



# Bridging the Digital Divide – Delivering Broadband Services in Pakistan

## The Company

Wateen Telecom\* is the Abu Dhabi Group's latest communication investment in Pakistan. After the successful launch of Warid Telecom in Pakistan, which has the largest post-paid GSM subscriber base in Pakistan, Wateen Telecom has been set up to become the leading "Carrier's Carrier" providing quality, reliability and affordability in the communication & media sector and bringing Next Generation services to customers' doorstep. A giant in the making, Wateen Telecom is a power house that will soon touch over 30 million businesses and home users in urban, suburban and rural locations in Pakistan. Its services include international and nationwide telephony, Internet access, data connectivity, Cable TV, Video on demand, Video Surveillance, Data Centers, Disaster Recovery and Video Conferencing.

Headquartered in the city of Lahore, Wateen Telecom has successfully deployed one of the biggest nationwide WiMAX networks. With the deployment of 842 four-sector base station sites in 22 cities, the Wateen WiMAX network covers over 20% of Pakistan's 164 million inhabitants. Since the network's commercial launch in December of 2007, Wateen Telecom has signed up 52,000 customers. Additional WiMAX base stations planned over the next 6 months will bring the total deployment to approximately 1300 base stations. Longer term, WiMAX coverage will be extended to an additional 70 cities.

Wateen's nationwide spectrum holdings in the 3.5 to 3.6 GHz band include 5 geographic regions with 42 MHz of spectrum and 9 geographic regions with 21 MHz of spectrum.

## WiMAX Broadband Services Offered

Wateen's WiMAX platform supports multiple services:

- Broadband Internet (IP bandwidth and Internet connectivity (with offerings up to 1

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\* Wateen Telecom (Pvt.) Ltd., 4th Floor, New Auriga Centre, Main Boulevard Gulberg II, Lahore, Pakistan, [www.wateen.com](http://www.wateen.com)

Mbps connectivity))

- Data (VPN (L2/L3), online surveillance, gaming and video conferencing)
- Voice (basic telephony, enhanced telephony, IP Centrex , video calling)

Customers can opt for either one or all services at the same time using a single CPE (Consumer Premises Equipment) adding a lot of convenience through prepaid converged billing. Also, WiMAX enables users to access Broadband Internet through the CPE or WiFi hotspots deployed across various commercial hubs through their laptops.

A range of CPE equipment is available to accommodate varied customer requirements and varied propagation conditions. Where propagation conditions are poor an outdoor CPE can be installed to maximize signal strength. This can also be a good option for business customers requiring a higher guaranteed data rate and multiple POTs connections.

Several self-install CPEs are available as well and Wateen plans to offer a USB dongle to facilitate portable usage in the very near future. Although the network will support mobility Wateen is currently constrained by the conditions of its license to fixed and portable services.

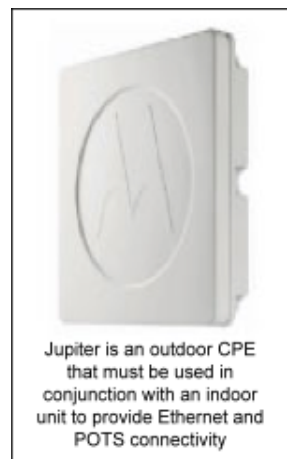
The goals in Wateen's pricing policy are:

- Minimize cost barriers for consumers to access broadband internet services
- Establish pricing options to address varied customer affordability
- Minor increase in monthly fees to encourage dial-up customers to upgrade to broadband

The monthly tariffs for internet access begin at 499 Rupees (~ \$6.30 USD) and as low as 90 Rupees for telephone (~\$1.10 USD). Wateen also charges a one-time connection fee and provides customers the option of renting or purchasing the CPE. Wateen also offers pre-paid and post-paid payment options.

