

Project Summary:

The map of Canada shows the urban sites with video conferencing connections and facilities that now have Quality of Service (QoS) for their video and audio traffic over the Kuh-ke-nah Network. The next image shows the First Nation communities connected into this broadband network and how the traffic flows to each community to ensure video, audio and data traffic is managed.

Summary:

Keewatinook Okimakanak's K-Net Services is working in partnership with First Nations, the public and the private sectors to develop and sustain a Wide Area Broadband Network. The Kuh-ke-nah Broadband Network (K-Net) provides support for band office programs, health and education services in each participating First Nation. The network supports the development of broadband applications that combine video, voice and data services requiring high speed connectivity solutions. The long term objective is to establish local community networks linked across the country to other networks that share and distribute broadband services and programs that benefit the local community.

K-Net staff develops different broadband applications and appropriate open source communication tools (ICTs) for Keewatinook Okimakanak staff and services to support First Nation leaders, administrators and program staff in the use of their ICT equipment and programs. Various scalable community broadband applications in the areas of health, education, datawarehousing, portals, IP video conferencing and telephony, community and regionally based networks are in operation today and can be viewed on-line at <http://knet.ca>.

Overview of K-Net Services:

K-Net Services is an agent for the development of community based networks. Its mandate includes working with First Nations to enable them to control the ownership of their terrestrial or satellite broadband networks. K-Net believes that in order for a network to be sustainable in a small community then the community needs to be involved in all the development phases and ongoing operation as much as possible. This effort will ensure that all the local organizations and service agencies working with the community will be able to contribute to the ongoing operation and maintenance of the local network so everyone in the community can access these on-line services. This position was adopted in the NAN Chiefs in Assembly Resolution 03/49: SUPPORT FOR THE DEVELOPMENT OF THE NAN BROADBAND REGIONAL NETWORK FOR FIRST NATIONS which among other things directs government programs and services along with other agencies to utilize and contribute to local community networks.

As of August 2003, the K-Net network consists of 20 remote First Nations in Northern Ontario linked together via a broadband infrastructure. Other points-of-presence on the network in urban centres across Northern Ontario include Timmins (with a local wireless loop connecting First Nation organizations), Thunder Bay (with a local wireless loop running off a 100M service), Sioux Lookout (with a fibre and wireless loop on a 10M circuit) and Balmertown (with DSL and cable service). The hub is located in Toronto co-located at the Education Network of Ontario

office complex with a fibre loop to some other Toronto based agencies with our 100M internet connection located from that office.

Various applications and services are being delivered out of Keewaytinook Okimakanak offices in Sioux Lookout and Balmertown as well as in K-Net partners' sites located across the country. On a national level, points-of-presence (with video conferencing capabilities) are also located in First Nation organizations in Sydney, Nova Scotia, Wendake, Quebec, Winnipeg and Thompson, Manitoba, La Ronge, Saskatchewan and Vancouver, BC.

Agreements are continually being completed to add other communities to the network. The communities are being served by terrestrial and satellite connectivity solutions depending on the community telecommunications infrastructure access. Bandwidth varies from 768K to 100 megabit depending on existing facilities and local needs.

At the community level K-Net works with local technicians and suppliers to create a local ISP and to help in the local connectivity solutions. K-Net supports the local technicians in the remote First Nations who take on the responsibility for the community portion of the network. This arrangement lessens the requirements for managed service contracts and reduces the time for local repairs and network maintenance.

K-Net networking personnel are in place in Sioux Lookout, Balmertown, and Toronto. K-Net's arrangements with Bell Canada help desk services allows it to purchase Bell resources as needed. K-Net staff are delivering help desk services for the NORTH Network in this region and for Industry Canada's First Nations SchoolNet program across Ontario. We work closely and support developments in the other Industry Canada First Nation regional management organizations.

K-Net has experience in both satellite and terrestrial networks as well as different technologies such as DOCSIS cable installations, wireless (900 and 2400 megahertz) installations, HDSL and ADSL technologies. K-Net also has experience building embedded computers for various applications such as the K-Net router and the K-Net remote access server.

