

# Rural Satellite Backhaul: Where are we Heading?



Daniel Enns, Senior Vice President Marketing and Business Development, Comtech EF Data, talks to Telecom Review about the importance of mobile backhaul over satellite.



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utilized takes into account all the current and foreseeable innovations.

### What are the key challenges and how can they be addressed?

In many developing markets, the first challenge is still the transition from legacy 2G/2.5G to 3G, from TDM to IP. Driven by the importance of acquiring additional data revenue and market share, operators in these markets are upgrading their mobile networks and facing surges in traffic that threaten to consume their bandwidth capacity.

This challenge can be addressed technically with the deployment of proven technologies that allow smooth transitioning and maximizing capacity. TDM voice traffic can be reduced by more than 50% with Abis optimization techniques. Similarly for IP and data traffic, header and payload compression features help mitigate IP protocol overhead and reduce the required bandwidth by 50% or more. The advanced satellite modem features such as adaptive cancellation technology which allows saving transponder bandwidth and power, results

in enhanced efficiency and reduced OPEX.

The second challenge is around 3G. The multiple 3GPP releases have very different characteristics. Release 99, for example, provides a very limited quality of experience for web browsing. The radio efficiency is also poor, becoming a major issue as traffic increases. Beyond Release 6, the data performance is subsequently improved. For each of these releases, there are different solutions that must be deployed in order to further enhance the efficiency and the user experience. IP compression and prioritization of voice/data/signaling are some of those solutions.

### While it seemed like TDMA VSAT technology with the concept of shared bandwidth has made inroads in the satellite backhaul market, there is a swing of the pendulum today as many of those TDMA vendors are integrating dedicated bandwidth SCPC into their offerings. What is the reality? Is SCPC suited for mobile backhaul?

The need for higher data traffic associated with the uptake of mobile internet has changed the landscape significantly. SCPC has reinforced its position as the perfect fit for mobile backhaul. Current SCPC solutions are designed for high throughput with very

high quality of service (low jitter, low latency), which is becoming more crucial for the growing data communications.

Quality of service is guaranteed as users get what they have purchased. This is not possible in a TDMA solution which quickly becomes inefficient as traffic increases. Shared bandwidth solutions may be viable for low-traffic sites, but they are unable to cope with increasing traffic and do not scale well. On the CAPEX side, you also have to provision for shared carrier even though individual sites need much less bandwidth than the total shared capacity. And, this can quickly become very expensive.

### What are the next technology trends? Are we ready for those changes?

The growth in internet-based applications has triggered the launch of High Throughput Satellites (HTSs) which will bring enormous capacity to the market. The level of throughput will require the ability to handle large amounts of traffic on the ground equipment while ensuring top quality of service.

Most of these HTSs are also based on Ka-Band, which is particularly sensitive to rain fade. The help of current ACM, power control, elaborated Quality of Service technologies and the ability to handle very large volumes of traffic are fundamental in order to take advantage

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of Ka-Band and be ready for this major trend.

O3b is also a game changer with their ambition to provide data rates unachievable using conventional satellite solutions. The O3b initiative plans to cater to super fast cell speeds (up to 50 Mbps) and support backhaul links of up to 1 Gbps for major IP trunking routes between the network core and the aggregation layer. Such speeds and throughputs will need to leverage aforementioned technologies along with high-speed ground equipment and traffic shaping functionality.

On the mobile side, small cells and LTE have appeared in the landscape and will soon make their way to satellite backhaul. Video is exploding and starting to capture a large portion of the mobile traffic. These shifts in the nature of the traffic and the usages demand that latency and

jitter be managed carefully. Only the most efficient solution can be part of the business case. On top of this, a suite of technologies (acceleration, caching and compression) to optimize the IP flow is required to guarantee the key performance indicators for real-time voice and data applications.

### How would you summarize the future solutions for satellite backhaul?

The explosion of mobile internet is driving the need for powerful and efficient satellite backhaul solutions. These solutions need to be future-proofed to accompany the technology changes and be ready to accommodate the ever increasing traffic. The success of these solutions also relies on their ability to facilitate lower OPEX. Mobile operators need to provide efficient and high quality service, but also one that is worthy of a business case. ■

**Comtech EF Data is the market leader in mobile backhaul over satellite. According to several market analysts, this market will continue to grow significantly over the years, particularly in emerging countries. From your perspective, what are the main success factors?**

Mobile operators want to provide coverage and affordable services

in remote/rural areas. While only satellite-based networks can provide such extended coverage and reliability, the associated bandwidth is usually scarce and comes with a price.

For mobile operators to be successful, the satellite backhaul has to, therefore, be extremely efficient to save on OPEX and ensure top quality of service. Efficiency is even more

important when traffic volume is increasing, which is the case for most mobile operators.

The mobile environment is also changing. Traffic is exploding; technologies are transitioning rapidly, and new services are being offered. Hence, the second success factor is the ability to provide service continuity and ensure that the technology