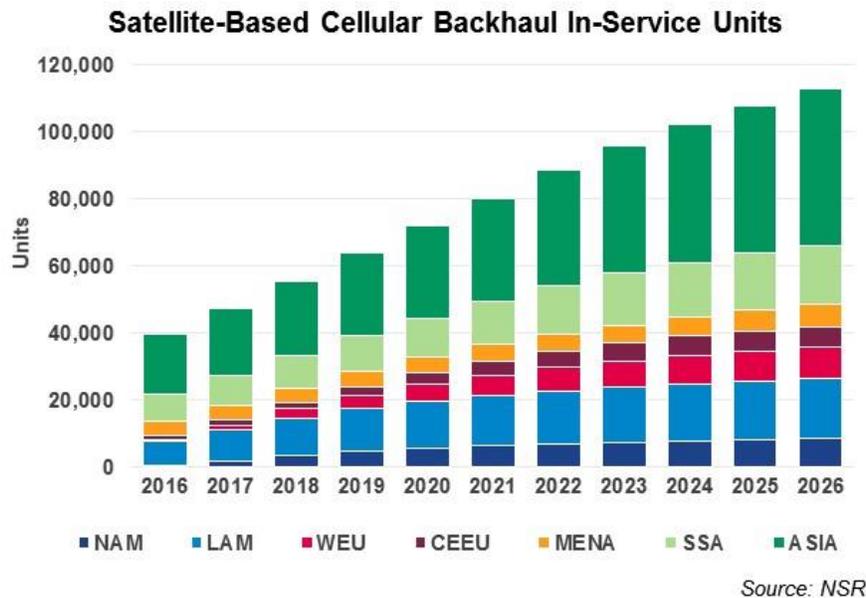


Satellite Backhaul Rising to Data Demand

[NSR Bottom Line Blog by Lluç Palerm Serra – Jun 8th, 2017](#)

Cellular backhaul is expected to be one of the fundamental growth pillars in the satellite industry. Gone are the days when satellite was just a last resort solution for Universal Service Obligations with negligible returns for Mobile Operators. The interest from Mobile Operators to adopt satellite solutions has grown based on new capabilities and new use cases. What are these new use cases boosting the new wave of growth and how should the offers adapt?

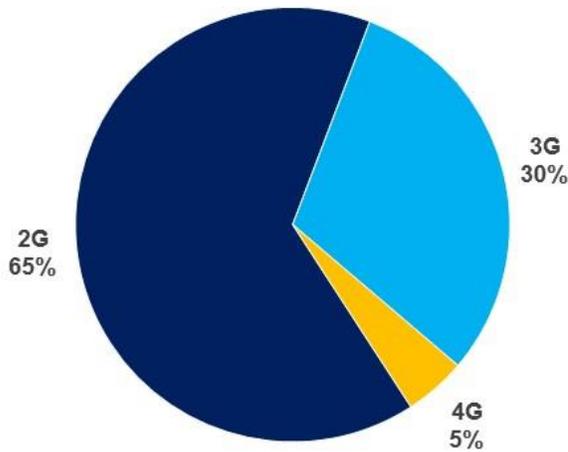


Satellite backhaul will generate large growth opportunities in the next 10 years. According to NSR'S [Wireless Backhaul via Satellite, 11th Edition](#) report, sites will grow at double digit CAGRs surpassing 110,000 installed units by 2026. This growth will be powered by the transition to 3G and 4G services together with a greater integration of satellite solutions in the global telecom ecosystem.

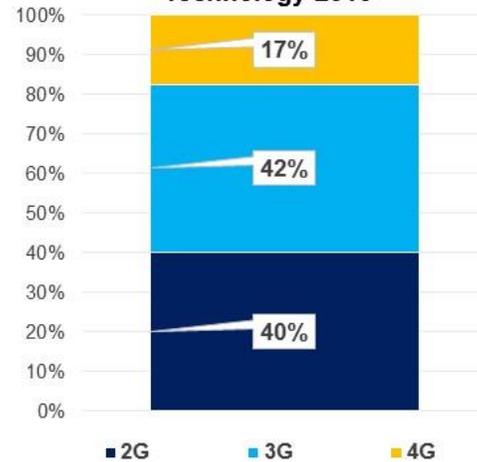
Broadband Is the New Bread and Butter

The arrival of HTS together with advanced ground segment is making satellite a viable option for backhauling 3G and 4G base stations. Long gone are the days when satellite was used exclusively for low bandwidth SMS/telephony/2G sites. Today the possibilities, and hence the expectations, are much higher. Broadband is taking over even in less developed markets like Africa where many new deals, like the procured by [Intelsat to Orange Cameroon](#), progressively include a 3G footprint. Looking forward, **the majority of new opportunities will be generated from 3G and 4G/LTE deployments**. 2016 marked a key milestone in this transition. For the first time, 3G global data traffic surpassed 2G demand despite the latter still comprising 65% of the installed base.

