

MRnet Strategic Plan – 2015 to 2018

Planning Assumptions

1. No provincial funding during the plan period
2. CANARIE will get funding renewal at about the same level and will continue to provide initial capital funding for RAN infrastructure and some network services
3. As is now the case, CANARIE will not provide funding for equipment for fibre IRU renewal
4. Above the network shared services will be a priority for all MRnet members. Cost of providing these services will have to be recovered through fees for service.
5. MRnet has evolved to a production network for most members and is critical to their operation. Availability, reliability and network performance are therefore more important than in the past.
6. Operating costs for the core network will be recovered through annual membership fees.
7. MRnet will continue to develop a close relationship with CANARIE and the Canadian NREN and participate in its governance and working groups.
8. The MRnet constituency will continue to be research and education institutions.
9. Researchers and students in member institutions are in the main not aware of MRnet and its role in their endeavours. It is in our interest to make all aware of the value of MRnet and how it is critical to research and education in the K-12, post secondary and research communities in the province.

10. The MRnet governance structure should allow for consultation and input from all stakeholders using the network.

Background

MRnet Defined

The Manitoba Regional Advanced Network (MRnet) was founded in 1995 as an incorporated not-for-profit consortium of organizations dedicated to the development and advancement of research and education (R&E) based high-speed networking and network applications. MRnet receives in-kind contributions and annual fees from its members as well as funding provided by the Canadian Network for the Advancement of Research, Industry and Education (CANARIE, also a not-for-profit corporation supported by its members, project partners, and Industry Canada). MRnet offers a reliable, high-speed communications network to its member institutions with no costs associated with the amount of traffic generated by an institution.

MRnet's (www.mrnet.mb.ca) role and mandate is the advancement of high speed research and education networking infrastructure and applications in Manitoba.

Current State

MRnet functions in Winnipeg using user-managed dark fibre connections. In Brandon the MRnet connection uses a dark fibre service from Manitoba Hydro between Winnipeg and Brandon, and a university/city-owned dark fiber build within the City of Brandon. Connections to Thompson and The Pas use a wavelength service from Manitoba Hydro.

All traffic on the MRnet network follows the MRnet acceptable use policy as follows;

Within the broader goal to advance the development of the digital economy in Manitoba and Canada, MRnet network infrastructure and services are provided to support research, education, advanced application development and associated usage by Manitoba research, education, government, and industry organizations.

The MRnet Network can be used for any legal purpose in support of this goal, so long as it does not interfere with or adversely affect the operation of the MRnet or CANARIE Networks or any network user, as may be determined by MRnet and/or CANARIE.

MRnet will only peer with a third party network if there is a technical and routing advantage for member's R and E traffic in our network. All peering traffic must meet the terms of the MRNET AUP.

Peering will ordinarily be through MBIX or another settlement free neutral exchange point. If there is an advantage to our membership it will be at an MRnet core point of presence.

MRnet reserves the right, through its governance processes, to modify this AUP from time to time.

The core network in Winnipeg is fully redundant. All core switches operate at 10 GbE and the two main switches are capable of 100 GbE. Institutions connect at 1 GbE or 10 GbE.

MRnet peers with the CANARIE national backbone R and E network to allow access to the 12 other regional R and E networks in Canada and to over 100 peer R and E networks in 80 countries.

CANARIE is upgrading their network to 100 GbE across the country. The MRnet core network in Winnipeg can be capable of meeting these speeds.

Over the previous plan period (2010-2015), significant advances were made in two key areas of strategic commitments, financial sustainability and access.

Issues and Challenges

The various constituents across Canada must raise awareness regarding the need for CANARIE to exist and operate the national network with appropriate priorities as we move through the second decade of the 21st century. Furthermore, it will be important to develop other international options for connecting the MRnet network outside of Manitoba should CANARIE cease to exist.

While there have been gains in the areas of sustainability and access in MRnet, the increased use of the network for mission critical activities for members has brought forward the challenge of higher service level expectations and potentially higher management costs. Currently, the network management remains at a “best effort” level of support. It will be necessary to formalize network management including problem response and resolution, network architecture planning and monitoring and reporting on network performance both in province and nationally.

Over the last plan period there were not enough resources available to market MRnet and raise awareness of the importance of the MRnet high speed network to the Manitoba R and E community. Going forward it will be necessary to further articulate the value proposition and make it known to a number of constituencies in Manitoba.

The current dark fibre infrastructure in the core network is primarily on 15 year IRU agreements. The supplier varies. In Winnipeg it is Bell and RD Technologies.

