FierceBroadbandWireless

Published on *FierceBroadbandWireless* (http://www.fiercebroadbandwireless.com)

Maravedis: 2012 wireless and mobile cloud predictions

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Created *Jan 3 2012 - 9:48am*

INDUSTRY VOICES

Editor's Note: Maravedis [1] is a research and consulting firm that often contributes Industry Voices for FierceBroadbandWireless. In this special look forward at 2012, the firm outlined what it expects in the new year. (Readers can take a look back at how Maravedis faired in its 2011 forecasts here [2].)

4G Subscribers
At the end of 2010, Maravedis predicted the LTE subscriber base would reach 6.52 million. We now expect 54 million LTE subscribers will be reached in 2012, of which 88% or 48 million will be FDD-LTE users and the rest (12% or 6 million) will be TD-LTE. The regions with the highest LTE subscriber uptake will be North America and APAC, with 46% and 36% of the total LTE subscriber market share respectively.

At the end of 2012, commercial TD-LTE networks will likely be up and running in more than 10 countries, including Taiwan, Malaysia, India, China, the United States and South Korea. China Mobile expects to launch the world's first truly large-scale commercial LTE service in 2012. Although some TD-LTE deployments have taken place earlier, such as Aero2 (Poland), Mobily and STC (Saudi Arabia), these deployments will not drive the economies of scale expected from the deployments that will occur in China and India next year, and volume production of TD-LTE handsets will not be realized until the end of 2012.

Maravedis predicts the BWA/WiMAX subscriber base will reach approximately 28.6 million at the end of 2012. Out of those 28.6 million subscribers, 21 million will be mobile using 802.16e-2005 network. We also anticipate that the mobile WiMAX subscriber base will gradually start to decrease in 2012 as major mobile WiMAX operators migrate to TD-LTE.

4G Deployments
We expect to see some traction on the TD-LTE front in India in the second half of 2012. Maravedis forecasts that the TD-LTE subscriber base in India will reach 2.25 million by the end of 2012. RIL, a pan India license holder, is expected to lead the market in terms of the number of TD-LTE subscribers with a 62% market share in 2012.

In North America, we anticipate that Clearwire could start rolling out commercial TD-LTE services in partnership with China Mobile in late 2012 in selected areas of United States. This will be a hybrid network running both mobile WiMAX and TD-LTE at the same time. However, we anticipate a gradual migration to a total TD-LTE network within a 3-year timeframe for this operator. Sprint will also become a LTE player in mid-2012.

In Latin America, the first LTE commercial deployments are expected to occur in Colombia, Mexico, Puerto Rico and Uruguay in 2012. This region will close 2012 with approximately over 2 million LTE subscribers

We anticipate a downsize of mobile WiMAX networks and subscriber slowdown, as major WiMAX players are committing to launching LTE. Some of the most important transitions we will see include Clearwire (USA), Yota (Russia) and P1 (Malaysia).

By the end of 2012 there will be 160 commercial LTE deployments in service, up from 61 LTE deployments at the end of 2011.

4G Equipment
Combining 3G and 4G devices, by the end of 2012 we predict:

- A total of 72 million tablets activated worldwide, from 46 million in 2011.
- A total of 885 million smartphones activated worldwide, from 650 million in 2011.
- A total of 151 million netbooks and notebooks, from 91 million in 2011.
- The main tablet OS will be iPad, followed by Android, accounting for 63% and 25% respectively.
- Apple could release a 4G iPhone running on LTE as early as mid-2012.

Maravedis predicts that by 2012, Android will continue to be the leading Smartphone OS, accounting for 49% of worldwide market share, followed by iPhone with 18%, Windows with 13%, and Blackberry with 12%. By the end of the year, Symbian devices will be largely discontinued and will account for only 5% of market share.

The smartphone activations will continue to increase year after year. In 2011 alone, Maravedis research estimated that yearly smartphone activations accounted for 170 million devices worldwide, and in 2012 the

number of new smartphones activated during the year could surpass 220 million. Finally, by year 2016, our forecast shows that a total of 1.75 billion smartphones will have been activated worldwide. Sales of devices powered by Google's OS (Android) will continue to dominate this segment. Going forward, Maravedis expects smartphones and tablets to take an increasing share of the device range.

During 2012. the first LTE smartphones will be commercial in Europe. At present, Samsung's LTE Galaxy S II is not going to be launched in Europe until the end of Q2 2012 by T-Mobile Germany. On the other hand, in APAC, NTT DoCoMo (Japan) the largest LTE operator in the region, introduced LTE smartphones in Q3 2011. Thus by the end of 2012, we anticipate over 3.5 million LTE subscribers in NTT DoCoMo's LTE network, from less than 600,000 reached in 2011.

We anticipate that Huawei, Nokia Siemens and Ericsson will continue to be among the most common LTE infrastructure vendors chosen by LTE operators, with Nokia Siemens occupying the largest share of the LTE contracts awarded (approximately 30% by year end 2012).

Industry changes are creating uncertainty at the moment, and the whole financial balance of the world is shifting, too. Spectrum auction delays, unavailability of 4G devices at affordable price points, mobile traffic explosion, changing usage patterns among customers, and economic crisis all contribute to what we expect to be a year of high instability and uncertainty for telecom operators and vendors

RAN trends

HetNets, although still only on the horizon, drew a little nearer in 2011. The list of technologies making up the HetNet is long, but of the myriad available, two made clear technological progress in 2011: Cloud RAN (promoted by CMRI - the China Mobile Research Institute), and small cells such as metro cells. In the case of cloud RAN, vendors such as Ericsson began to publicly announce their success in deploying centralized base-band processing, chipset vendors such as TI joined the fray with specialized base station SoC solutions to take on general purpose processors, and network infrastructure vendors (particularly Alcatel-Lucent) wowed trade show crowds with their ever-smaller remote radio heads.

