

Date:10/08/2009 URL:

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*Where there's no wireline there's business, say WiMax players. But they must first contend with the 3G juggernaut..*

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*Globally, several operators are deploying WiMax e-version for mobile broadband services.*

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K. Murali Kumar



*Conventional wires are not needed for connectivity.*

Thomas K. Thomas

Chhota Udaipur, a tribal area 100 km off Vadodara in Gujarat, is probably where the story of India's WiMax-based wireless broadband services will begin. This remote area is among the many places in India where there is no copper available to provide connectivity to the online world. But things may soon change here after broadband connectivity and Net devices are given to tribal schools and hostels by Bharat Sanchar Nigam Ltd through its franchisee partner Soma Networks. This State Government initiative will also attempt to set up low-end BPO centres using WiMax.

In a country with low wireline penetration and a cost-sensitive market, WiMax is touted as the perfect medium for broadband services, which so far has only about 6 million subscribers. Companies including Tata Communications, BSNL, Reliance Communications, Soma Networks and Intel are betting big on WiMax to take this number to 100 million over the next 10 years.

Prateek Pashine, chief operating officer, Tata Communications Internet Services says, "WiMax can play a major role in addressing the large latent demand for quality broadband in

homes and small businesses. In India this technology will play the role of kick-starting growth in broadband penetration and we hope to participate in driving that growth.” Tata Communications has been dabbling with a lower version of WiMax (802.16d standard) for over two years. It already has over 1,000 base stations spread across 150 cities and a customer base exceeding 50,000. Now with the Government planning to auction 20 Mhz of spectrum for broadband wireless access, Tata Communications is eyeing the new version of WiMax (802.16e standard). “The ‘e-version’ provides better spectral efficiency, more standardised and compatible product availability, and other features in addition to mobility,” says Pashine.

### Time-to-market advantage

Globally, several operators are deploying WiMax e-version for mobile broadband services. In the US, Clearwire, which was among the first to select WiMax as its wireless mobile broadband technology in 2006, believes it will give existing telecom operators more than a run for their money. “There was (and still is) no other technology available to meet our time-to-market timelines. Currently, WiMax has minimum 2-3 years’ time-to-market advantage over any competing technologies. None of the existing 3G technologies could properly support the capacity required for heavy data utilisations — 5GB to 15GB per month,” says Ali Tabassi, Senior Vice-President, Global Ecosystem and Standards, Clearwire.

UQ Communications in Japan is also rolling out WiMax-based broadband services.

Tatsuo Sato, Senior Manager, UQ says, “UQ selected WiMax because it has fast-mover advantage over other technologies.” He says although WiMax and LTE (Long Term Evolution) both use the same technologies, WiMax is way ahead with many products in the market. “UQ started its pilot service from February this year and moved to commercial service from July. We have received many positive comments from our pilot users,” he says.

### Does it mean business?

Though telecom industry largely agrees that WiMax is a good broadband technology, not all are convinced on the business front, which will, at the end of the day, decide the success or failure of any technology. Compared with other next-generation technologies, WiMax is relatively a new entrant. Third-generation technologies such as EVDO and HSPA, which are also competing for the lucrative wireless broadband data market, have been tried and tested for more than five years. In contrast, WiMax deployments are only just beginning. Operators including Yota in Russia, Packet-1 in Malaysia, VMax in Taiwan and Clearwire in the US began rolling out network over the past six months. On the other hand, 3G is available in the whole of Europe, the US, Australia and many other countries in South-East Asia.

Comstar, a WiMax-based operator in Russia, admits it is early to say whether they have bet on the right technology. Says Dmitriy Ronin, director, WiMax project, Comstar – Russia, “Comstar has chosen WiMax because we suppose it’s the most innovative wireless broadband access technology and can build powerful wireless networks. But it’s too early to judge (on whether they have made the right choice of technology). The first facts-based comments are possible in 2-3 years.”

Elsewhere too, WiMax faces different challenges. According to research analyst firm Maravedis, subscriptions in South Korea to WiBro, the local version of WiMax, fell last year before the government allowed VoIP (Voice over Internet Protocol) on the network. “An auction of radio spectrum for WiMax in India was delayed and Clearwire doesn’t have

enough money to do what it has to do. Clearwire is about \$3 billion to \$4 billion short of the \$6 billion to \$7 billion it will need to reach 100 million subscribers by 2010, and is unlikely to make its deadline. All this matters, in part, because chip and device manufacturers need some assurance that people want to use WiMax before they put it in their products," a Maravedis executive was quoted in an international report.

Most of the international WiMax operators *eWorld* spoke with were unwilling to share targets for achieving break even. However, a study by business consulting and internal audit firm Protivity states that the four WiMax operators in India, as envisaged in the auction guidelines, will start making 25 per cent profits on revenues of about Rs 5,200 crore at the end of five years of operation. The report, made for the WiMax Forum in India, pegs 36 million WiMax subscribers by 2014 which gives each of the four operators about 7-9 million subscribers. It says the operators will get ARPU of Rs 700-1,100 a month, assuming 512 kbps speed initially. It estimates 10,700 WiMax base stations in five years for which sites will primarily be leased from existing tower companies. "Capital expenditure (excluding spectrum licence cost) per subscriber is estimated to be Rs 1,900-2,100 and break even in 3-5 years," the report states.