Project Objectives:

- Provide the hardware and software required by the Band Offices, Health Centres, Police Stations and Schools in the six Keewaytinook Okimakanak First Nations to support the use of on-line and off-line communication software for remote access to the Keewaytinook Okimakanak Wide Area Network.
- Acquire and install the hardware and software in the Keewaytinook Okimakanak Red Lake and Sioux Lookout offices to support the use of on-line and off-line communication software for remote access to the network and individual computer in the six Keewaytinook Okimakanak First Nations
- Provide training support for Keewaytinook Okimakanak staff and First Nation workers to use the installed hardware and software to enable their participation on the Keewaytinook Okimakanak Wide Area Network.

- Support other First Nation Council offices and First Nations to develop similar networks that will support the use of shared resources and expertise in future long-term telecommunication developments (ie. Broadband Telecommunications Network).

The K-Net System Today:

- K-Net is a comprehensive, reliable, secure and scalable network that is operational today providing broadband connectivity between 20 remote First Nations and other major centres across the province as well as across Canada (partner sites in Sydney - Nova Scotia, Wendake - Quebec, Winnipeg and Thompson - Manitoba, La Ronge - Saskatchewan, Vancouver -B.C.);
- A VPN tunnel is in place on the network today providing a connection to the telemedicine network's (NORTH) VPN concentrator which provides access to more than 70 hospitals located across the province and to the Health Science centre in Winnipeg;
- The pricing for the network is shared among all the different network users thus aggregating the bandwidth costs and supporting local community economic development efforts involving the "smart" use of ICTs;
- A fibre optic municipal network in addition to a local wireless loop is in operation in Sioux Lookout connecting the First Nation organizations and service providers to the First Nation communities on the network;
- A wireless broadband loop is in place in Thunder Bay and Timmins to connect First Nation organizations and other partners to the network in that centre;
- High speed data, IP telephony and IP videoconferencing services are all being delivered and supported over the present network;
- A multi-point video Accord bridge and an Cisco IP audio Call Manager are now in place to handle multiple sites for both video and audio IP connections;
- C-Band broadband satellite services utilizing Industry Canada's public benefit transponder with a locally supported Network Management System in partnership with the Kativik Regional Government in northern Quebec;
- Experienced and knowledgeable staff are in place supporting the use of the network along with helpdesk services for NORTH Network (with a Service Level Agreement in place) and Industry Canada's First Nations SchoolNet program.

Today, we are able to provide the different agencies and organizations across the region with the same level of connectivity and support that can be expected from any carrier class provider. As well, there are some entry level solutions that any group can use to "grow" to include additional applications as their needs and capacity develop to support such developments. K-Net can provide these groups with the following levels of service:

- Basic connectivity to all sites in the SL district that K-Net services for a fixed cost per month. This includes the satellite served sites.
- If required, K-Net can install VPN clients and concentrator for secure VPN tunnels for sites to connect into the organization's network. Internet access can be done through the group's own network if required. This would be the beginnings of a scalable broadband network for the organization to be able to support different applications and services.

- CIR can be purchased to support specific applications such as Video conferencing, Realtime applications (voice over IP), SAP and others.
- Service level agreements can be negotiated to provide a required level of managed services and support.
- This approach ensures that upgrades will not require any infrastructure rebuilds but simply an increase in bandwidth and services.

Some additional considerations and potential savings that K-Net has become aware of through the development work with different partners include:

- Existing connectivity solutions can be migrated over to the K-Net Network for a major cost savings from their present locations because of the “best price” arrangements with K-Net partners. The price for this service would have to be determined depending on needs and traffic patterns.
- IP telephony services within the different organizations serving the First Nations on the Kuh-ke-nah Network create additional savings for these organizations which go towards local First Nation economic development initiatives. K-Net presently has IP telephones operating very successfully in several First Nations across the region.
- IP video conferencing services that support the development of telemedicine applications are presently being delivered and can be accommodated across the region (a comprehensive business case has been presented to HC to deliver this telemedicine service in all the First Nations across the Sioux Lookout region).

Each of these services are scalable and the prices are intended to ensure the sustainability of the network. As well, the support required to help it grow to include other communities across Nishnawbe Aski Nation, as well as other communities across Canada is also in place and being shared among all the partners.