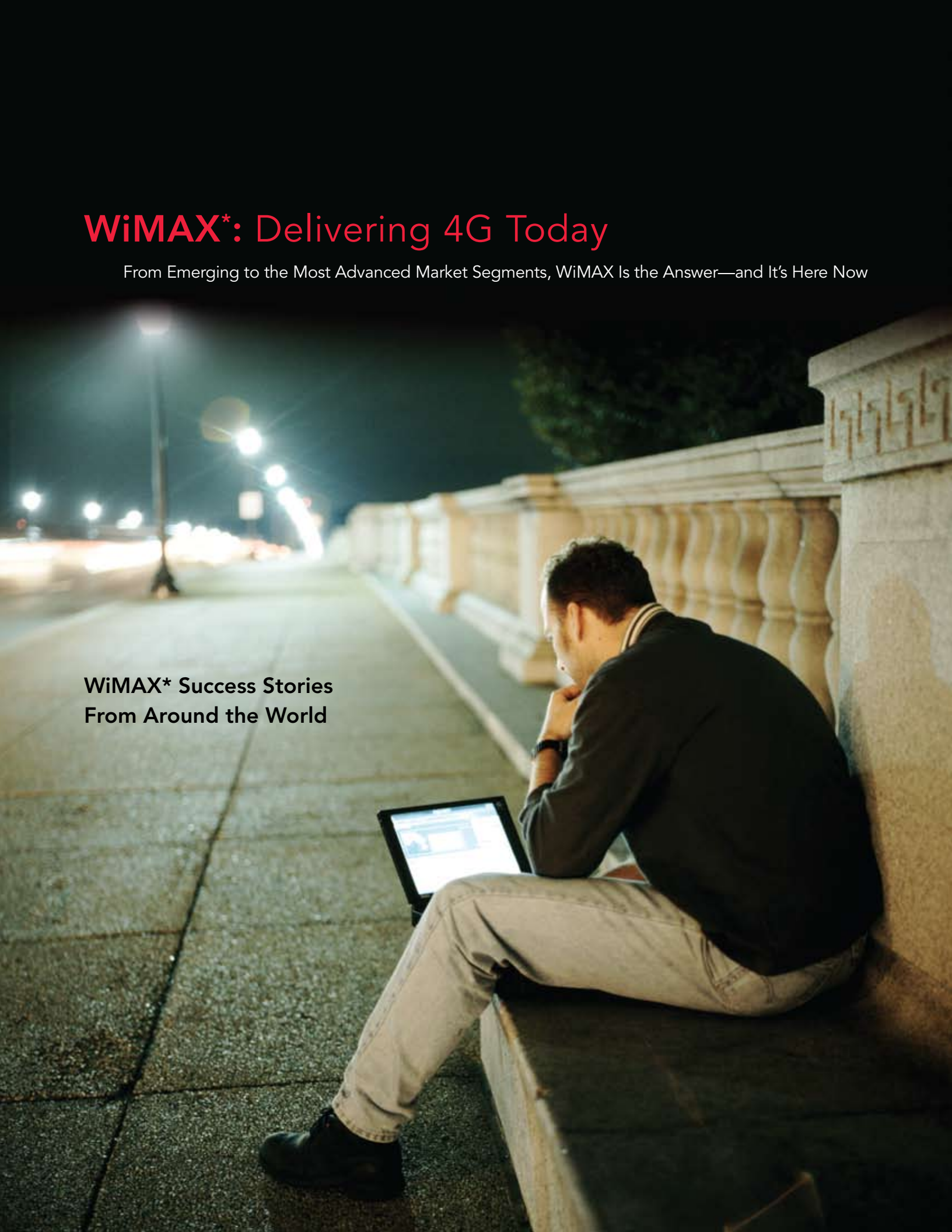
WiMAX*: Delivering 4G Today

From Emerging to the Most Advanced Market Segments, WiMAX Is the Answer—and It's Here Now



WiMAX* Success Stories From Around the World

The 4G Era Is Here

WiMAX* is the first 4G technology available today to meet the pent-up demand for the mobile Internet. As 3G performance degrades with the growing number of subscribers and 3G networks already getting jam-packed, customers are being shifted to 2G networks to try to relieve the congestion.

As a 4G technology, WiMAX can provide three times the performance of today's 3G solutions, with the ability to scale to 10 times the performance with 802.16m.

We are living in an era of unprecedented change—and WiMAX is a change for the better. And it's here now. WiMAX offers increased capacity and a lower cost per bit to enable the delivery of mobile broadband services in both developed and developing market segments.

Real-World WiMAX Deployments at a Glance

This document offers snapshots of live WiMAX deployments around the world and provides insights to the advantages, benefits, and new and successful business models being delivered today—right now—with WiMAX. In the midst of a global economic slowdown, we need to be smart about our money and our time. We need to maximize productivity to drive prosperity, and WiMAX can help. Higher capacity, super-fast speeds, new bundles, mobility, organic network growth—these competitive advantages help to make WiMAX all the more compelling in these challenging times.

Today, key members of the computing, telecommunications, and Internet industries are delivering what is considered to be a game-changing and disruptive technology for the connected world—WiMAX—and enjoying some common benefits:

- Rapid time to market and rapid deployments driving rapid return on investment (ROI)
- New bundles and services for differentiated offerings
- Reusing global systems for mobile communications (GSM) and code division multiple access (CDMA) overlay equipment for savings in capital expenditures (capex) and operational expenditures (opex)
- High capacity and unmatched speeds enabling mobile and personal broadband at prices and costs that beat 3G
- High customer satisfaction for retaining and growing customers

Currently, there are more than 455 Fixed and Mobile WiMAX trials and commercial deployments in 135 countries, so the snapshots that follow represent just a handful of the existing deployments around the world.

