

## PtmP Wireless Backhaul Market from an All-IP Perspective -

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## Questions Answered by This Report

- What frequency bands does each major PtmP backhaul vendor support?
- What size will the PtmP and microwave market be by 2016?
- What are the PtmP wireless backhaul equipment offerings by the significant vendors in the industry?
- What are the strengths and weaknesses of each vendor's products?
- What are the opportunities and threats for the major vendors?
- What are these vendors' plans going forward?
- What is the maximum throughput achieved for a single channel with each PtmP technology?
- What compression techniques have vendors developed in order to increase throughput?
- How are microwave vendors solving the packet synchronization issue?
- How does PtmP equipment manage TDM and packet traffic at the same time?
- What functionalities do PtmP vendors add to their solutions in order to add intelligence and reliability?
- How do vendors manage network, links and remote units?
- What are the highly reliable vendors' products (Mean Time Between Failure) in the wireless backhaul space?
- How much growth did the PtmP microwave market experience in 2010-2011?
- What kind of redundant solutions are offered per link?
- What were the market shares of the most important microwave vendors in Q1 2011?
- What was the regional breakdown of microwave shipments in 2010?
- What is the future of TDD versus FDD duplexing?
- Which frequency bands generated the most revenue in 2010?
- Which frequency bands will be most important in the coming years?
- How will SON enhance the small cells backhaul from an NLOS perspective?
- What were the most used equipment configurations during 2010 (split mount, all-outdoor or indoor)?
- ***And much more!***

## 1. Executive Summary

### **At the end of 2011, 15% of the installed backhaul market worldwide will be Point-to-Multipoint with the remaining 85% Point-to-Point**

Operators' focus on backhaul, driven by their need to add more capacity, resulted in an 11% increase in PtMP equipment shipments between Q1 and Q2 2011. Although operators preferred PtP wireless technology, the PtMP was very attractive as the best alternative in high density areas. The increase in PtMP shipments was anticipated as an emerging market, although both PtP and PtMP are expected to complement each other, particularly in the cities where LTE networks require full coverage for high capacity

### **Maravedis expects the wireless PtMP backhaul equipment market to reach US\$1 billion by 2016 from \$200 million in 2011.**

Although the PtMP market is very complex because of the different technologies and frequency bands used, it is expected to grow to a market value of US\$1 billion by 2016. Beyond 2013, the rise of LTE deployments, in combination with small cells growth, will drive the growth of PtMP's market adoption..

### **By 2016, the Non-Line of Sight (NLOS) equipment revenues will reach 35% of the total PtMP**

In first half of 2011, many NLOS vendors (for example Taqua, BliNQ) were testing their PtMP products in the TDD spectrum bands as they move toward the 2<sup>nd</sup> generation product releases in 2012. Given the low cost of spectrum (sub-2¢/MHz for Point of Presence), the operators' requirement for a full picocell backhaul solution should increase the NLOS equipment revenues from 2011-2016 at close to growth rate of 50% per year.

### **Africa is driving the PtMP microwave market during the global downturn**

Africa has been the only region in the world where microwave shipments continued to grow throughout 2010 into the first half of 2011. Sales increased over 60% in the second half of 2011, with all microwave vendors indicating the African continent, predominantly the South African market, as the region with the strongest activity and the highest competition. There is a need for additional capacity in the PtMP backhaul segment of cellular networks in Africa. This growth will continue if, as expected, the private equity funds flow in from investors such as Old Mutual Investment Group Africa Infrastructure Investment Managers, Helios and Eaton Tower.

### **Middle East doubled revenues from Q1 to Q2 2011**

Although Middle Eastern revenues doubled from Q1 to Q2, this increase was not enough to match or surpass Africa. The Middle East continues to hold a market share 40% less than Africa's, continuing the trend seen in 2010. Until 2015, the Middle East's telecommunications investment is expected to decline by \$2M year-to-year due to unequal investment trends and political instability (i.e. Egypt, Libya, Syria, etc.) across the region.

### **PtMP technology can reduce CAPEX up to 50% and OPEX up to 70%**

PtMP typically requires less than half the hardware for coverage over PtP, showing reductions in CAPEX of up to 50% and in OPEX of up to 70% according to vendors claims. In addition, operators can maximize their return on investment by enabling faster time to revenue. Some vendor's solution enables additional sites in an existing sector, where each requires only one new Remote Terminal, minimal planning and no additional RF license. Additional capacity can be inserted on a channel-by-channel, sector-by-sector basis, allowing the operator to minimize initial capital expenditure and tailor subsequent investments to match growing subscriber numbers.