Wateen target customers include:

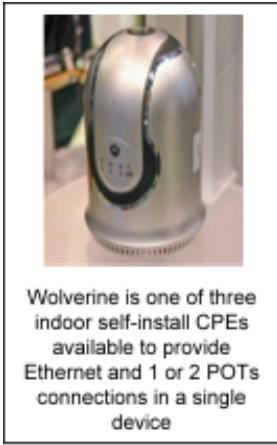
- Carriers and Operators: These currently represent the largest revenue segment
- Businesses and SMEs: These are addressed by in-house sales teams and on-going support provided by dedicated account teams
- Residential, SOHO, and Individual Customers: These customers are reached with sales outlets for walk-in customers, direct sales teams, and Affinity Partners. This is currently the fastest growing market segment.



Integrated Access Devices (IADs) are available with 4 or 8 ports

## The End-to-End Network

Wateen has a nationwide Optic Fiber Trunk, alongside a cutting edge wireless nationwide WiMAX network based on the IP/MPLS network. Wateen currently has one of the largest privately owned networks in



Pakistan. Wateen has 5,000 km of Optical Fiber Cable (OFC), LDI Networks, WiMAX networks, as well as a Metro Ring presence in seventeen metropolitan areas.

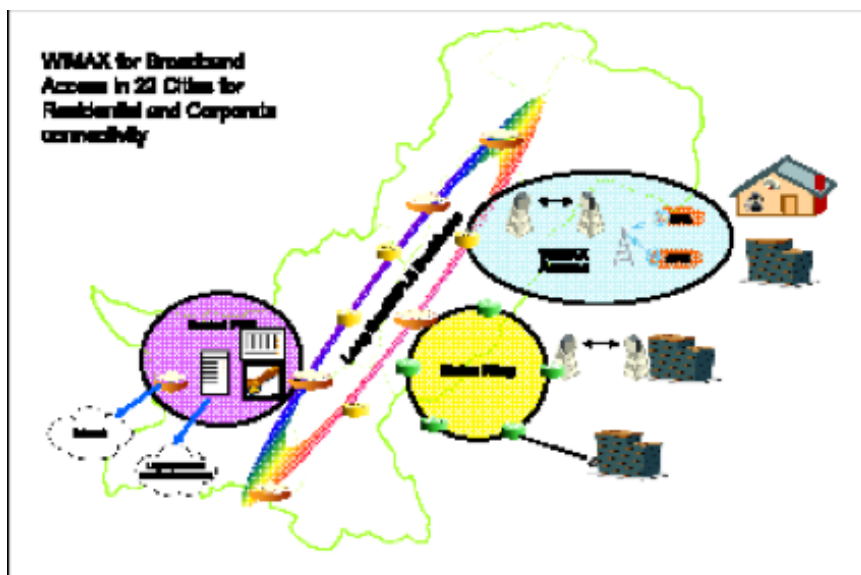
Wateen Telecom has chosen its network solutions and vendors in accordance with international standards to provide world-class innovation that focuses on quality, reliability and scalability.

To effectively realize its vision, Wateen has focused on creating a Next Generation Network that is based on IP/MPLS and IMS (Integrated Multimedia Subsystem) solutions with multi-access services using fiber access and spectrum in the 3.5 GHz band for WiMAX last mile access.

To ensure quality and reliability, Wateen Telecom is building its own network to avoid third party reliance and to provide guaranteed Service Level Agreements (SLAs). This large-scale endeavor includes:

- Next Generation Network (NGN) Core.
- IMS enabled converged multi-access network based on a layered architecture.
- Robust LDI/Class 4 and class 5 networks with all fundamental enabling technologies and a host of applications providing depth and breadth of value added services.
- End-to-end IP-centric architecture including IP/MPLS core and edge networks for triple play services.
- Fixed and Wireless Access Networks.
- Metropolitan Access Network (MAN) with 96 pair G652 / 655 optical fiber.
- Ethernet rings in all major cities including Fiber to The Curb (FTTC).
- National WiMAX cutting edge 4G broad band wireless connectivity.
- Infrastructure (Optical Fiber Network and Tele-housing).
- Multi-terabyte DWDM solution over national fully redundant ring architecture Long Haul optic fiber network covering 5,000+ km scalable up to 160 lambdas, connecting all major cities in Pakistan and neighboring countries.
- Regional and international direct connectivity through optical fiber and VSAT links establishing Pakistan as a major regional communications hub.
- Tier 1 Tele-housing and managed services based on international standards and premiere Service Level Agreements (SLAs.)