Only WiMAX* Provides Speeds "As Advertised" in the United States: Gartner research shows that the four major 3G operators in the Unites States are failing to deliver the speeds that customers expect. In fact, Gartner reports that most 3G providers in the United States typically market speeds as high as 1.8 Mbps when the actual speeds are generally between 300 Kbps and 700 Kbps.[1]

Mobile WiMAX speed, on the other hand, is "as advertised." Senza Fili Consulting shows that Clear's Mobile WiMAX service in Portland, Oregon, is "consistently good" and achieves throughput typically over 3 Mbps in the downlink and between 350 and 400 Kbps in the uplink.[2]

WiMAX Snapshots: How It's Being Done. Now.

CLEAR

Clear, USA: 4G at a 3G Price

Clear is the go-forward brand that combines Sprint Xohm and the "old" Clearwire, with successful WiMAX launches already in Portland, Oregon, and Baltimore. In Portland alone, Clear can reach 1.7 million potential customers.

A core advantage of Clear WiMAX is its technology—one network that can deliver five essential services: home broadband, home voice, mobile broadband, mobile voice, and mobile entertainment. In fact, Clear likes to think of its network as a 4G "bit factory" that can serve up multiple gigabits per month that beats 3G price points. Subscribers get super-fast mobile Internet with download speeds of up to 4 Mbps and lots of capacity—all for a low price between USD 30 to USD 50. No other service provider in the United States offers this speed at this low price.

"We are able to deploy a WiMAX network for anywhere between 1/10 and 1/20 of the capital costs of historical costs for 2G/3G networks. And on the operating side, we are seeing the same efficiencies. We can make a byte of data for somewhere between 1/10 and 1/20 the cost of producing a byte of data over today's 3G networks. That fundamentally changes the game from an operator's perspective. To be able to give a customer a better quality product and have it cost us less to produce it: you can't do better than that!"

Ben Wolff, Chief Executive Officer, Clearwire

To be successful, a network must do it all:

- Provide super-fast speeds at a low price
- Offer loads of capacity
- Have great coverage measured in miles, not feet
- Enable customers to cut the cords
- Be simple to use

In other words, it must do more for less. That's WiMAX.

And it's easy to set up. The Clear modem comes already authenticated on the network: one click to install and one click to run. Customers can get online really, really quickly and get super-fast speeds with no setup appointment, no installation visit, and no phone line. They just plug in and surf, often in 60 seconds or less. Simple.

DIGICEL

Digicel, Cayman Islands, and Jamaica: WiMAX + GSM Overlay = Fast Market Segment Share Growth

Seeking to quickly grow from a mobile operator to a complete wireless service provider with a competitive service portfolio, Digicel sought a wireless technology that would enable it to provide corporate data, VPN, voice, Internet, and affordable residential broadband services first as a fixed nomadic service and then evolving to Mobile WiMAX services. Other demands included cost effectiveness, easy and fast deployment, quality of service (QoS) and security, as well as a standards-based solution that could be deployed in the 2.3 GHz and 3.5 GHz frequency bands which were readily available and affordable.

Digicel selected WiMAX and successfully deployed its WiMAX network in the Cayman Islands based on Alvarion's BreezeMAX* Open WiMAX platform. BreezeMAX is being used as a fixed/nomadic/mobile wireless broadband solution for residential and small and medium enterprise (SME) customers in the 2.3 GHz frequency band and for corporate customers in the 3.5 GHz frequency band.

WiMAX has enabled Digicel to quickly become a complete service provider for fixed and mobile services, successfully competing against other service providers—offering high-quality connectivity and advanced services. The WiMAX network solution and the business model implemented by Digicel enable customers to simply buy the product, bring it home, plug it in, and get hooked up in three minutes or less. Customers also benefit from a broadband service that does not require phone lines or line rental, and allows them to simply connect from wherever they are. Digicel's subscriber package in the Cayman Islands includes broadband services bundled with GSM voice services at a 20 to 30 percent discount, and data speeds up to 4 Mbps.

For Digicel, the impact has been significant. The company has captured 25 percent of the market segment share in the Cayman Islands in just 180 days and has penetrated 80 percent of corporate accounts in Jamaica and the Cayman Islands within 12 months.[3]

UQ

UQ, Japan: WiMAX: High Speeds, Low Costs, and Short Time to Market

On February 26, 2009, UQ Communications Inc. will start a "futuristic" global-standard broadband service in Tokyo, Yokohama, and Kawasaki under the brand UQ* WiMAX. This service will enable the use of high-speed mobile data communication using Mobile WiMAX. With speed and low cost as the key differentiators, UQ focuses on the notebook, netbook, mobile Internet device (MID), and ultra mobile PC (UMPC) markets, and targets 100,000 subscribers by the end of 2009. Live speed tests on notebooks have reached about 16 Mbps down and 4 Mbps up. And when commercial service begins in July, UQ will offer its customers a flat-rate, "all you can eat" service for one price.

UQ's plan after 2009 is to extend service to cover additional major cities and achieve 76 percent population coverage by 2010 and more than 90 percent by 2012. Subscribers will be able to watch Webcasts and online videos, listen to audio—in most cases, all at the same time. In other words, from now on, devices will operate wirelessly just as computers use wired broadband today. WiMAX can radically change people's relationships to the Internet and the devices they use.

