



Wimax Technology

KEYWORDS

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ABSTRACT *Wimax stands for Worldwide Interoperability for Microwave Access. Wimax technology is a telecommunications technology that offers transmission of wireless data via a number of transmission methods; such as portable or fully mobile internet access via point to multipoint links.*

INTRODUCTION :

The **Wimax technology** offers around 72 Mega Bits per second without any need for the cable infrastructure. **Wimax technology** is based on Standard that is **IEEE 802.16**, it usually also called as Broadband Wireless Access.

Think about how you access the internet today.

There basically three different options:

BROADBAND ACCESS

WIFI ACCESS

DIAL-UP ACCESS

The main problems with broadband access are that it is pretty expensive & it doesn't reach all areas.

The main problem with WIFI is that hot spots are very small, so coverage is sparse.

This new Technology would provide:-

- High speed of broadband service
- Wireless rather than wired access
- That is less expensive than cable
- Much easier to extend to rural areas
- Broad coverage like cell phone networks

All this is possible with WIMAX.

TYPES OF WIMAX:

FIXED WIMAX:

Fixed WIMAX deployments do not cater for hand off between base stations, therefore the service provider cannot offer mobility.

MOBILE WIMAX:

Mobile WIMAX implementations can be used to deliver both fixed & mobile services.

How Wimax Works:

In practical terms, WIMAX would operate similar to WIFI but at higher speeds, over greater distances and for greater number of users. WIMAX could potentially erase the suburban & rural blackout areas that currently have no broadband internet access because phone and cable are not yet reached the remote locations. A WIMAX tower station can connect directly to the internet using a high-bandwidth, wired connection. It can also connect to another WIMAX tower using a line-of-sight, microwave link.

This connection to a second tower, along with the ability of a single tower to cover up to 3,000 square miles, is what allows WIMAX to provide coverage to remote rural areas.

FEATURES

1 Anywhere, Anytime, Connectivity

WIMAX offers the kind of service where you can get a connection, wherever u may be.

When WIMAX is fully developed, u will no longer be limited to 300 feet within the WIFI hotspot, & u won't have to drive around looking for a connection.

2 Cost Effective

There are areas of the world-especially in rural areas-where deploying wired broadband infrastructure is not cost effective.

In this case WIMAX is very cost effective.

3 High speed of Broadband service

Another benefit of WIMAX is the ability to get a higher connection speeds farther away from the transmitter.

WiMAX ARCHITECTURE

WiMAX has four fundamental architectural components:

➤ Base Station (BS):

The BS is the node that logically connects wireless subscriber devices to operator networks. The BS maintains communications with subscriber devices and governs access to the operator networks. A BS consists of the infrastructure elements necessary to enable wireless communications, i.e., antennas, transceivers, and other electromagnetic wave transmitting equipment. BSs are typically fixed nodes, but they may also be used as part of mobile solutions—for example, a BS may be affixed to a vehicle to provide communications for nearby WiMAX devices. A BS also serves as a Master Relay-Base Station in the multi-hop relay topology

➤ Subscriber Station (SS):

The SS is a fixed wireless node. An SS typically communicates only with BSs, except for multi-hop relay network operations. SSs are available in both outdoor and indoor models.

➤ Mobile Subscriber (MS):

Defined in IEEE 802.16e-2005, MSs are wireless nodes that work at vehicular speeds and support enhanced power management modes of operation. MS devices are typically small and self-powered, e.g., laptops, cellular phones, and other portable electronic devices.

➤ Relay Station (RS):

Defined in IEEE 802.16j-2009, RSs are SSs configured to forward traffic to other RSs, SSs, or MSs in a multi-hop Security Zone. WiMAX devices communicate using two message

types: management messages and data messages. *Data messages* transport data across the WiMAX network. *Management messages* are used to maintain communications between an SS/MS and BS, i.e., establishing communication parameters, exchanging security settings, and performing system registration events (initial network entry, handoffs, etc.) IEEE 802.16 defines frequency bands for WiMAX operations based on signal propagation type. In one type, WiMAX employs a radio frequency (RF) beam to propagate signals between nodes.

ADVANTAGES

1 Bandwidth Flexibility:

The service's bandwidth levels can be flexibly assigned to upload and download, so that businesses can tailor their service to fit their usage patterns.

2 Pricing + Contract Flexibility:

WiMAX service offers pricing based on your bandwidth demands. you can select either a total bandwidth speed 3MB or 6MB upload download.

3 Quick Installation:

Getting your connectivity up and working as quickly as possible. If you are moving, starting up anew location or need a fast back-up solution, the WiMAX service is ideal.

4 Interpenetration:

WiMAX allows interpenetration for broad band service of video and internet access-simultaneously.

The real benefit is that you can run signals very, very close to each other on wireless channels.

Conclusion

WiMAX is still under development and need more research on its securities vulnerabilities. In the near future, when WiMAX achieves a maturity level, it would have a great opportunity to be a successful wireless communication technology.

REFERENCE

- [1] Dapeng Wu, Yiwei Thomas Hou, Wenwu Zhu, Ya-Qin Zhang, Jon M. Peha :Streaming Video over the Internet: Approaches and Directions. IEEE transactions on circuits and systems for video technology, vol. 11, no. 3, march 2001 | [2] A. Albanese, J. Blömer, J. Edmonds, M. Luby, and M. Sudan: Priority encoding transmission. IEEE Trans. Inform. Theory, vol. 42, pp. 1737–1744, Nov. 1996. | [3] W. Li, "Overview of Fine Granularity Scalability in MPEG-4 Video Standard," IEEE Trans. Circuits Syst. Video Technol., vol. 11, pp. 301–317, 2001. | [4] John G. Apostolopoulos, Wai-tian Tan Video Streaming: Concepts, Algorithms, and Systems HP Laboratories Palo Alto HPL- 2002- 260 September 2002 | [5] Iso/Iec Jtc 1/Sc 29/Wg 11 N7555, Working Draft 4 of ISO/IEC 14496-10:2005/AMD3 Scalable Video Coding, October 2005, Nice France. | [6] Md. Taslim Arefin, Md. Ruhul Amin: Congestion Control and Buffering Technique for Video Streaming over IP | [7] Barclay Dutson, Claudia Dutson, and Stephen Drayson. New opportunities in streaming media report. In Vision Consultancy Group, September 2000. |