

Solving the capacity crunch with IMB mobile broadcast

by Jon Hambidge, CMO, IPWireless

The long predicted explosion of mobile data has arrived. The rapid adoption of media-centric smartphone and tablet devices has accelerated mobile data usage including mobile video traffic. Mobile broadcast, initially focused on supporting Mobile TV as an application, is now seen as a way to provide capacity for popular content. Integrated Mobile Broadcast (IMB) supports high performance broadcast with a very low cost upgrade. With the GSMA's support of IMB, mobile broadcast is now ready to address 3G capacity issues.



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The long predicted explosion of mobile data has now shifted from theory to reality. With an ever-increasing range of media-centric smartphone and tablet devices, operators are faced with an exponential growth in mobile data - in particular mobile video - traffic on their 3G networks. In the light of these developments, mobile broadcast offers a highly compelling solution. While initially focused on supporting mobile TV as an application, mobile broadcast is now looked at as a way to add infinite capacity to 3G for popular content. The 3G roadmap has evolved to include Release 8 Integrated Mobile Broadcast (IMB) a very low cost technology upgrade that supports a high performance broadcast bearer. With the recent GSMA and mobile ecosystem

support of IMB, mobile broadcast is now ready for prime time as a way to address 3G capacity issues.

More and more people are regularly streaming video over mobile networks leading to soaring data volumes; a recent study by Allot Communications found that YouTube alone accounts for 13 per cent of all mobile bandwidth. This increase in mobile data consumption has, in turn, negatively impacted the quality of service that consumers are receiving. Operators, then, are keener than ever to find a technology which can offload these bandwidth-hungry applications from their data networks whilst also providing them with the opportunity to increase ARPU through the creation of innovative new services.

Freeing up 'unicast' capacity for bandwidth-intensive traffic is just part of the issue. The exponential rate at which 3G traffic is growing, especially for data-intensive applications like mobile video, will spell clogged networks for service providers and forebodes slow multimedia content delivery for the average user. It has been predicted that the total wireless network traffic generated from all voice and data services will increase 39 times by 2014 while LTE will only give a two to four times increase in spectral efficiency. Operators must plan for this surge in traffic prior to LTE rollouts or risk network performance degradation.

As a result, mobile operators are turning their attentions to mobile broadcast

options as a way to offload unicast traffic, with IMB generating particular interest. It implements broadcast services in the unpaired TDD (*time division duplex*) bands of spectrum owned, but unused, by many operators as part of their 3G licences. By adding a very integrated licences bearer to existing 3G networks in spectrum already owned by 150 MNOs (*mobile network operators*), they get infinite capacity for popular content, making it a highly cost-effective option. IMB is unlike other broadcast technologies as it is one-tenth of the cost at a network level, has a far higher degree of integration with 3G networks, and is wholly MNO controlled. Moreover, it utilises widely deployed WCDMA technology that already exists in devices, minimising the cost of manufacturing IMB capable phones.

The unused TDD bands support multiple 5MHz carriers, each of which may be dedicated solely to the delivery of broadcast services. It is expected that IMB will support up to 30 broadcast channels in 10MHz at 300 kbps. By taking advantage of unused TDD spectrum, IMB can deliver the most popular content and reduce the capacity needed on crowded FDD (*frequency division duplex*) channels. The standard was harmonised in Release 8 of 3GPP and endorsed by the GSMA in September 2009 as its favoured method of mobile broadcast. It is one of five technologies to be officially endorsed and promoted by the GSMA as fit for the purpose and effective for the mobile industry. Others include HSPA and WCDMA.

Previously, there had been division in the vendor community regarding which broadcast technology to support. This division led to regional and even in-country variances resulting in confusion among handset manufacturers on which to support, and few devices were produced, limiting the potential for widespread deployment. Within the 3G broadcast standards, there were initially two separate proposals for the TDD spectrum. With the harmonised proposal that was agreed to in Release 8 for IMB, there is now a single broadcast standard which has received the support of many major vendors such as Ericsson and Huawei who will both be bringing IMB to market in their product roadmaps. The technology has also recently become the subject of a major London pilot by operators O2, Orange and Vodafone, which begins in the fourth quarter of this year.