"I strongly believe Mobile WiMAX is the only wireless broadband technology to open up new market segments through market penetration of WiMAX chip embedded devices. UQ Communications selected Mobile WiMAX as the best technology based on our strong belief that, in light of wide global adoption, recent dramatic data traffic increases, and the necessity to respond to global roaming requirements, it can meet various customer needs fully with the shortest time to market. Moreover, one of our key strategies is to support any device. That is, the business model is open, where any manufacturer can provide a variety of WiMAX devices like MIDs, netbooks, and other WiMAX-enabled consumer electronics. This is very different from the existing cell phone business model."

Takashi Tanaka, President, UQ Communications Inc.

YOTA

Yota, Russia: First Mobile WiMAX Network in Russia and Super-Fast Speeds

Yota is a services company, delivering mobile broadband services using cutting-edge 4G Mobile WiMAX technology. In fact, Yota is the first Mobile WiMAX network in Russia, with current services covering a total population of 20 million people. It offers Internet access along with mobile services, such as music and video on demand, as well as IPTV, developed by its own research and development at speeds of up to 10 Mbps per user device.

Until Yota's service became available, mobile Internet access in Russia was slow and expensive. The 3G networks, announced a couple of years ago, are still not very popular and not even available yet in Moscow. By contrast, after just 18 months of operations, with Mobile WiMAX, Yota has deployed a radio network in Moscow and Saint Petersburg, the two largest Russian cities. Moreover, 1,000 base stations will be deployed in Moscow and St. Petersburg, with full coverage by the end of 2009. Yota's overall target is to deploy networks in more than 40 Russian cities, beginning in those with populations over 1,000,000, and then moving to those with populations over 500,000.

ONEMAX

ONEMAX, Dominican Republic: Rapid Time-to-Market Means Rapid ROI

In the Dominican Republic, Santo Domingo-based service provider ONEMAX teamed up with Alcatel-Lucent to develop a Mobile WiMAX service platform. Just six months after the contract was signed, ONEMAX launched the world's first Mobile WiMAX network in the 3.5 GHz spectrum and connected its first customer. Rapid deployment is one of WiMAX's key benefits for service providers.

Since the rollout could be done quickly, ONEMAX enjoyed a competitive capital expenditure per subscriber and could target specific geographic zones in which there was strong demand. Rapid time-to-market in this case also meant rapid return on investment. "We plan on becoming EBITDA1-positive quite quickly," says ONEMAX Founder and Director Raoul Fontanez.

In addition, the WiMAX service is using QoS to ensure carrier-grade Voice over IP (VoIP) services and to provide low latency for better end-user communications experience. This has emerged as a key selling point for both consumers and business users, on top of the general benefits of broadband access services.

"WiMAX will be to broadband wireless what GSM is to telephony. By that, I mean that, in my opinion, the next billion Internet connections, connecting unserved and underserved populations around the world, will be provided by WiMAX."[4]

Raoul Fontanez, Founder and Director, ONEMAX

KENYA DATA NETWORKS

Kenya Data Networks, Kenya: WiMAX Delivers a Fast ROI

Kenya Data Networks (KDN), a full service data communications carrier, needed to find a reliable and cost-effective last-mile access solution to support value-added broadband services for Kenya's business and residential markets as part of its wireless Internet Butterfly* service.

KDN decided to extend the reach of its WiMAX network, particularly since the company considered WiMAX to be the best economic choice for the unique needs of the growing East African market. The company selected Alvarion's BreezeMAX platform to deliver high-performance last-mile access in Nairobi and 40 towns across Kenya and support seamless WiMAX connectivity with mobile devices and Internet services. In addition, the extended WiMAX network is used for enterprise inter-branch services, connecting bank branches, ATMs, schools, cyber cafés, and businesses.

"Adapting WiMAX technology is helping us create awareness and educate the market toward adopting the Internet as a way of life."[5]

Mr. Vincent Wang'ombe, Marketing Manager, KDN

Since the extension of KDN's existing WiMAX network and augmentation of their Butterfly service, customers are enjoying uninterrupted, consistent high-quality service and satisfaction. Furthermore, the extended WiMAX network offers full support for mobile device connectivity planned for the next phase of the rollout. WiMAX technology is enabling quicker service deployment and access to more markets, giving KDN a fast ROI, increased revenues, and growth.

KDN plans to use the capabilities of its WiMAX network to offer personal broadband services, realizing the vision of seamless mobile device connectivity.

WORLDMAX

Worldmax, The Netherlands: Europe's First City-Wide Commercial Wireless Broadband Network Based on Mobile WiMAX

The Netherlands has an enviable telecom market, with more than 100 percent mobile penetration, 83 percent of households connected to the Internet, and some of the most advanced broadband infrastructure in Europe. Within this competitive market, Worldmax decided to deploy one of Western Europe's first commercial Mobile WiMAX networks.

Worldmax owns a nationwide and exclusive 3.5 GHz license for the Dutch market. Early in 2008 the company rolled out a network very rapidly, delivering nomadic broadband services in Amsterdam by mid-2008. The service was initially launched with PC cards but Worldmax recently introduced USB dongles to allow subscribers to connect their laptops to the network. Looking forward, the WiMAX solutions embedded in Intel® Centrino® 2 processor technology-based laptops, UMPCs, and netbooks will further enhance the offering and fulfill the promise of cost-effective, high-speed broadband on the go.

With the help of Alcatel-Lucent, Worldmax installed over 110 WiMAX base stations within two months to provide global coverage for the city of Amsterdam and demonstrated Europe's first city-wide commercial wireless broadband network based on Mobile WiMAX technology. The network now has over 180 base stations, and Worldmax offers commercial service with predefined prepaid and postpaid packages throughout the entire city of Amsterdam.