Outside of Winnipeg it is Manitoba Hydro Telecomm. The IRUs start to end in 2021. Some IRUs have different terms and conditions. It is necessary to start preliminary planning for IRU renewal and sources of funding therein.

MRnet Mandate

MRnet has been successful in fulfilling its mandate. Looking forward, the MRnet consortium is committed to keeping its focus, maintaining its momentum of development and growth, and working towards a common vision and goals.

MRnet exists:

- To be the Manitoba Regional Advanced Network (RAN), in partnership with CANARIE.
- To leverage available funding in order to meet CANARIE's national mandate in Manitoba.
- To facilitate and promote high-speed research and education networks.
- To provide and operate a province-wide R&E high-speed network in Manitoba that is connected to the national network which, in turn, is connected to the global research and education network.
- To provide a Manitoba institution-to-institution research and education network.

MRnet Vision

To continue to be a recognized national leader in providing a sustainable, advanced high-speed network which supports research and education among industry, education, and governments through the plan period.

MRnet will accomplish this by:

- Providing an active, self-sustaining, pervasive, reliable, high-speed network infrastructure connecting all eligible member institutions for the purpose of research, development, and educational activity.
- Ensuring sustainability of the current infrastructure and evolving into providing greater provincial coverage (across Manitoba) as well as ensuring collaboration and sharing via the research and education network.
- Remaining technologically innovative in respect to how researchers collaborate and in demonstrating new technologies.
- Providing a platform for a growing number of innovative applications to facilitate significant participation by Manitoba on the national Research & Development stage.

- Building capacity for research and education activities in Manitoba, thereby increasing utilization by all research and education institutions in Manitoba.

In light of the existing environment and the evolving state of the consortium, the current MRnet Mission Statement is as follows;

MRnet's mission:

1. To provide and operate a state of the art high speed Research and Education network in the province peered with the national CANARIE backbone network.
2. To stimulate research and educational use of high-speed network services and related information technology within Manitoba.
3. To stimulate cooperation in high-speed research and development networking among our members
4. To enhance our members' expertise in advanced networking technologies and applications through the use of the MRnet high-speed research and education network.
5. To make the Manitoba education and research community aware of the value of high speed networking in their endeavours locally, nationally and internationally

Strengths, Weaknesses, Opportunities and Threats (SWOT)

This Strengths-Weaknesses-Opportunities-Threats (SWOT) analysis describes MRnet's current position and the opportunities that exist for MRnet, together with the potential barriers that could obstruct the consortium's efforts toward bringing these opportunities to fruition. The roadmap that charts the transition from baseline to realization of opportunities and associated critical success factors is the strategic plan.

Strengths

The following are some of MRnet's advantages:

- Technical expertise in the membership.
- Reliable as dial tone, invisible, simple to use, high-performing network.
- Low cost of membership.
- Sustainable, financially sound model
- One major urban area --- providing a geographic advantage.
- Commitment from existing members (e.g., as demonstrated by in-kind contributions).
- Common agreement on mission.
- CANARIE funding support.
- Growth in research in Manitoba.
- Network is used and fulfills a real need
- MRnet connects the majority of all research and education sites in Manitoba
- High speed global connections to other country NRENs
- Enjoys significant user support
- Collaborative attitude built on strong interrelationships.
- Success in provision of shared services through Merlin as a partner
- Benefits from a long term continuous relationship with CANARIE and other RANs

Weaknesses

The following reflects on current MRnet limitations, whose improvements would likely help strengthen MRnet's ability to achieve its vision, goals and objectives:

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- Limited general awareness of what the network is used for (invisible)
- Limited general understanding of what the users do with the network.
- Limited communication between researchers / educators and network operators.
- Low visibility and awareness with Government, researchers and academia.
- Cost of serving rural and remote locations.

- Not a production or commercial level network.
- In the longer term IRUs will be coming up for renewal and there is no assurance of funding availability
- MRnet is primarily a “volunteer” organization.

Opportunities

The opportunities for MRnet lie primarily in areas that have, so far, remained “untapped”:

- Lower-cost alternative to carriers (MB Hydro Telecom).
- Accommodation of increasing number of applications needing high-speed network (lightpaths, grid computing, Cloud computing, virtual reality, access federation, SaaS, HD Video, etc, etc).
- Increase in shared services through Merlin and MRnet reducing institutional IT operating costs increasing and creating efficiencies and mitigating risk
- Cost sharing of operating costs among members
- Developing new relationships with stakeholder groups and getting more involvement in planning and awareness.

