

# WiMAX TV

Mobile TV Broadcasting over WiMAX networks



## DESCRIPTION

Digital television and video services are among the fastest growing data applications today. The revenues generated by broadcast TV dwarf those generated by the other emerging forms of entertainment by orders of magnitude. New service providers such as telcos and other broadband providers all recognize the necessity and huge appeal TV has in winning and maintaining audience share and driving average revenue per user (ARPU).

Mobile TV has already proved to be an attractive application for cellular operators with several million Mobile TV subscribers worldwide. New and incumbent operators are investing in infrastructure to meet the consumer expectations for "content anywhere, anytime on any device".

WiMAX is one of the most promising emerging wireless networking technologies designed to meet the exploding demand for data anywhere, anytime and video is likely to be a major component of the applications expected. However, video is a bandwidth hog. Each new customer requires more bandwidth, and serving thousands of individual "unicast" streams becomes expensive with the inevitable decline in quality of service at periods of peak demand.

This is where a hybrid broadcast/multicast/unicast architecture becomes a powerful way to meet consumer and operator interests.

TV viewing remains an inherently "peaky" experience. Viewers aggregate around "peak viewing times", dictated by lifestyle and anticipated by the industry. At the same time, the bulk of TV audiences are largely served by 5-10 major channels or networks in most markets.

A WiMAX TV Broadcast / multicast solution enables user demand for the most popular programming on mobile video to be channeled towards a service that can guarantee quality reception over predictable bandwidth and without any risk of congestion or contention.

In addition to nationwide or regional TV broadcasting, WiMAX TV enables local content insertion and "micro-broadcasting" - the efficient delivery of content within restricted areas during popular sports events or concerts, or within airports, campuses or hospitals.

The most popular TV channels are broadcast on bandwidth that is set aside and efficiently managed through dynamic multiplexing as it is in other TV broadcast systems. Other TV channels can be multicast or unicast based on the demand in each particular cell. Interactive services and niche content are to be serviced over unicast links.

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## BENEFITS

### > WiMAX service providers

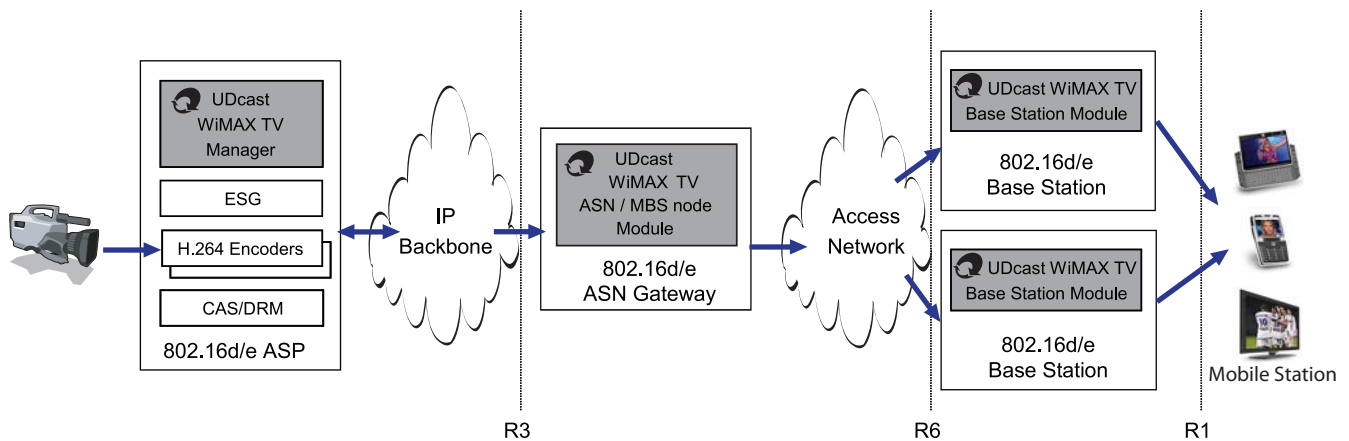
- Revenue generating and differentiating application
- Efficient use of spectrum and network resources
- Low CAPEX investment

### > WiMAX equipment manufacturers

- TV broadcast extension to the existing WiMAX solutions
- Modular software design portable on legacy hardware platforms
- Seamless integration with standard TV play-out components

### > WiMAX end-users

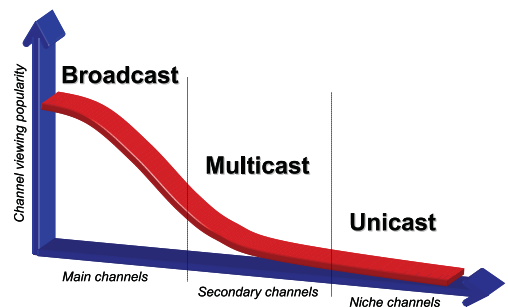
- Portable broadcast-quality TV reception
- Affordable access to wide range of compelling video content
- Accessible with inexpensive WiMAX devices (PDAs, Laptops, Phones ...)



WiMAX TV end-to-end system view

## SERVICE SETUP EXAMPLE

- |  |  |
|--|--|
| - Distribution network:                    | WiMAX 802.16d/e                                |
| - Number of broadcast TV services:         | 5-10 programs                                  |
| - Broadcast video encoding rate            | MPEG4 300-500kbps                              |
| - Number of multicast/unicast TV services: | 50-500 programs                                |
| - Multicast/unicast video encoding rate:   | MPEG4 150-300kbps                              |
| - Other services:                          | ESG, Radio, Data Push, Addressable Advertising |
| - Service protection models:               | free-to-air, pay-per-view, subscription        |



Hybrid broadcast/multicast/unicast distribution

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