will ultimately be improved, as will videoconferencing abilities of the hospitals (telehealth), libraries, and educational institutions (distance learning). Kansas will be able to create an environment with an identifiable focus on investments in technologies that provide for long-term needs of public institutions. The commercial telecommunications industry will see increased business and opportunities. Together our organizations will work to carry out this Vision in a fiscally responsible manner to ensure the prudent use of taxpayer dollars.



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