Threats

The following represents some potential obstacles/barriers that could impede MRnet’s ability to pursue opportunities that would help it meet its vision, goals, and objectives:

- An ongoing lack of awareness and insight of the nature of research by internal and external stakeholders.
- .Increased demand for shared services without funding
- Stakeholders, including governments, taking the research network for granted.
- Competitive agendas from other organizations; that is, competition for funds and resources.
- Funders’ perspectives on the value of MRnet to their respective organizations, based on invested assets. Stating the value proposition of MRnet and ROI
- Challenge of succession planning and loss of expertise.
- Unpredictable future for CANARIE
- No dedicated operational staff – reliance on in kind support
- Monopoly of telecommunication carrier in rural and remote areas in Manitoba, resulting in inadequate service
- Institutional costs of keeping up with technology.
- Lack of redundancy in some core network links

Going Forward – The Strategic Commitments

A series of goals and related strategic commitments have been developed in order to focus MRnet's efforts towards achieving the stated mission and vision. The following strategic commitments are the key to ensuring MRnet's sustainability. The goals and their underlying commitments are organized into three broad themes: *Financial Sustainability, Access, and Governance and Building Awareness of the Value of MRnet.*

A. Financial Sustainability

Goal - A sustainable funding model for MRnet.

Strategies:

- i. Continued financial sustainability through a combination of CANARIE contributions for initial capital expenses, membership fees, supplier partnerships, and other sources for on-going operational costs.
- ii. Provide a fast, reliable, scalable, technologically current and economically-viable high-speed research and education (R&E) network.
- iii. Start to look at options for building up a reserve for fibre IRU renewals

B. Access

Goal - Universal, ubiquitous and affordable access to high-speed research and education networks for qualifying organizations throughout Manitoba.

Strategies:

- i. To facilitate connectivity for R&E to rural and remote sites.
- ii. To ensure MRnet membership for qualifying members within MRnet's mandate.
- iii. Review ownership of the local loops and control of edge switches

C. Governance and Building Awareness of the Value of MRnet to Manitoba Research and Education

Goal - A governance structure that reflects the research interests and needs of members and allows for efficient operation of MRnet in support of research and education in Manitoba.

Strategies for Governance:

- i. Regularly review and enhance governance models for MRnet.
- ii. Look at options in our governance structure to include stakeholder groups

Strategies for Raising Awareness of the MRnet Value Proposition:

- i. Create and publicize greater recognition of the utility of R&E networks among researchers, government, and industry.
- ii. Seek funding from CANARIE to hire a firm to produce promotional and briefing materials and update the MRnet web site
- iii. Proactively lobby government, industry, and academia for support of CANARIE and other high-speed R&E network initiatives
- iv. In consultation with research and teaching stakeholder groups conduct annually and document an assessment of anticipated needs which could be met by MRnet in advanced R&E networking for R&E institutions and of emerging technologies in high-speed R&E networking.
- v. Maintain and publicize an inventory list of past, current and potential projects in Manitoba using high-speed R&E networks through an annual report and other promotional materials.

Critical Success Factors

The critical success factors are the elements that need to be in place and/or the events that must occur for MRnet to be successful in achieving its goals and objectives. These include:

i. Ongoing funding

- R&E networks cannot be self sustaining based on contributions by researchers alone.
- Support from the federal government and members will always be required for sustainability.

ii. Commitment

- Institutional commitment (by executives, senior researchers, and senior administrators in research and education) demonstrated through member fees, endorsement of MRnet, recognition, increased funding, and provision of a quality campus network included in their strategic plans.
- A continued, engaged, and active core membership including a designated champion for the network.
- Strong support from CANARIE, including connection, funding, and endorsement of MRnet as the regional network carrier.
- A collaborative approach in the membership.

iii. Relevance

- Demonstrated use of the network, emphasizing the importance of the network to provincial research and education - a method by which to report accomplishments (ie. awareness building).
- A communicated value proposition expressed in tangible and measurable terms (ie. Briefing notes).

iv. Accountability

- A governance board with policies and rules in place.
- Focus on the mandate, mission, and vision.
- Strategic and operational plans in place.
- Good, effective communication among members and to supporters.
- Accountability to researchers (users) and funding bodies.
- A reporting framework or mechanism.

v. Technical Expertise

- R&E networks cannot rely on technical support solely from the vendors and network carriers since the type of usage in such networks typically pushes the boundaries of the technology.
- Skills are required which are not normally found in the support structures available from commercial suppliers. These skills need to be provided by and from within the member organizations.
- As the network becomes more mission critical to some members, skills to operate the network and design the architecture of the network will become more important.

vi. Cost

- MRnet members are responsible for local infrastructure and support.
- Financial and administrative management is also provided as an in-kind contribution. This allows membership fees to be kept at a low level.