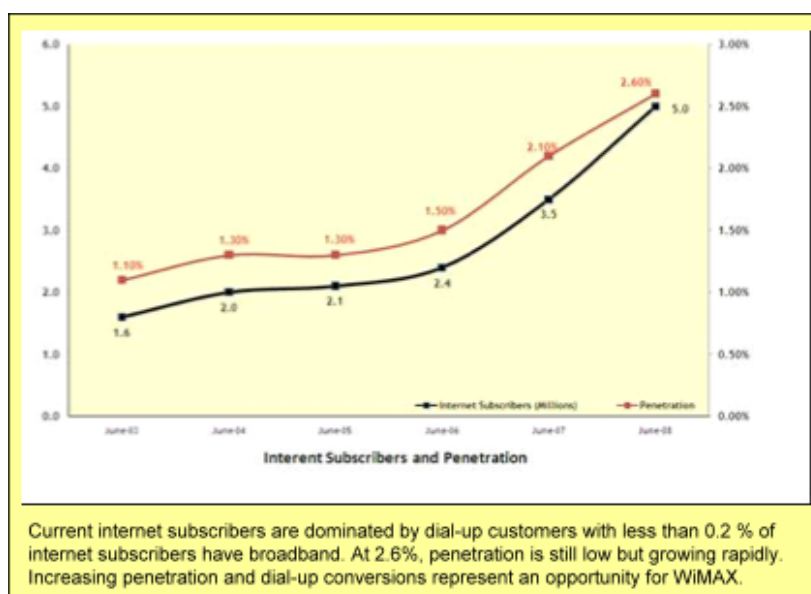
To facilitate WiMAX deployment Wateen has entered into agreements with Warid telecom and other GSM operators to reuse existing GSM sites. This has greatly reduced capital investment requirements and benefits Wateen as well as the GSM operators since ongoing site operating expenses are shared.



### Market Opportunity and Company Vision

According to the Pakistan Telecommunication Authority (PTA), as of June 2008 there were 5 Million internet subscribers in Pakistan about 95% of which are dial-up customers. These dial-up subscribers are all potential customers for converting to broadband. Wateen believes that these subscribers can be converted to broadband internet by offering true broadband services at a small incremental cost compared to what they are paying for dial-up.

Other alternatives for broadband services that exist today include Hybrid Fiber Coax (HFC), DSL, and to a lesser extent, Fiber to the Home (FTTH). Although these wireline networks account for the major share of current broadband connections, the market share for these technologies is projected to decrease while projections for wireless are expected to increase dramatically. The PTA projects that wireless will account



for 2/3 of the total broadband connections by the 2010-2011 timeframe.

With time to market advantage with the WiMAX technology in Pakistan, Wateen's present customer base is expected to grow considerably in the coming years. With a combination of planned WiMAX network expansion, offering of new value added services, increasing penetration of internet subscribers, and the conversion of today's dial-up customers to broadband, Wateen has expectations of reaching 1.5 Million broadband customers in five years.

## Conclusion

Wateen has taken advantage of the benefits of deploying a standards-based WiMAX wireless technology to quickly reach a significant percentage of Pakistan's population. Circumventing the tedious and time-consuming acquisition of right-of-ways associated with the expansion of a wireline network and the with the ability to reuse existing GSM sites has enabled Wateen Telecom to become, in a very short period of time, the second largest broadband operator in Pakistan.

Wateen with their network planning has taken into account the necessary tradeoffs between coverage and capacity dictated by the demands of a data-centric network. The initial high cost for subscriber equipment has been overcome by offering customers very affordable equipment rental arrangements. The offering of bundled service packages and a range of service level agreements has made broadband internet access affordable to a large majority of the population now covered by the Wateen WiMAX network. Going forward Wateen has very realistic expectations of reaching 1.5 million broadband customers within 5 years. This will be accomplished by:

- Expanding WiMAX coverage to additional cities
- Converting existing dial-up customers to broadband
- Offering new broadband services and CPE options

With WiMAX, Wateen Telecom is well on its way towards bridging the digital divide and making nationwide broadband connectivity a reality in Pakistan.

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