"This new network makes it possible for us to have our customers online…, with access to unlimited wireless data and transparent and flexible contracts at very competitive prices."[6]

Jeanine van der Vlist, CEO, Worldmax, The Netherlands

MAX TELECOM

Max Telecom, Bulgaria: Capex and Opex Savings with WiMAX

Max Telecom entered the telecommunications market in Bulgaria just two and a half years ago, and the "greenfield" company is garnering international attention with its nationwide network based on Mobile WiMAX technology. The ambition of Max Telecom is to extend its network to the entire population of the country within the next few years. The company currently offers Internet access, virtual private networks (VPNs), voice services, video, and IPTV.

WiMAX has enabled Max Telecom to rapidly and cost effectively achieve national coverage, and the Cisco Broadband Wireless solution has created the foundation for mobile services. To compete against larger DSL and cable players, Max Telecom has also adopted an aggressive wholesale strategy. The operator is developing relationships with LAN service providers to pass through its voice and other services that can be bundled with the data services from these providers. The Mobile WiMAX network enables this business and is also enabling Max Telecom to expand its "triple-play" business by teaming up with a Bulgarian satellite TV provider.

Within the first few months after deploying the new Mobile WiMAX solution, the results are promising for Max Telecom: Capital expenses will come down from about USD 430 per potential subscriber to less than USD 200 within three years.[7]

Moreover, the low operating expenses achieved with the WiMAX solution will enable differentiating services including a free TV service (MaxTV*), rebranded Google* applications (mobile MaxApps*), and a mobile e-mail service (MaxMail*). Other service providers may be able to enjoy capex and opex savings, too.

XANADOO

Xanadoo, USA: WiMAX Offers Ease of Use for Service Providers and End Users Alike

Xanadoo Wireless High-Speed Internet is one of the fastest-growing wireless broadband operators in the United States. Launched in early 2006, Xanadoo offers service in a number of Texas, Oklahoma, and Illinois markets. Additionally, Xanadoo has licensed spectrum holdings in the 2.5 MHz frequency bands covering almost 10 million people across 11 states to support planned growth and expansion. Xanadoo's wireless networks and portable modems are built using the latest Mobile WiMAX technology and equipment from Cisco.

With Mobile WiMAX, high-speed Internet access in the college towns served by Xanadoo is easy and flexible. Both wireless modem options, the "Zero-Install*" Desktop Modem and "Internet-On-The-Go*" Laptop Card, offer the ability to stay connected anywhere—at home, at work, down the street, even across town. With features such as no phone line or cable service requirements, instant setup, everyday low pricing as low as USD 14.95, and eight speed plans to choose from, Xanadoo offers high-speed Internet the way people want it.

But the convenience doesn't end there. All Xanadoo wireless modems provide instant Plug and Play setup with no confusing wires or software to deal with. Xanadoo is driving WiMAX into America's heartland because of its flexibility, speed, and ease of use for service providers and end-users alike.[8]

AIRCEL

Aircel, India: WiMAX Delivers High-Performance, Last-Mile Broadband Access

Aircel Business Solutions (ABS), a division of Dishnet Wireless Ltd. (DWL) and a Strategic Business Unit of Aircel, is headquartered in New Delhi, India. ABS/DWL has successfully deployed WiMAX networks and offers Internet, multiprotocol label switching VPN, NPLC, VoIP, and a host of services in 36 of India's top business cities.

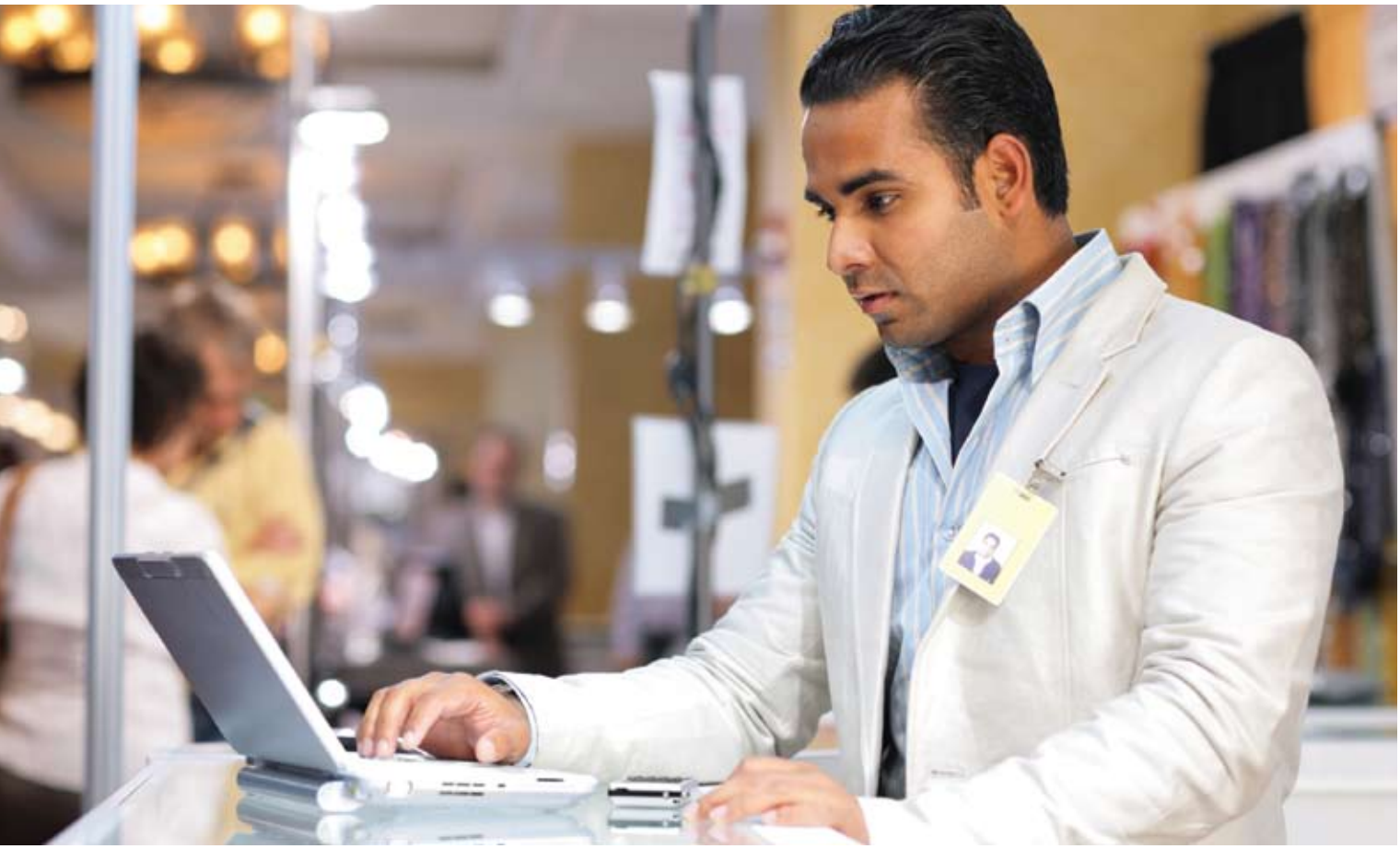
"We have pioneered India's wireless revolution by offering WiMAX."[9]