### 3G players unimpressed

But proponents of 3G technologies dismiss these numbers and insist there is no space for WiMax in India when existing mobile players are well positioned to offer wireless broadband through EVDO or HSPA. Kanwalinder Singh, President, Qualcomm India and South Asia, says, "The cost of rolling out a greenfield mobile WiMax network is huge, given the geography of this country. WiMax requires at least 4-5 times the number of base stations needed for, say, EVDO." Renting a tower would cost Rs 30,000 a month, making it unviable both in rural and urban areas, he says, adding that existing players are committed to the next levels of their respective technologies, namely HSPA for GSM and EVDO for CDMA. According to Qualcomm, WiMax may be restricted to niche areas in cities, offering fixed connectivity to the enterprise segment. "In India this technology may, at best, be relevant for homes and offices in a fixed environment," says Singh. Agrees Tata Comm's Pashine, who says the WiMax 802.16e is seen relevant in the short term to serve the needs of fixed and nomadic broadband, owing to poor availability of wireline infrastructure.

### Who will benefit?

Soma Networks, currently the only operator in India to roll out WiMax using BSNL's spectrum on a franchisee model, is also restricting itself to fixed broadband. "In an emerging market like India, with vast areas underserved due to lack of wired infrastructure or sub-optimal DSL connections (slow speeds), the best use of WiMax today is to deliver broadband to homes and businesses that have poor or no connectivity. The population we cover in the three circles of Gujarat, Maharashtra and Andhra Pradesh is 240 million. And even if broadband penetration increases from the 0.5 per cent today to 3 per cent over the next three years, we are still talking of very small volumes to justify that kind of investment, given the lower ARPU numbers in India. Using WiMax as a mobile broadband application is better suited for developed markets, which have high data consumption. Classic examples are Tokyo and Korea," says Yatish Pathak, founder and CEO, Soma Networks.

Established global WiMax players, of course, disagree. Clearwire, for example, says it is offering 4-6 Mbps downlink and 1-2 Mbps uplink at full mobility at 60 miles per hour. Japanese players such as UQ and Malaysia's Packet-1 are also exploring options to bring

their WiMax-based mobile broadband to India not just for data services on handsets but also applications such as IPTV and VoIP. “The flexibility of WiMax enables a great variety of services, types of users and progressive deployment in any geographical location... allows for greater economies of scale as wide areas are covered by WiMax base stations,” says Packet-1.

But international players sound a word of caution on the quantum of spectrum available in India. While in other countries operators have more than 30 MHz of spectrum for WiMax services, in India there is only 20 MHz for each operator. “More than 30 MHz bandwidth should be assigned to install 10 MHz channel with Reuse 3. Operators are able to expand their service coverage with 20 MHz by using a technology called Fractional Frequency Reuse (FFR: Reuse1). The wider the spectrum, the better for coverage expansion and future technology expansion toward the new standard 802.16m that realises 100Mbps+ download speed,” says UQ’s Sato.

### Big players in the ring

Market watchers point out that apart from cost factors, the Indian market has traditionally been unkind to new technologies in the mobility segment. “We have seen many mobile technologies such as PAS, Corpect and CDMA trying to break into the cellular market dominated by GSM players. So far, only CDMA has had some limited success, that too because it is backed by large corporate groups like Reliance and Tatas. WiMax may have a tough time breaking into the mobile space unless a major player decides to invest in it,” said a GSM player.

That big player could be chipmaker Intel, which is heavily banking on the success of WiMax in India to penetrate into the booming mobile devices segment. Intel Capital, the Silicon Valley-based chipmaker’s venture capital firm, is in talks with Indian operators to jointly invest and offer mobile WiMax. The chipmaker is also trying to get other international WiMax players, funded by Intel Capital, to either bid for spectrum when it is auctioned or partner an Indian licence-holder. Russian operator Yota is one such player which may strike an alliance with an Indian player, including Mahanagar Telephone Nigam Ltd and Bharat Sanchar Nigam Ltd, to offer WiMax-based broadband services in India. Yota, backed by Intel capital, currently offers WiMax-based services in three regions of Russia including Moscow and St Petersburg. Yegor Ivanov, Director, Business Development, Yota, says, “India is a key market for us since we are looking at expanding to international markets. We are looking at various options, including a partnership with MTNL, for offering WiMax broadband in Delhi and Mumbai, and with BSNL in the rest of the country.” Yota has roped in Phi Televentures, a new company floated by former executives in Motorola and Alcatel Lucent, to work out a deal in India. By partnering MTNL and BSNL, Yota will have the first-mover advantage apart from not having to buy spectrum through the competitive bidding slated for later this year. One factor favouring WiMax players is that compared to 3G they offer international and new players a lower upfront cost to enter the fastest-growing mobile market in the world.

While the Government plans to peg the reserve price for 3G spectrum at Rs 4,040, there are efforts to fix the base price for WiMax spectrum at only 25 per cent of that. But 3G players say that would hardly make a difference in a business requiring investment of billions of dollars. “While the disparity in reserve price is unfair to 3G, the lower base price does not give WiMax players a 100-metre headstart in a 10-km marathon race. The winner, at the end of the day, will be decided in the marketplace and we are going to go hard at them,” says a company executive backing 3G technologies.

Will the WiMax story also end at Chotta Udaipur or will the technology be able to disrupt the mobile broadband market by taking on the 3G juggernaut in India? With the auctions for spectrum slated later this year, the answer will not be long in coming.

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