

bmcoforum White Paper

Towards cost-efficient mass delivery of live TV, multi-media and e-publishing content to mobile and portable devices

Ways to overcome the mobile data tsunami

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1. For the next years, market research reports forecast an explosion of the mobile data traffic over unmanaged access and transport networks.

Globally, mobile data traffic is expected to double every year through 2014, increasing 39 times between 2009 and 2014 [1].

This growth is caused by the increase of the mobile TV and video subscribers penetration from 4-5% in 2009 up to 10 – 30% in 2015 [1], by new devices generating an extended video and TV content consumption on the move and by the increased requirements on the video and TV quality.

Among them, **the biggest driver for the traffic increase will come from video/TV traffic.** While video/TV traffic averaged roughly 39% of all mobile traffic in 2008; it will account for roughly 66% of all mobile data traffic in 2014 [1].

2. The fast growing data traffic is a challenge for the mobile network operators as they have to extend their networks by creating smaller cells, deploying new frequencies or deploying new technologies with higher capacity as LTE, while at the same time the users expect low priced unlimited data plans to remain.

To overcome data traffic limitations, increasing the cell number is a natural solution mobile network operators will consider first. Several mobile operators have started to provide femtocell equipment, however mainly for voice services. Switching to the LTE technology will add capacity to the mobile networks. It provides in a 20 MHz channel bandwidths a shared gross downlink data rate of 100 Mbps.

But are cell number increases, femtocells or LTE the most cost-efficient solution for handling the future mass audience traffic? This question waits for an answer so far.

3. The character of video and TV consumption on mobile devices will be manifold and includes consumption of live TV as well as consumption of on-

demand streaming or download of video, like YouTube. Mass audience traffic may originate from both cases. Furthermore, emerging e-publishing formats as rich media magazines integrating audio, video and text, may become mass-relevant as well.

However, the origination of mass audience traffic has content, time and location dimensions:

- The content format or the content itself should be capable of generating high user interest while on the move. This may be the case for live/real-time content consumption, e.g. for breaking news or (some) sport events but also for top actual videos on YouTube.
- Exclusive content, e.g. live sport transmission, is capable to generate more consumption than sharing it with other delivery channels as free stationary TV
- At different seasons of the year users interested in watching certain content on the mobile devices may stay at different location; the same for different hours of the day and for working days and weekend

Why, when and where mass audience consumption should be handled by the mobile broadcast network may vary from a lot of circumstances.

So, the initial approach to broadcast a fixed bouquet of TV channels over a mobile broadcast network was not sufficient for a viable business model as in many cases the traffic can be handled by the mobile networks.

4. Due to the availability of top video and TV content at portals, live TV consumption on mobile devices may focus on exceptional programming as sport events, breaking news, shows and soaps. However, in many cases the same TV content will be consumed on-demand by a mass audience at a later point of time via portals.

On the other side, video portal usages show that also videos from other sources, e.g. user generated content, and e-publishing formats may become mass audience relevant, streamed or downloaded in high numbers within a short time period.

Mass-relevant TV, video and other rich-media traffic may also originate from content that will be consumed by the masses in a short time period instead simultaneously.

5. Many mobile devices as smartphones, tablets and notebooks have WiFi access which, when available, may be used to stream or download video and TV content. However, **in mass audience situations**, e.g. at public events locations as football and concerts, **public WiFi hotspots may reach their limits**. Furthermore, content right issues have to be considered.
6. Mobile broadcast networks are specialized on mass audience delivery as each of their large cells can simultaneously serve an unlimited number of users with high quality while reducing the transport network costs.

However, mobile broadcast networks have to be built with high initial investment costs while the extension of mobile networks can be done by incremental costs.

However, **there is a break even between extending the mobile/LTE network by adding new cells and setting up a new mobile broadcast network.**

7. In the past, mobile broadcast networks have been considered as stand-alone networks for delivering mobile TV in a whole country, marketed by the support of mobile operators. So, mobile broadcast network and business planning were focussed on the coverage of a large population share, at least after some time period. Frequency licenses covered the whole country.

However, in areas (e.g. rural areas) and in less busy times of the day and the week, mobile networks may be able to handle mass delivery of video and TV content without any additional mobile broadcast network. In other areas (e.g. special urban areas) and special public event locations, from a certain point, the set up of an additional mobile broadcast network may be the optimal solution.

The break even between extending the mobile/LTE network by adding new cells and setting up a new mobile broadcast network must be considered area by area.

The resulting mobile broadcast network set-up only in mass audience relevant areas will reduce the costs for mobile broadcast networks which are considered today as an outstanding cost driver in the overall business case of mobile broadcast TV.

8. In the selected mass audience relevant areas, **the mobile broadcast network can handle beside top TV channels also downloads of mass audience relevant video and TV content as well as the emerging e-publishing formats which might be consumed at a later point of time.** Similar to podcasts specifications, broadcast live TV content can be recorded at the mobile device for later consumption directly from the broadcast avoiding subsequent streaming or download.
9. For the users at their devices, seamless service delivery over different networks as mobile network, WiFi and mobile broadcast network is a prerequisite of any such converged network approach. This includes the availability of corresponding devices.

The user should not be aware of the network to be used for content delivery. He **should be able to select content from a service guide/portal, to be delivered to him over the most suitable network at his actual location, depending on the availability of the networks and the service type (live/on demand, broadcast/streaming/downloading).**

10. **Seamless services give room to the mobile network operators to use the delivery channel most effectively, for both service provisioning and cost consideration,** for example the broadcast network for mass audience delivery in specific areas, unicast for long-tail and individual video content. In any case the service platform shall provide a comprehensive

description of the services line up, with an adequate look and feel and format taking in account user settings.

11. During the last 12 months, the **bmcoforum** has published two documents

- A white paper, white paper, arguing that off-loading of mass audience relevant TV and video traffic from mobile networks to broadcast networks results in optimization of the overall investments of mobile operators [2]
- A study on mobile services for seamless audio-visual content consumption, including service examples and business model considerations [3]

Recent work of the **bmcoforum** focuses on the qualitative analysis of the main characteristics of off-loading methods as BTS densification, HSPA+, LTE, femtocells, public and private WiFi and broadcast as well as on cost factors of these off-loading options. The work targets on the break even for the one or the other off-loading method being more cost-efficient under certain assumptions than other options.

12. Our understanding of the role of mobile broadcasting networks and its convergence with mobile networks has changed over the years. Five years ago, the mobile network has been considered mainly for providing user authentication and the return channel for interactive mobile TV applications. Users, accustomed to accessing services via mobile internet on many smartphones, are changing the way they interact with and consume TV, which is a major paradigm shift. Now convergence among mobile broadband and mobile broadcast is subject to new viable business models. The new role of mobile broadcast networks and technologies shall be mainly to offload traffic of video and live TV channels delivery in cases where and when mobile networks can hardly handle that.

[1] Cisco Visual Networking Index 2009

[2] Seamless unicast and broadcast services to meet increasing mobile TV and video consumption, **bmcoforum**, May 2010
(http://www.bmcoforum.org/index.php?id=295&no_cache=1)

[3] Mobile Services for Seamless Audio-Visual Content Consumption - Service Examples and Business Model Considerations, **bmcoforum**, September 2009
(http://www.bmcoforum.org/index.php?id=252&no_cache=1)