Mr. Chandan Ghosh, Head-Aircel Business Solutions

To support the rapid growth and demand for broadband services in India and bridge the digital divide in one of the largest emerging markets in Asia, ABS/DWL sought a robust, last-mile access solution for Internet services that could be deployed quickly and cost effectively while providing businesses with top QoS.

ABS/DWL selected WiMAX as the optimal solution for delivering high-performance, last-mile broadband access because it is fast and cost effective, reaches areas not covered by existing wired infrastructure, and is scalable to meet current and future demands. After rigorous testing, Alvarion's BreezeMAX 3300 platform was selected to overlay and expand radio network plans for last-mile access to quickly offer affordable broadband data services.

For ABS/DWL, the impact has been significant. Integration of WiMAX technology is enabling faster deployment of networks and access to more markets, increasing revenues and accelerating return on investment. Setting a new standard of service for the growing enterprise market, ABS/DWL's rollout of WiMAX for last-mile broadband access is enabling customers throughout India to benefit from a wider range of mobile and fixed service applications, as well as paving the way for additional WiMAX deployments across the country.



MAGTICOM

MagtiCom, Republic of Georgia: Leap Tall Buildings with WiMAX

On November 18, 2008, MagtiCom launched Mobile WiMAX service in the capital city of Tbilisi, as well as in Batumi, Telavi, Gori, Rustavi, Akhaltsikhe, Kutaisi, Ozurgeti, Oni, and Poti in the Republic of Georgia. Dedicated to bringing the latest technological standards in the Internet space to Georgia, MagtiCom not only launched the country's first WiMAX offering, but also the fastest Internet connection available in Georgia to date. By the end of 2009, MagtiCom's WiMAX network will cover all the big cities and regional centers of Georgia.

MagtiCom uses WiMAX and Cisco solutions to enhance in-building service. For example, Eastern European and Asian cities differ from many North American and Western European cities by the large proportion of residents who live in high-rise apartments. These apartments are often built from steel-reinforced concrete, which tends to block radio signals from entering the building. Traditionally, service providers had only two choices: they either "blast" a signal at high power through the walls or "sneak" the signal in over copper wires, using repeaters or femtocells. Now MagtiCom uses Cisco's adaptive beamforming to strengthen the signal delivered to a user by up to 100 times, making it especially useful for these environments.

MagtiCom launched the Republic of Georgia's first WiMAX* offering, and also provides the fastest Internet connection available in Georgia to date.[10]

DANSKE TELECOM

Danske Telecom, Denmark: Satisfying Customers with WiMAX

Danske Telecom has its headquarters in Copenhagen, Denmark. With a population of approximately 5.5 million, Denmark already has one of the highest broadband penetrations in the world. This would not appear to be an attractive business environment for a new broadband operator with a new access technology. Nevertheless, Danske Telecom has in just a few years demonstrated that with the right technology and a business approach that is focused on the customer experience, it can be successful in this highly competitive environment.

With its considerable nationwide spectrum holdings in the 3.5 GHz band, Danske Telecom has deployed a WiMAX network comprising 72 base station sites in seven cities. Broadband services were launched in Denmark's three largest cities, Copenhagen, Aarhus, and Odense, in October 2005. By mid-February 2008, Danske Telecom had extended coverage to seven cities covering 550,000 Danish households and about 40 percent of the population.

Moreover, although DSL has the dominant broadband market segment share in Denmark, Danske Telecom is capturing more than 16 percent of new broadband subscribers within its WiMAX coverage area. Danske Telecom's subscribers currently total 13,500. Typical consumer pricing options range from 99 Krone (~USD15) per month for 1 Mbps download speed to 199 Krone (~USD 30) per month for 3 Mbps. Danske Telecom has found that aggressive pricing is a key factor in winning consumer market segment share from competing incumbent DSL operators.

