



# Broadband Oasis in the Sahara Desert

— LTT selected ZTE to build the first mobile WiMAX network in Africa

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ZTE is a reliable partner. ZTE WiMAX products can provide wireless coverage in all kinds of scenarios and satisfy our network construction requirements.

—LTT CTO Abdul Nasir A. Al-Tubuly

Libya is located in the northwestern corner of the African continent and borders the Mediterranean Sea to the north. It lies across some of European countries such as Greece, Italy, France and Spain. Libya is famous for its vast territory and a long Mediterranean coastline. It has rich oil and natural gas, which are the main economic pillars and have created huge enormous wealth.

Libya Telecom & Technology (LTT) is a subsidiary of GPTC. It is specialized in providing data services such as Internet. It was only providing dial-up Internet access, VSAT, DSL, WiFi and E-mail services. In August 2007, LTT was determined to develop wireless broadband service and carry out tender and bid activities in the WiMAX field. After careful survey, LTT selected ZTE as its strategic partner to build the first WiMAX network in Africa.

### Opportunity or Challenge

The mobile voice service in Libya was offered by Libyana and Al-Madar. As the telecom market grows, the mobile penetration soars to 110% and reaches close to saturation. The Internet becomes ubiquitous in the globe and influences people's communication habits. Because the broadband data in Libya is comparatively backward and the existing wired broadband data resource cannot meet the increasing market demands, the development of wireless broadband has become a key issue for Libya to construct a broadband data network.

Libya is surrounded by the Mediterranean Sea on the north and extends deep in the Sahara Desert. Except the green coastal areas (also densely populated areas), more than 90 percent of the country is desert or half-desert dry plateaus where the population is sparse. The different types of landform result in different climates. For example, the coastal lowland in the north of Libya features sub-tropical climate. It is hot and dry in summer, but warm and rainy in winter. The inland in the south of Libya features tropical desert climate. It is cold in winter and hot in summer. The seasonal temperature difference and the temperature difference between day and night are very big. The landform, climate and population distribution features put strict requirements to network construction. By virtue of outstanding WiMAX strength and good understanding of the local environment, ZTE offered WiMAX end-to-end solution to fully satisfy LTT's requirements.

By cooperating with GPTC, LTT and Libyana since 2005, ZTE has accumulated rich experience in building local networks. Following the previous successful cooperation, ZTE was selected by LTT to build the first mobile WiMAX network in Africa.

### Best Solution Selection

WiMAX - new wireless broadband access technology, has obvious technical advantages. It features high access rate and large throughput. It can obtain 17.85

Mbps DL and 3.74 Mbps UL peak rates (MIMO 2\*2) at 5M spectrum bandwidth. Compared with other 3G technologies, WiMAX can obtain higher broadband rate at the same spectrum. Due to good mobility, high capacity and rate, QoS guarantee, perfect coverage solution and rich multimedia and broadband data services, WiMAX will help operators to rapidly explore the market.

The complicated geographic and climate environment in the north of Libya rose to the challenge of equipment performance and engineering execution. ZTE WiMAX end-to-end solution adopts key technologies such as MIMO, OFDMA and efficient power amplification. With the BS supporting large coverage, a large number of BSs can be saved. The large-capacity outdoor distributed BS cabinet integrates BBU, transmission equipment, environment monitoring equipment, ACD/DC conversion equipment and backup power supply. This cabinet can save the equipment room space and allow rapid network construction. Moreover, this cabinet can protect against high and low temperature. It is able to stand 50°C in the Sahara Desert.

During product design, ZTE focused on low-TCO, green network and convenient installation. ZTE made every effort to satisfy the operator's demands and maximize value for the operator.

Firstly, ZTE adopted the structure of the Universal IP Platform, greatly reducing expansion, evolution and convergence

costs. ZTE's unique SDR technology based on Micro TCA supports technical upgrade and evolution through software/hardware upgrade, thus reducing investment in network upgrade. In addition, ZTE BBU supports at most 12 carrier-sectors, allowing network expansion in the future.

Secondly, ZTE WiMAX technology leads the industry. The multi-antenna technology supports 4T8R. With the same coverage area, by using 8-antenna BSs, more than 12% BSs are saved as compared with using 2-antenna BSs. The unique ultra long-distance coverage solution helped the operator to build networks in rural or remote areas, for example, the big areas in the middle and south of Libya. It can achieve a coverage radius of 19 kilometers.

Thirdly, ZTE's diversified indoor solutions provide convenient and efficient WiMAX broadband access. ZTE's mature Pico/Femto BS for indoor equipment features small size, convenient installation and wide coverage area. It can be deployed rapidly in densely populated or important areas. For the indoor environments where cable layout is not convenient, ZTE offers indoor Pico solution based on power line transmission.

ZTE has committed to R & D of WiMAX and owned more than 600 WiMAX-related patents. It is always leading the industry in standard pre-research, industry standard and equipment

certification. ZTE is the first company to win the 3.5 GHz equipment certification in the world and also the first company to acquire Wave II 2.5GHz/3.5GHz equipment certification and 2.5GHz terminal certification. ZTE's commitment to R & D ensures advanced technology, high compatibility and reliability of ZTE WiMAX products.

With abundant experience in engineering execution, ZTE offered all-round network planning & optimization, site acquisition, infrastructure, equipment installation and network operation & maintenance service. Through regulated project management model, uniform deployment and rapid action, ZTE built a high-quality and cost-effective wireless broadband network for LTT.

## Confidence in Future

ZTE provided customized terminals for LTT to rapidly explore the market and promote WiMAX brand. ZTE customized a series of terminals, designed personalized user interface, and found new functions catering for the user demand on the client end.

After put into commercial operation, LTT WiMAX network is running normally with good performance. The market promotion quickly spreads. WiMAX network is attracting new users. A lot of users have subscribed to the WiMAX service and purchased WiMAX terminals. The high user growth has raised LTT's confidence in the prospect of WiMAX.

## Case Summary

### Customer Requirements

- Ensuring high quality and high reliability, meeting network deployment requirements in complicated scenarios
- Effectively controlling network construction cost and maintenance cost
- Providing total solution of coverage, implementing rapid network deployment

### ZTE Solutions

- Large-capacity outdoor distributed BTS and ultra long-distance

solution, implementing coverage in remote and complicated scenarios

- Indoor coverage solution, efficiently implementing access of WiMAX signal to indoor environment
- Strong network optimization and planning capabilities as well as efficient engineering execution

### Customer Value

- Rapid and efficient network deployment
- Effectively reducing network TCO to maximize customer investment value