## **Concentration of shipments at 26GHz risks increase of spectrum saturation**

Frequencies at 26GHz bands have been in high demand during Q1 and Q2 2011, leading to the possibility these bands may become quickly saturated. Shipments in this range grew during 2011 (27% quarter-over-quarter between Q1 and Q2). Equipment shipments in this band are expected to increase, since it attracts the most concentration due to the volume of licensed bands that operators hold, such as Mobile Telephone Network (MTN) concentrated in the regions of Africa (South Africa) and Middle East (UAE) and some in Europe, (UK, and Portugal).

## **In Q2 2011 Intracom Telecom took the lead in the EU market and narrowed the spread to 30% over Cambridge Broadband Network in the global markets**

Intracom Telecom's PtMP product with an optional coexisting PtP solution seemed to be very attractive during Q2 2011, gaining market share for the first time in Africa. In Europe during Q2 2011, Intracom Telecom reported revenue at 60% more than Cambridge Broadband Network. However, both vendors are extremely competitive not only in Africa but also in the Middle East, where Cambridge Broadband Networks dominated the 26GHz band sales, leaving room for Intracom Telecom in the 28GHz band.

## **Increasing intelligence and efficiency in radios**

Most vendors define radio's efficiency based on Adaptive Modulation, bandwidth management or the statistical multiplexing features. New solutions and products are adding a new set of features impacting all Ethernet solutions. BLINQ Network offers an intelligent algorithm for Dynamic Bandwidth Sharing and interference management. It also supports Self Organizing Network features and VLANs to secure traffic. Alvarion is among the leaders of the intelligent algorithms, presenting three different types, FEC (Forward Error Correction) Algorithm, CAC (Connection Admission Control) Algorithm and DES (Data Encryption Standard) Algorithm.

## **More Time Division Duplex than Frequency Division Duplex systems, especially from the new NLOS entrants, and less on microwave**

The FDD systems refer strictly to bi-directional voice service since these occupy a symmetric downlink and uplink channel pair. However, as a trend and on a per case basis, TDD is the choice and provides the ability to define the percentage of Upload versus Download traffic (asymmetric). This can be especially useful for specific uplink-centric applications such as those used by many vertical markets (video surveillance) where the application benefits from a ratio for Upload/Download. That ratio is no longer constrained to a fixed 50/50 mix. Most of the NLOS products operate in the Local Multipoint Distribution Service bands (unpaired licensed bands) and are TDD-based, as from vendors such as Taqua, BLINQ Networks, Airspan and Alvarion.

## **NLOS and microwave both reduce the time to deploy a cell site to a couple of hours, meeting operators' need for prompt installations**

Whether we refer to NLOS or microwave technology, the time-to-deploy for a new connection or even a cell site is significantly reduced to a few hours. The turnkey feature offered by many vendors such as Alvarion, Bluwan, Blinq Networks and Proxim Wireless saves significant time, since the terminals are pre-configured and preloaded with all the necessary software. Still, the time to configure the antenna's direction demands the most installation time, requiring angle of degree determination, in order to achieve the expected site coverage.

## **WiFi remains a viable backhaul PtMP solution**

Carrier WiFi solutions will always be sought not only for WiFi offload (city hot zones) but also to facilitate large-scale, indoor-outdoor deployments for Tier 1 Carriers. In addition, many applications such as video surveillance and public safety need monitoring based on WiFi solutions. These are implemented successfully and commercially by Proxim Wireless. Cambium Networks (ex Motorola Solutions' Canopy) and Belair compete in the unlicensed bands that are still ideal for 3G/Wi-Fi high user concentration. Belair became the leader in Q2 2011 of the carrier WiFi market, reporting 31% of shipments in North America compared to Motorola's 9%. North America is currently the most active region, accounting for 55% of the carrier WiFi market,

largely due to WiFi hot zones needed to add more capacity to the network. In North America, WiFi is used by dominant operators such as AT&T, as well as cable carriers such as Time Warner Cable, Comcast and Cablevision.

#### **Most vendors are ready to comply with small cells requirements**

Most PtmP vendors pay special attention to the emerging small cells requirements and tap into this huge potential market. Key small cells features are small size, lightweight products deployed outdoors and able to withstand harsh weather conditions and environments. The small cells, Outdoor Metro Pico/Femto, could easily be supported from PtmP products, adding extra capacity to the cell site and the aggregation node. Ideally, all this hardware should be flexibly mounted on any street level deployment (light pole or rooftop), with intelligent and independent power features (Power of Ethernet), support for all weather conditions standards, for availability in 30-50 mm/hr rain and temperatures ranging from  $-45^{\circ}\text{C}$  to  $+55^{\circ}\text{C}$ . Split mount equipment will still be a player, but the footprint will move very close to zero