Danske Telecom deployed its broadband wireless access network with pre-WiMAX-certified equipment based on the Motorola Expedience* platform. This enabled Danske Telecom to quickly gain a market presence in offering fixed broadband services. Now with the availability of Mobile WiMAX-certified equipment, Danske Telecom is looking at further network expansion that will also support mobile services.

In recent Danske Telecom customer surveys, more than 98 percent of surveyed customers indicated that they would recommend service to a friend. Danske Telecom's customer service also rated 4.3 out of 5.

WATEEN

Wateen, Pakistan: Reusing GSM Sites for Rapid Deployment and Expansion

Wateen Telecom is the Abu Dhabi Group's latest communication investment in Pakistan and has successfully deployed one of the largest nationwide WiMAX networks. With the deployment of 842 four-sector base station sites in 22 cities, the Wateen WiMAX network covers over 20 percent of Pakistan's 164 million inhabitants. Since the network's commercial launch in December 2007, Wateen Telecom has signed up 52,000 customers. Additional WiMAX base stations planned over the next six months will bring the total deployment to approximately 1,300 base stations. Longer term, WiMAX coverage will be extended to an additional 70 cities.

Wateen credits WiMAX's time-to-market advantage in helping the company to achieve these goals. With a combination of planned WiMAX network expansion, offering 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.

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. To facilitate WiMAX deployment, Wateen has also entered into agreements with 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. Circumventing the tedious and time-consuming acquisition of right-of-ways associated with the expansion of a wireline network and 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.

With WiMAX, Wateen Telecom is well on its way toward bridging the digital divide and making nation-wide broadband connectivity a reality in Pakistan—and enjoying cost benefits through GSM synergies at the same time.

MOBILINK

Mobilink, Pakistan: A GSM Operator Goes WiMAX

Mobilink Infinity is a wireless broadband and telephony service for residential and enterprise consumers, based on the Mobile WiMAX standard. It is offered by Mobilink, a subsidiary of the Orascom Telecom Group—Pakistan's leading cellular service provider. Mobilink Infinity went live on October 22, 2008, in the city of Karachi, with other cities and regions of Pakistan to be covered in the months ahead. Alcatel-Lucent worked with Mobilink and supplied a fully integrated end-to-end Mobile WiMAX solution that leverages existing sites and equipment in Mobilink's GSM network, helping to optimize deployment economics.

So why is a GSM operator such as Mobilink deploying WiMAX? The insistent demand for high-speed Internet access in Pakistan was the driving factor of Mobilink's choice, especially in a country where many regions have either no or very poor quality landlines. Because WiMAX is available today, Orascom can quickly and cost effectively offer subscribers in Pakistan high-quality Internet access and voice-over IP services via broadband wireless.[11]

Delivering the Next Leap in Mobile Network Evolution

WiMAX is flexible enough to serve all markets and can even be inexpensively deployed where infrastructure does not exist. Just as developing markets once jumped from landline to wireless services, they can now leapfrog to advanced services with WiMAX. WiMAX aims to connect entire cities wirelessly, from the most developed to the most remote and poor communities around the globe—and to help bridge the digital divide.

WiMAX Forum*: Expanding the Ecosystem

The WiMAX Forum is an industry-led, not-for-profit organization formed to certify and promote the compatibility and interoperability of broadband wireless products based upon WiMAX standards. The Forum currently has more than 500 members globally, including operators, component and equipment manufacturers, and others in the communication ecosystem. With more than 455 Fixed and Mobile WiMAX commercial deployments in 135 countries, the WiMAX Forum works closely with service providers and regulators to ensure that WiMAX Forum Certified* products meet customer and government requirements. Today, there are at least 88 WiMAX Forum Certified products that can help to speed deployment of WiMAX networks.

According to the WiMAX* Forum, WiMAX service providers now cover 430 million people globally and are on a path to almost double that number by the end of 2010, with over 800 million people covered by next-generation WiMAX networks.

With such a robust and flourishing ecosystem in place, WiMAX technology can offer global economies of scale, and thus help to lower costs compared to other wireless technologies. In fact, the WiMAX Forum forecasts over 133 million WiMAX users and 538 operators worldwide by 2012. So if WiMAX is not yet available in your area, it could be there very soon. Similar to the way that the first cellular networks got built out until they ultimately could provide ubiquitous coverage, the WiMAX rollout will continue. Visit **www.wimaxforum.org** for more information.

Certification Labs

Certification lies at the core of the WiMAX Forum mission. WiMAX Forum Certified* equipment gives operators a powerful platform to roll out robust services and applications across a wide range of devices. WiMAX devices and networks have the most extensive certification and interoperability testing in the industry in place to guarantee network performance and consumer satisfaction. The availability of WiMAX Forum Certified equipment will continue to accelerate the adoption rate of WiMAX technology by promoting the continued introduction into the market of a broad selection of interoperable devices from many vendors at affordable prices.

Since the announcement of the first WiMAX Forum Certified products in January 2006, the certification program has rapidly expanded its scope, addressing new profiles (meaning new spectrum bands) and expanding its global presence. There are now nearly 40 certified Fixed WiMAX products and more than 50 certified Mobile WiMAX products. The WiMAX Forum has the capacity to certify the hundreds of WiMAX products that will enter the global market. Globally there are six certification labs in operation, located in Spain (AT4wireless in Malaga), Taiwan (Advance Data Technology Corporation and TTC/CCS in Taipei), China (China Academy of Telecommunications Research in Beijing), US (AT4wireless in Virginia), and Korea (Telecommunications Technology Association). Additional labs in India, Malaysia, and Brazil are scheduled to be opened in 2009.