Cloud RAN promises new efficiencies in terms of power consumption, hardware utilization and interference coordination, and operators seem comfortable and willing to incorporate the technology into their networks. Maravedis' research showed that all vendors report good uptake of their initial remote radio head technologies.

Metro cells, on the other hand, are still somewhat farther down the road. As femto cells continue to make steady progress, their technological underpinnings are being recycled and improved upon to make metro cells possible. A rash of small cell silicon announcements in the second half of 2011 (TI, Picochip, Qualcomm, and Mindspeed, among others) point to the future. Maravedis' research points to improving silicon maturity as one of the driving forces behind a likely expansion of the metro cell market in 2012.

Video over Mobile Broadband

The importance of video in mobile broadband was shown by Cisco's industry benchmark study "Visual Networking Index: Global Mobile Data Traffic Forecast Update, 2010-2015," which indicates that mobile video traffic was 49.8 percent of total mobile data traffic at the end of 2010, and will account for 52.8 percent of traffic by the end of 2011.

Examples of the video capabilities announced by wireless infrastructure vendors in 2011 include:

- Ericsson/Akamai Partnership: Ericsson will be deploying a node in the mobile network to interface to Akamai's Content Delivery Network, and ensure that quality-enabled content is locally cached in the mobile network and receives appropriate Quality of Service handling through the mobile network.
- Huawei Cloud/Video solutions: Huawei is developing entire cloud video solutions to store, encode, and deliver video content in fixed and mobile networks. As part of its base core network platform, Huawei incorporates Deep Packet Inspection (DPI) capability to identify high and low priority traffic and deal with it accordingly across the mobile network.

Operators such as Videotron in Canada, who have access to broadcast and film content are rushing to offer high-quality video as a premium service through their mobile broadband networks, relying on advanced HSPA+ technology to deliver the bandwidth and QoS required. Clearly, video offers a way to monetize mobile broadband that does not require waiting for LTE

Backhaul Trends

1. Microwave market will continue growth, with main focus on PTP

In 2012 the microwave market will continue toto grow, mainly driven by the need for operators to easily deploy new PTP links and new base stations to provide good quality of experience over LTE networks. In addition, the PMP market is expected to surpass $1 billion and will also be directly influenced by the small cells market because of its high percentage of outdoor solutions.

2. Millimeter-wave market is emerging, earning more market share

Small cell backhaul solutions in the 60GHz are emerging, developing innovative form factors that may not be easily recognized by regular citizens, meaning radios that will go unnoticed. Companies such as BridgeWave and Siklu will continue playing a significant role with their intelligence and innovation, gaining more market share mainly in North America and Europe where related licenses are available. Those radios are expected to allow mobile operators to align their antennas remotely, since the large number of units being deployed would make on-site alignment of the antennas a nightmare

3. Risk of spectrum saturation in 18 and 26GHz

Frequencies at 26GHz bands have been in high demand during 2011, leading to the possibility these bands may

become quickly saturated in 2012-2013. Other bands such as 26GHz are expected to serve backhaul needs in 2012. Congestion in the 15 to 28GHz bands will continue to increase in 2012 as a result of a microwave component shortage. In spite of the congestion, shipments in this band are not expected to decrease since an important percentage of the links using this frequency band are still not fully enabled for packet transport purposes.

4. Wi-Fi backhaul offload will be a good alternative to avoid significant investment in base stations and network's expansion
Carrier WiFi solutions will continue serving not only for WiFi offload (city hot zones) but also to facilitate large-scale indoor-outdoor deployments for Tier 1 carriers. That is expected to continue playing a significant role also in 2012 mainly in North America and Europe. In addition, many applications such as video surveillance and public safety will need monitoring based on WiFi solutions.

5. Russian federation could be a new emerging market
The Russian Federation seems to have the greatest potential in 2012 given its geography. Wireless is the regional strategic preference over fiber among carriers, but also 80GHz license was recently allocated for millimeter-wave implementation. Finally a potential collaboration, in 2012, of three major mobile network operators and Rostelecom to deploy long-term evolution on Yota's infrastructure will be a catalyst for significant mobile broadband uptake in the near future.

Mobile Cloud Trends
Looking into 2012 and the rapidly evolving cloud services market, the key question and uncertainty for operators is defining what a carrier-class cloud platform is and what infrastructure and technology is needed to truly enable differentiated cloud services. The wild card in the equation for developing operator cloud technology is in the use of OpenStack, the open source cloud platform that is attracting the attention of many vendors and operators as the foundation for battling Amazon and Google in cloud services.

While the vendors are taking different approaches to enable the operator cloud, the common theme is that the network is essential in enabling carrier-class cloud services to support real-time applications and enterprise cloud services with service level guarantees. Telecom vendors are focused on exposing, or enabling the use of network assets and unique telecom capabilities to allow the operator and its partners to develop more robust and differentiated cloud services to compete against Amazon, Google and other public cloud providers.

- The Over-The-Top players will continue to dominate public cloud services, but telecom operators will emerge as leaders in providing secure and guaranteed business cloud services
- Carrier-class cloud architectures and platforms will emerge and disrupt the cloud services value chain as the cloud market moves from the early adopter phase to mainstream adoption
- 4G networks combined with carrier-cloud services will enable innovative and unique M2M and vertical solutions
- OpenStack will evolve and mature into the standard choice for developing carrier-cloud platforms that can compete with the leading public cloud providers

LTE Maravedis TD-LTE WiMAX

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