Satellite - where and why?

By Dr Dawie de Wet

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Surprisingly, the debate surrounding satellite as a feasible and sustainable communication technology continues. Usually these debates discuss satellite as an alternative option to fibre cable networks and how fibre will replace satellite and then, almost inevitably, the conclusion is that satellite will someday, maybe soon, become obsolete.

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However, as a quick reference and perspective, just consider DStv services. Arguably, DStv and other satellite TV distribution networks are some of the most successful mass deployments of satellite technology to the consumer market throughout Africa. Clearly, the use of satellite as communication medium for distribution of TV services is effective and highly relevant in existing and emerging markets.

The question of whether or not satellite technology is feasible and sustainable is really about the application of technology rather than technology itself. One has to consider what applications will be complemented by satellite solutions and what market applications would satellite represent the most preferred option.

To analyse this with accuracy, we should start by considering the fundamental elements of satellite solutions. In brief, the core principles are:

- **Ubiquitous coverage**: Geostationary satellites broadcast communication signals over vast geographical areas. Typical signal coverage for satellite networks can be pan-Africa coverage, national coverage or high-powered regional coverage. It is literally available anywhere anytime within the target market region;

- **High availability**: From the user terminal the communication is directly to the satellite and no local towers, masts or other signal transmission networks form part of the network. This means service availability can be high and even the influences of local weather storms can be mitigated to meet mission-critical communication demands;

- **Broadcast nature**: Satellite networks are typically deployed in a star configuration. According to this model services are provided from a central location to many, even thousands, of remote locations. This is exactly how the DStv network operates and why satellite is such an attractive option for broadcast networks; and

- **Service operating costs**: The ongoing communication costs for today's satellite networks is high compared to fibre and other wireless networks. This is because of the cost of leasing services on communication satellites. However, it should be noted that this cost element can be mitigated through the use of different network design and costing models.

Keeping in mind these basic technology principles we can define user requirements for which satellite networks will provide the optimum solution:

- **High availability, large-scale deployment and low data volumes**: This is a typical scenario that applies to financial ATM networks and is a perfect example of where satellite networks provide far superior communication and lower price points than either DSL or 3G.
  The strength of satellite networks in this application is high availability to all locations linked to low 'pay per use' communication costs;

- **Reliable, pan-Africa, critical communications networks**: Mission-critical corporate communications from South Africa to offices and operations in Africa is an ideal application for satellite networks. The 'anywhere in Africa' signal footprint, low-cost remote equipment and cost-effective pricing models provide businesses with operations in Africa a peace-of-mind alternative - either as primary option or as back-up to local communication;

- **Two-way data broadcast networks**: Satellite networks are the perfect broadcast medium to all applications that are 'IP broadcast'. These include corporate in-store media distribution and digital advertising networks;

- **High-capacity, high-availability, remote circuits**: Mining and industrial developments are often remote and located in regions that are not yet connected to the national telecom networks. For these requirements satellite circuits remain the only option;

- **Mobile, rapid deployment, tactical and on-demand services**: For news-gathering crews, event management, disaster management and other tactical requirements satellite networks that provide reliable, high-capacity and affordable communication services. The 'anywhere anytime' nature of satellite services, linked to guaranteed service levels and 'pay per use' pricing models, makes satellite the technology of choice; and

- **Broadband, multimedia, consumer networks**: Today, satellite network offers can provide consumer broadband services as a 'last resort' basis and mostly for locations or application, where either ADSL or 3G is not available or reliable. With the development of high-throughput satellites on the horizon and improvements in satellite modem technologies, it is expected that the cost per GB will near that of 3G and other terrestrial networks. At this point in time satellite will become the most cost-effective and most suitable solution for consumer IP distribution networks and will start superseding the DStv network with an IP two-way broadcast network equivalently.

In summary, the use and deployment of satellite networks as a communication option is now most relevant to a number of specific user application scenarios within the current environment and this will develop. With the ever-increasing demand for broadband connectivity, linked to the cost-performance benefits expected from the next generation high-throughput satellite, we can expect wider deployments of satellite as a communication medium.

ABOUT THE AUTHOR

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