More Devices Are Driving Users to WiMAX

Beyond Voice: The 4G WiMAX Vision

WiMAX is fulfilling the promise of 4G and is expected to enable connectivity in a very broad range of devices beyond what has been enabled on voice-centric networks. The demand for data is exploding—and not just on mobile phones. Cameras, PCs, netbooks, and an entire new array of devices will be using and creating innovative data applications: and 4G is all about data. Multi-megabyte, high-demand, on-demand consumer entertainment and business applications—and the devices to deliver them—have the need for the kind of speed that WiMAX offers.

In fact, WiMAX is an open standards-based, interoperable technology built from the ground up for the high-speed Internet and thus can offer freedom of choice when it comes to the devices and services running on it. Acer, Asus, Dell, Fujitsu, Lenovo, Panasonic, Samsung, and Toshiba have already announced plans to deliver Intel Centrino 2 processor technology-powered notebook computers with embedded WiMAX technology that will be compatible with the Clear network. And 26 notebook models with embedded WiMAX technology are available today—with many more being brought to market by top PC original equipment manufacturers (OEMs) throughout the year in the United States and additional countries.

When these devices team up with breakthrough WiMAX technology, the possibilities may be limitless.

Not Just for Notebooks Anymore

WiMAX promises broadband on the go for more than just notebook computers. WiMAX chips can also be embedded into consumer electronics and games, digital cameras, home entertainment systems, utility meters, appliances, MIDs, and netbooks, so users can connect, entertain, stay informed, and be productive wherever they go. In fact, the WiMAX product portfolio continues to grow, which will open up even more opportunities in the marketplace. And more devices will drive more users to WiMAX.

Mobile Device Management (MDM) solutions have even been developed to manage the expanding number of devices already in use today. For example, the Mformation Service Manager for WiMAX enables mobile operators and service providers to remotely activate, configure, diagnose, update, secure, and manage a diverse fleet of WiMAX-capable devices throughout their lifecycle. Mformation's device management solutions currently manage hundreds of millions of mobile devices around the world.

WiMAX IPR Advantages

Members of the WiMAX industry have formed the Open Patent Alliance (OPA) with the goal of providing an intellectual property rights (IPR) solution that supports the development and adoption of WiMAX worldwide. The OPA expects to develop a WiMAX Patent Pool to deliver on the goals of lower cost, transparency, and predictability in IPR, which will in turn drive the adoption of WiMAX to enable more 4G OEMs and original device manufacturers (ODMs) to enter this market segment.

ITRI

Industrial Technology Research Institute (ITRI), Taiwan: WiMAX Device Forecast to Triple in Next Two Years

The Industrial Technology Research Institute (ITRI) was founded by the Ministry of Economic Affairs in Taiwan as a non-profit research-and-development organization for applied research and technical service. When the Taiwan government selected WiMAX to execute a national program to realize the country's broadband coverage vision and national goals, ITRI and the WiMAX Forum established the M-Taiwan WiMAX Application Lab to test and develop innovative Mobile WiMAX applications in a complete ecosystem. This lab will also be used to assist Taiwanese operators to conduct interoperability and roaming testing in preparation for upcoming commercial launches this year.

Over 30 companies in Taiwan are producing WiMAX devices, including AboCom, AWB, Acer, Alpha Networks, ASUSTek, Cameo, CyberTAN, D-Link, DNI, Gemtek, GIL, IAC, Inventec, JStream, Liteon, Loop, MiTAC, MTI, Ruby Tech,Qisda, Quanta/QMI, Spectec Computer, TECOM, USI, WNC, and ZyXEL. Devices currently in market include modems, network interface cards (USB dongles, express cards, and so on), gateways, IADs, MIDs, and notebook PCs with built-in WiMAX modules.

According to Dr. Hsieh, Taiwan regional director, WiMAX Forum, the market forecast for WiMAX devices is extremely promising. Although the economic crisis has affected the global WiMAX market, Taiwanese manufacturers still delivered about one million units of CPEs in 2008, mostly fixed products, and started shipping mobile products in October 2008. In fact, Dr. Hsieh expects the yearly growth in shipments to be tripled for the next two years according to an ITRI forecast, with major growth expected for emerging markets in Asia Pacific, Middle East, Brazil, and Russia. He also sees a variety of MIDs, dual-mode cellular/WiMAX phones, and embedded PCs to start going to market this year.

YOTA

Yota Offers World's First Dual-Mode GSM + Mobile WiMAX Handset

Yota currently offers customers various Mobile WiMAX devices:

- **Mobile Phones:** The HTC MAX* 4G is the world's first dual-mode GSM + Mobile WiMAX handset.
- **Notebooks:** The Samsung WiTu* PC puts the 4G Internet in your hands.
- **USB Modems:** The 4G Samsung USB Dongle provides simple access to the 4G Internet from a PC or laptop.
- **IAD:** The ASUS Mobile WiMAX Wi-Fi* Center offers fast wireless Internet, VoIP, and local networks for home and office.
- **Express Cards:** The 4G Express Card Samsung* offers a compact 4G Internet for people on the go.

The HTC Max* 4G–the world's first dual-mode GSM/Mobile WiMAX handset

Acer, Asus, Dell, Fujitsu, Lenovo, Panasonic, Samsung, and Toshiba have already announced plans to deliver Intel® Centrino® 2 processor technology-powered notebook computers with embedded WiMAX technology, and 26 notebook models with embedded WiMAX technology are certified today—with many more being brought to market by top PC OEMs throughout the year in the United States and additional countries.

