

Wireless ISP Experience I

AmeriSys Inc.

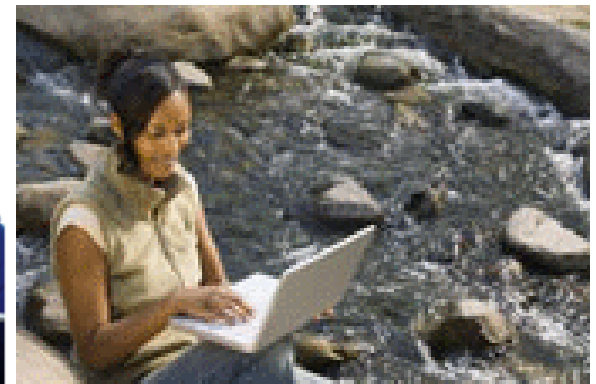
Operators of:



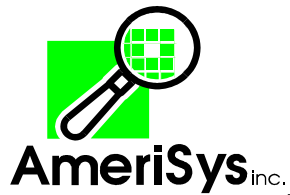
RuralConnection.ca



vivo wave)))
INTERNET SANS FIL



CoolSpot.ca



Wireless ISP Experience II

Network Architect of:

MRC des Appalaches

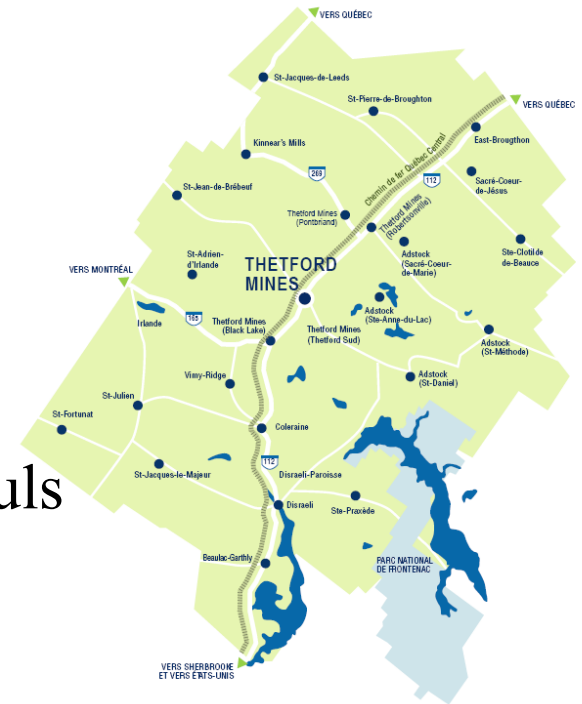
17 cities & rural areas

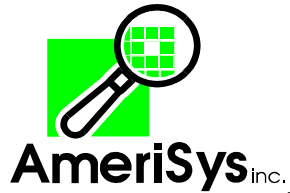
400 Mbps fiber 4 point backbone

Multiple microwave high-capacity backhauls

78 towers, ~600 AP – population ~30,000

900MHz, 2.4GHz, 3.65 GHz, 5.8Ghz





Wireless ISP Experience III

Network Operator:

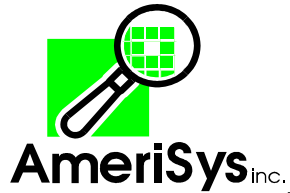
MRC de Mirabel

Under construction – started Spring 2010

Cable modem backhauled

900MHz, 2.4GHz, 5.8Ghz Wireless service





Wireless ISP Experience IV

Network Operator of:

VivoWave internet Inc.

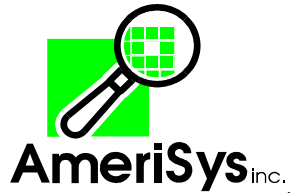
MRC de Brome-Missisquoi

200 Mbps 2 point fiber backbone

Population ~36,000

900MHz, 2.4GHz, 3.65 GHz, 5.8Ghz





Wireless ISP Experience V

Network Operator of:

RuralConnection.ca

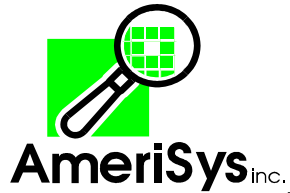
MRC des Laurentides

Cable & bonded DSL backhaul

Population ~15,000

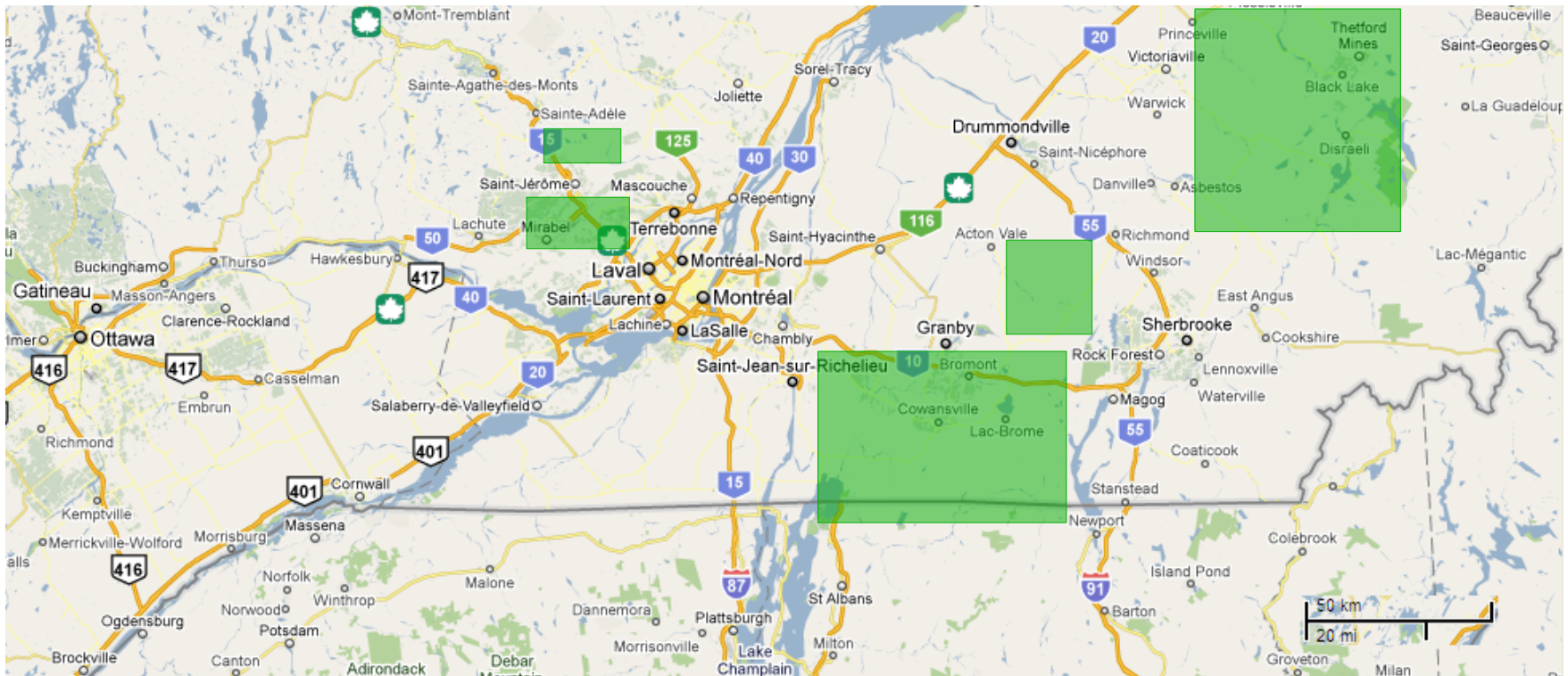
900MHz, 2.4GHz, 5.8Ghz

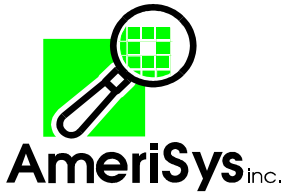




Wireless ISP Experience VI

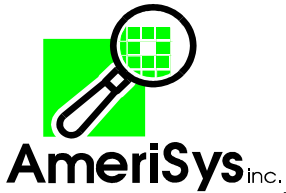
Network coverage





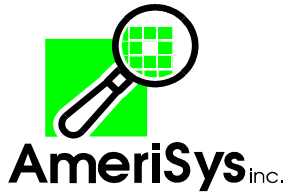
Lessons Learned I

- In forested areas
 - 5.8 GHz operation is impossible
 - 3.65 GHz operation is impossible
- 2.4 GHz operation only possible in very sparse vegetation
- 900 MHz operation possible in sparsely forested areas
- Evergreens are electromagnetic brick walls in all bands
- Contrary to manufacturer claims
 - Line of sight is essential for all four bands
- Antenna gain
 - Plays bad tricks in forested areas due to dispersion
 - Main tool in clear line of sight conditions
- Weather conditions
 - Vastly affect propagation through vegetation



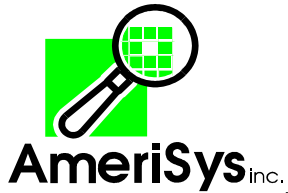
Lessons Learned II

- Customers want
 - Extreme reliability (>99.999%)
 - Streaming service support (audio & video)
 - Very low cost professional installation
 - Very low monthly rates
 - Unlimited volumes
 - Small antennas, out of sight
- Customers refuse or are reluctant to
 - Antenna towers/structures including domestic 10m towers
 - Structure fees



Lessons Learned III

- Customers don't understand or don't want to understand
 - Upload/download volumes
 - Difference between Streaming video and TV
 - Cable does not charge volume for TV viewing time
 - Radio does not charge for audio listening time
- Customers have been spoiled and do not want to pay for
 - Equipment WISP installs or leaves on customer premises
- WISPs need a lot more bandwidth, in the VHF band
 - Customers usage trends
 - More speed, more volume, lower costs
 - Heavy apps demand
 - lower over-subscription ratios
 - Reducing number of customer an AP can serve



Lessons Learned IV

- For customers
 - WISP service is a consumption commodity
 - Like phone or cable services
- Computer browsers, mail clients, etc, are either
 - Productive appliances
 - To communicate, socialize and work
 - Toys for enjoyment to entertain them
- Customers increasingly need
 - On-site, “computer appliance” repair personnel
 - i.e. if when they plug it, it doesn't play
 - They want someone else to take care of it.