Much like HSPA, which has proven to deliver mobile broadband traffic efficiently, IMB provides the GSMA community with the opportunity to efficiently deliver mobile broadcast services, evolve their existing 3G networks and maximize the billions already invested in spectrum licences.

Mobile Broadcast also opens up a wide range of other applications and new service possibilities for the operator community. These can be delivered to all devices attached to the network without impacting the performance of the unicast voice and data network, a key requirement for operators. These include live event mobile TV streaming, homepage or widget updates, OTA software updates, public safety alerts and, perhaps most interestingly, predictive mobile broadcast.

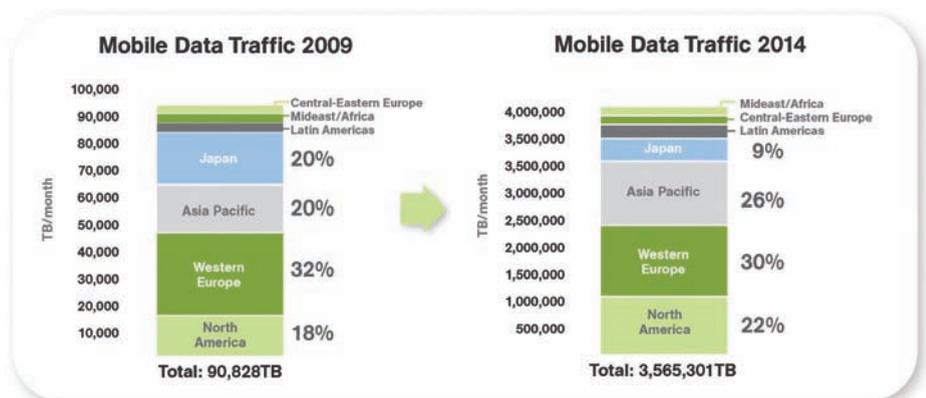
While it has been typically assumed that success in digital content distribution is dependent on the delivery of a broad range of small, niche items, recent experience suggests that the opposite is true and that there is a high level of common content viewed by users. For instance, less than one per cent of YouTube videos receive more than 500,000 views a month whilst the song recommendations and top 50 tracks account for over half of all downloads on Spotify. This creates a huge opportunity for IMB. With a high concentration of video and multimedia traffic concentrated on just a few sites, for example YouTube, Spotify and BBC iPlayer, operators can identify the most popular content and broadcast it to consumers using an IMB network.

At the same time, low-cost mass-storage for mobile devices, such as MicroSD

memory cards, has become readily available presenting mobile operators and content providers with the chance to exploit IMB's capabilities. Large data files and popular content can be pre-loaded onto the device, using the broadcast mechanism, based on prior information about the user, their subscription profile or other data.

Until now mobile broadcast has failed to offer an adequate business proposition. The lack of integration with existing 3G technologies and high capital expense costs associated with the purchase of new infrastructure and spectrum have largely doomed these solutions to failure. In IMB, however, mobile broadcast has found a business case. The long anticipated capacity crunch has finally arrived and led mobile operators to hunt for a means of offloading the multimedia traffic that is putting such a massive strain on their networks. A cost-effective solution, IMB's capacity for predictive broadcast, coupled with the increasing storage space on mobile devices, makes it ideally suited to meeting consumer demand for multimedia content without degrading the operator's unicast networks performance. Mobile broadcast has had a number of false dawns, but the support vendors and operators have shown through instances like the GSMA endorsement and London initiative would suggest that in IMB mobile broadcast's time has come. ●

Mobile data traffic will increase **39x** between 2009 and 2014



Source: Cisco Visual Networking Index: Global Mobile Data Traffic Forecast Update, 2009-2014 & Credit Suisse

*TB= terabyte