

# The Canadian Wireless Industry



## WiMAX and Wireless Mesh

### Overview

**WiMAX** is a Broadband Wireless Access technology (BWA) that has the potential to provide high speed wireless connectivity over a large geographic area at relatively low cost. The range is estimated to be in the tens of kilometres from one base station, with peak speeds up to 70 Mbits/s. WiMAX is considered to be an ideal solution for servicing sparsely populated rural areas and is a good wireless backhaul solution for cellular networks. WiMAX solutions have provisions for fixed connectivity (similar to home internet connections) today and mobile connectivity (similar to cellular) in the near future. The technology is new and product certification is underway on fixed WiMAX equipment. The first company to get certification of a complete suite of equipment for WiMAX (Jan. 2006) is Redline Communication, a Canadian leader in the WiMAX arena.

The global WiMAX market, which is just gaining momentum, is estimated to be worth over \$3 billion by 2010<sup>[1]</sup>. The tremendous growth will be fuelled by the deployment of WiMAX in suburban environments where DSL infrastructure is poor and also in emerging markets where the need for broadband connectivity is high but the traditional wireline infrastructure is lagging.

A **Wireless Mesh** network is another variation of Broadband Wireless Access technology (BWA). It is basically an extended version of a WiFi network and can be scaled out to become a Metropolitan Area Network (MAN). Wireless mesh networks are comprised of several access points (AP) and backhaul nodes as the coverage area for each AP is restricted to several hundred feet. Wireless Mesh has become the solution of choice for many universities, municipalities and enterprises for the flexibility and versatility it offers, the prevalence of WiFi in laptops and PDA's and the low cost of CPE's.

The wireless mesh network market will grow aggressively over the next few years driving the market for access points from \$34 million in 2004 to \$974 million in 2009<sup>[2]</sup>. The wireless mesh market will be fuelled by an increase in deployments of wireless mesh for metropolitan area networks (MAN), university campuses and enterprises.

Both BWA technologies allow non-traditional players to enter the market. Non-traditional players such as municipalities and ISP's are disruptive and a threat to operators as they can now deliver wireless broadband connectivity and take away the opportunity from operators wishing to deliver triple play services (voice, data and TV). For instance, wireless mesh networks such as the Fred-eZone in Fredericton is managed by the municipality and offers free WiFi access to users.

### Applications of WiMAX and Wireless Mesh

WiMAX and wireless mesh enable a whole host of IP applications including internet connectivity, e-mail, VoIP and IPTV. Once product certifications for mobile WiMAX are complete and networks are rolled out, users will have the ability to be mobile and use all applications on the go. As devices become more prevalent, VoWiFi (voice over WiFi) usage will grow driven by applications such as Skype.

## The Canadian Value Proposition

WiMAX is an area where Canadian companies have leadership. **Redline Communications** was among the first vendors in the world to get both its base stations and CPE's WiMAX certified giving Redline a significant advantage over competitors and enable it to be the first to market products. Other companies such as **VCom** have been awarded multi-year contracts to deploy WiMAX networks in India. Canada is also very strong in the R&D side of WiMAX and the development of OFDM<sup>[3]</sup> technology with companies like **Wi-LAN** which specialize in the core design and software for 802.16. **Wavesat** is another Canadian company with market leadership in WiMAX. It was recently selected by Sloka Telecom of India to provide its WiMAX chipsets for the development of a low-cost WiMAX solution for emerging markets.

For wireless mesh, **Nortel** specializes in delivering mesh networks to enterprises and universities. **BelAir Networks** has taken a different approach and develops complex and scalable mesh networks for operators with built in redundancy, QoS and billing capabilities.

## Key Canadian Companies

### WiMAX:

**DragonWave** ([www.dragonwaveinc.com](http://www.dragonwaveinc.com)): DragonWave Inc. is a leading innovator in high capacity broadband wireless networking systems for network operations and service providers. Since inception, the company has achieved customer recognition for quality, innovation, and technical advances in delivering wireless point-to-point networks for the transport of data, voice and video communication systems, including comprehensive service and support

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**Redline Communications** ([www.redlinecommunications.com](http://www.redlinecommunications.com)): A leading provider of standards based broadband wireless access equipment including WiMAX to operators, service providers and enterprises worldwide for access and backhaul purposes.

**SR Telecom** ([www.srtelecom.com](http://www.srtelecom.com)): SR Telecom designs, manufactures and deploys versatile, Broadband Fixed Wireless Access solutions including WiMAX. Carriers have used SR Telecom's products to provide field-proven data and carrier-class voice services to end-users in both urban and remote areas around the globe in over 130 countries connecting nearly two million people.

**VCom** ([www.vcom.com](http://www.vcom.com)): VCom is ISO 9001 certified that designs and manufactures broadband wireless access products including WiMAX base stations, network management systems and customer premise equipment (CPE).

**Wavesat** ([www.wavesat.com](http://www.wavesat.com)): Wavesat is a fabless semiconductor developer of WiMAX and development tools. It offers solutions to allow system manufacturers and operators to deploy WiMAX fixed wireless networks now and transition to WiMAX 802.16e mobility technology in the future.

**Wi-LAN** ([www.wi-lan.com](http://www.wi-lan.com)): Offers products and services for WiMAX including reference designs for core access products and semiconductors. Wi-LAN also offers customized services for design and system integration.

## Wireless Mesh Networks:

**BelAir Networks** ([www.belairnetworks.com](http://www.belairnetworks.com)): BelAir is a leading provider of secure and scalable wireless mesh network solutions that deliver voice and data services for operators, municipalities, enterprises and university campuses.

**Newtrax Technologies** ([www.newtraxtech.com](http://www.newtraxtech.com)): Newtrax provides system integrators and OEM's with a wireless mesh technology platform that monitors and controls applications in harsh environments. Newtrax's intellectual property portfolio includes several patents pending and industry secrets.

**Nortel** ([www.nortel.com](http://www.nortel.com)): Nortel is a world leader in offering mobile connectivity products and services including cellular and wireless local area networks (WLAN) infrastructure and enablers to operators, enterprises, university campuses and governments globally.

**Tranzeo** ([www.tranzeo.com](http://www.tranzeo.com)): Tranzeo is an industry leader in custom designing, manufacturing and distributing wireless Point-to-Point, and Point to Multi-Point solutions. Tranzeo offers wireless broadband equipment in the 2.4GHz and 5GHz range and uses DSS and OFDM technology.

[1] IDATE News Release: WiMAX – Ready for Deployment, September 2005  
<http://www.idate.fr/pages/index.php?rubrique=etude&idr=16&idp=104&idl=7>

[2] In-Stat Market Alert: Wireless Mesh Network Equipment Market Accelerates, October 2005  
<http://www.instat.com/newmk.asp?ID=1462>

[3] Orthogonal Frequency Division Multiplexing: OFDM is used to enhance performance in high frequency bands in urban and rural areas where buildings and foliage can negatively impact signal strength.

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