EION WIRELESS

Case Study

# Quality of Life and Staying Connected

## Challenges of the Wholesale ISP Business Model

*Mountainous terrain presents a particularly challenging environment in which to deploy broadband communications networks. Difficult geography combined with a low population density tends to limit the options for providing broadband access at rates that are attractive to both consumers and to service providers. The picturesque Wenatchee Valley located next to the rugged, snow capped Cascade Mountains and the mighty Columbia River in Central Washington State offers just such a challenge.*

### CUSTOMER

The quality of life available in Central Washington State attracts many entrepreneurs and high tech professionals whose activities require significant bandwidth. Despite having a population of only 40,000 in an area that measures about 7 miles by 10 miles, Washington's Wenatchee Valley is home to 8 WISPs. All of them use the unlicensed 2.4 GHz radio band. Beginning in 1997, Northwest Telephone (NWT), a wholesale provider to ISPs in Washington State, has combined fibre optic cable with unlicensed wireless solutions to build a network covering about 1,500 square miles in Central and Eastern Washington State including the Wenatchee Valley. NWT's business model is to build the network, provide the connection to the home or business and sell the bandwidth to ISPs. In turn, ISPs that use the NWT network provide sales and marketing functions as well as first level support.

### CHALLENGES

With 8 ISPs all using the same signal band in a relatively small area, NWT must frequently take steps to try and mitigate radio interference. NWT is the largest carrier in the region and as a result it is also the one with the most to lose due to radio interference problems. Short-term solutions have included using attenuators to knock down the signal strength, employing signal polarization and redirecting antennas to catch side loads. Medium term solutions have included migrating the older areas of the wireless network to the 5.8 GHz band and then transferring the 2.4 GHz equipment to less congested regions. The long-term solution will be to form a consortium of service providers in order to coordinate radio deployments and so reduce radio interference. The end result will be happier customers and less effort expended retuning networks.

### SOLUTION

NWT currently uses about 200 Wi-LAN legacy radios as CPEs and for backbone transport in order to serve a mix of residential and small business end customers. The typical site consists of 3 sectors fed with a radio, providing an average throughput of about 3.2 Mbps per sector. NWT runs up to 30 CPEs per sector with the typical configuration being about 15 CPEs per sector. In the future NWT's strategy for dealing with radio interference will be to build overlapping 2.4 and 5.8 networks. Then, as interference becomes a problem, transition existing customers from 2.4 to 5.8.

The 2.4 radios will eventually be redeployed to cities with populations of less than 10,000 people. The more metropolitan areas will be converted to a 5.8 GHz platform such as EION's Ultima 3. One of the benefits of EION's Ultima 3 platform is its all- in-one design, which makes the deployment process fast and simple. The Ultima 3 combines the antenna and radio together eliminating the need to run a large coaxial cable into a customer's premise.

Whenever possible, NWT tries to keep its installation to the outside of the customer premises. The ideal arrangement is to put a CAT 5 box mounted on the outside, terminate the NWT connection there and have the ISP complete the internal wiring. If NWT needs to, it can unplug the indoor from the outdoor and insert NWT's own test unit powered by a battery.

NWT's president Andrew Metcalfe explains, "From our standpoint we need a place to be able to break the connection from the customer's house and have a remote power system that can plug directly into the radio to do the trouble shooting without ever going into the customer's premises." NWT typically puts all base station components into an environmental, airconditioned cabinet. They usually put routers into each base station with typical base station cabinet costs ranging from about 10 to 15 thousand US dollars. NWT typically puts all base station components into an environmental, airconditioned cabinet. They usually put routers into each base station with typical base station cabinet costs ranging from about 10 to 15 thousand US dollars.

## FUTURE PLANS

While DSL can often be deployed more cheaply than wireless, it suffers from latency much more than wireless does. NWT has found that many people that play games on the Internet prefer wireless connections because of the low latency. Andrew says that NWT's next move will be to provide VoIP, to any broadband connection in the ecosystem. The most "bang for the buck" for VoIP is expected to come from the wireless system because for the people that are typically outside the core telephone network system, getting extra lines etc. is sometimes impossible or if it is possible it is a lot more expensive than merely adding another telephone VoIP line.

The NWT wireless network is not 100% redundant to the subscriber. Therefore, radio reliability is extremely important in order ensure maximum customer up time. NWT makes use of Washington State's extensive fibre optic network wherever possible, utilizing the fibre network to drive Ethernet connections out to base stations so that communities that didn't have any kind of broadband network before can now get access very quickly for a minimal amount of money.

NWT selected EION radios after a comprehensive comparison of all equipment vendors. As Andrew Metcalfe explains, "We gathered together all the radios available when NWT started up, four vendors in total, and ran a series of tests. Basically, we turned all of the systems on at once and did some interference testing and the Wi-LAN* system was the only system that could maintain a connection through pretty much everything that NWT threw at it while the other systems failed on a regular basis. We also liked the fact that the Wi-LAN product isn't 802.11b but instead is a proprietary product."

Andrew feels that proprietary technology makes for a more secure network, something that many businesses are seeking. Andrew also commented that, "The Wi-LAN* error interface seems to be more rugged than other equipment. This along with Wi-LAN's* excellent customer support and easy access to the engineering department were more than enough reasons to select equipment of this company."

**In 2006, EION Wireless acquired major product lines and expert staff from Calgary based Wi-LAN Inc.*

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EION Wireless, a division of EION Inc., is a global provider of Broadband Wireless Access products that enable effective, economic and secure wireless high-speed communications solutions. EION is a Principal Member of the WiMAX Forum and was named one of the fastest fifty growing wireless companies in North America by Deloitte and Touche. With over ten thousand broadband wireless installations worldwide, the company's licensed and unlicensed frequency products are used by wireless ISPs, private network operators, and remote rural networks and in voice and data backhaul applications to solve last mile challenges. EION Wireless works with more than 165 worldwide channel partners to support its diverse global customer base.