ACER

Acer Presents the New Aspire One

"'Despite the recent problems of the financial markets and general economic uncertainty, the netbook and notebook markets will continue to grow in 2009,' said Gianfranco Lanci, president and CEO, Acer Inc. 'With companies focused on containing the crisis, consumers and products designed for them become more important as users simply cannot do without their personal communication instruments.'… The 10" Aspire One comes with 802.11b/g WiFi and Acer Signal Up technology built-in as standard for easy access to available wireless networks. In addition [it] is equipped with Bluetooth* and can also be specified with a choice of embedded WiMAX or 3G wireless technologies for unlimited connectivity."[12]

Acer's new Aspire One* Netbook with WiMAX

LENOVO

Lenovo Adds Wireless WiMAX Connectivity to Notebook PCs

"Lenovo… is bringing the latest high-speed wireless connectivity to its customers through a broad offering of WiMAX-enabled Lenovo ThinkPad and IdeaPad notebook PCs. Lenovo's WiMAX lineup addresses all types of users, from business users needing ultraportability with the thin and light ThinkPad X301 notebook to mainstream business users with the ThinkPad T400 notebook to small-to-medium businesses with the ThinkPad SL300 and SL500 notebooks…. In addition, Lenovo will be expanding its notebook offerings with built-in WiMAX later this year to include models of the business-focused ThinkPad W500, W700, SL400 and X200 notebooks. Lenovo will also offer WiMAX-enabled models of the IdeaPad Y530 notebook designed for consumers."[13]

WiMAX-enabled Lenovo ThinkPad*

Coverage Where You Need It

You wouldn't think of having a notebook without Wi-Fi—in the future you will feel the same way about WiMAX. WiMAX has you covered!

The Intel® Wireless WiMAX/WiFi Link 5050 Series is Intel's integrated WiMAX/Wi-Fi module solution with advanced MIMO ("multiple input and multiple output") antenna technology that can enable you to experience a new level of mobile Internet. Measure your hotspot in miles, not feet, with WiMAX. So get ready to experience incredible wireless performance that goes well beyond today's hotspots.

WiMAX—now your hotspot can go with you. The Internet speed and performance you expect at home is now available on the go. You can stream HD videos, play high-res online games, and download the hottest music—all without wires. And with the explosion of social networks now available on mobile devices, WiMAX can help you stay in touch by offering you a best-connected experience.

Get unplugged! WiMAX gives you the reliable coverage you expect from wired connections, where and when you need it without being plugged in. Now you can stop searching for service and start surfing or working because your hotspot just got a whole lot bigger.

Leading PC OEMs are now delivering Intel® Centrino® 2 processor-powered notebook computers with the embedded Intel® Wireless WiMAX/WiFi Link 5050 Series. In fact, 26 models are certified today, and Intel expects 100 models as we enter 2010.[14]

WiMAX Is Here. Now.

WiMAX delivers mobile broadband services in both developed and developing market segments on a wide array of devices and offers numerous benefits as these snapshots have shown:

- More than 455 Fixed and Mobile WiMAX trials and commercial deployments in 135 countries—today[15]
- WiMAX service providers covering 430 million people globally—today[16]
- 4G at a 3G price—today
- Speeds of up to 10 Mbps—today
- Capex and opex savings—today
- Customer satisfaction—today
- Greener deployments leveraging GSM synergies—today
- Over 88 WiMAX Forum Certified products—today[17]
- Twenty-six Intel Centrino 2 processor-powered notebook computers with the embedded Intel Wireless WiMAX/WiFi Link 5050 Series certified—today—and 100 forecast by the end of 2009[18]

WiMAX is here today. These snapshots prove it.

For more information about WiMAX*, go to:

www.intel.com/technology/wimax

www.wimaxforum.org

1 "U.S. 3G Networks Deliver Less Than Expected," Phillip Redman, Gartner Research, (www.gartner.com), 22 January 2009.

2 "Testing WiMAX performance in the Clear network in Portland," Senza Fili Consulting, January 2009.

3 Snapshot taken from "Digicel Customer Story," Alvarion, 2008.

4 Snapshot and quotations taken from "ONEMAX Success Story," Alcatel-Lucent, 2008.

5 Snapshot and quotation taken from "Kenya Data Networks Ltd., Customer Story," Alvarion, 2008.

6 Snapshot and quotation taken from "Worldmax Success Story," Alcatel-Lucent, 2008.

7 Snapshot taken from "Bulgarian Telco Pioneers Mobile 'Triple-Play' Services over WiMAX," Cisco, 2008.

8 Snapshot taken from "Xanadoo," Cisco, 2009.

9 Snapshot and quotation taken from "Aircel Business Solutions Customer Story," Alvarion, 2008.

10 Snapshot taken from "MagtiCom," Cisco, 2009.

11 Snapshot taken from "Mobilink Infinity Success Story," Alcatel-Lucent, 2008.

12 Source: www.acer.co.uk/acer/news_detail.do?LanguageISOCtxParam=en&sp=page1&ctx2.c2att1=17&kcond9.c2att193=17143&CountryISOCtxParam=UK&ctx1.att21k=1&CRC=492806988.

13 Source: www.lenovo.com/news/us/en/2008/10/wimax.html.

14 These numbers are based on Intel research and forecasts.

15 Per WiMAX Forum.

16 Per WiMAX Forum.

17 Per WiMAX Forum.

18 Per Intel.

*Other names and brands may be claimed as the property of others.

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