2016 - Sites Share by BTS Technology



Capacity Share by BTS Technology 2016



The shift will be almost completed by 2026 as more than 90% of the installed satellite base will service broadband sites. Several factors such as the reliance of MNOs on data services for growing their revenues or the need to phase out legacy networks to release spectrum to deploy 5G will only accelerate this migration. At the same time, risk aversion is growing among MNOs and satellite should become the solution of choice to test new markets at low CAPEX. Moreover, **network cloudification will create new use cases for satcom with greater integration in the overall telecom systems.**

A Key Tool in the Backhaul Ecosystem

In the transition to smarter networks, a wide range of new applications are opening for satcom. We are more and more dependent on mobile communications; not only for our daily communications but also First responders' messages, industrial grade links or IoT today that relies on mobile networks. Fiber and microwave links do not always reach the required levels of availability those applications need. Satellite is increasingly used as an additional layer of resiliency in markets as varied as Latin America ([Telefonica](#)), Africa ([BICS and Eutelsat](#)) or even Europe ([Avanti-Gilat-EE](#)).

Traffic in mobile networks is highly concentrated. A small number of towers deal with the majority of traffic and a long tail of sites generate low volumes of traffic. However, despite carrying low volumes of traffic, these sites need to be able to cope with high peaks of traffic. All in all, the investment in infrastructure needs to be spread among fewer GB. While satellite backhaul has comparatively big variable costs, initial investment is much lower compared with other alternatives. Hence, a satellite solution is very well suited for sites with sporadic use. This kind of use case is growing for sites located in areas as varied as highways, sporting events or seasonal tourist spots. Some actors are developing targeted solutions like [O3bFastConnect, recently used in the Africa Cup of Nations in Gabon.](#)



Evolving Requirements

This new set of applications requires an adaptation of the offer and the technology. Needless to say, price per Mbps is critical to facilitate broadband services. The efficiency at which the system transforms MHz into Mbps has an obvious impact in this equation. Satellite power, ground segment design, modem and other important elements all have their roles to play in end-to-end system efficiency.

In order to qualify for 4G deployments, modems must be able to transmit beyond 100 Mbps. Optimization must go beyond the physical layer and aspects such as data compression, protocol optimization and local cache will further improve the satellite link. Even the design of the satellite footprint can greatly influence the feasibility of the solution. Investment in ground segment and the possibilities for bandwidth sharing are optimal if the network is served using a minimal number of beams. With traffic shifting following hourly patterns, ground and space segment must work closely to allocate capacity when and where needed.

Probably one of the most critical elements in the transition to Broadband services is the new peaky traffic patterns. Bandwidth pooling and statistical multiplexing are key features for optimizing satellite capacity utilization with the new traffic patterns. This is creating a major technological shift in the vertical. Comtech has been the dominant vendor for Backhaul with almost 2/3 of CPE Revenues market share but its legacy SCPC modems are not well suited for the bursty 4G traffic. This has allowed competitors like Gilat (based on TDMA) to close big wins in the recent past making a dent in Comtech's market share. This has triggered the [launch of the new Heights platform by Comtech](#) which incorporates dynamic bandwidth allocation. The market still needs to dictate the verdict if this dynamic-SCPC is responsive enough for the peaky 4G traffic patterns or whether Backhaul will still be served by niche platforms in an HTS ecosystems that seems to place a premium on scale but [initial market response seems auspicious with good acceptance of the new flexible platform](#).

Bottom Line

The new combined capabilities of space segment and ground segment will generate a wave of growth in the backhaul segment. Cheap capacity together with advanced performance of ground terminals will open a range of new use cases for satcom.

3G and eventually 4G will become the norm for Satellite Backhaul, and this will create an opportunity for satellite to play a bigger role in the end-to-end ecosystem. New use cases like network resiliency or sporadic use sites will increase the penetration of satellite services in the telecom ecosystem.

Even if growth prospects are auspicious, this will be a highly contested vertical both inside the satellite industry and from alternative technologies. New network generations present evolved technology requirements creating the opportunity (or risk) for disruption. Only the actors that find the best fit in the backhaul ecosystem will succeed in this promising but challenging vertical.

NSR supports equipment vendors, service providers, satellite operators, end-users and financial institutions in their technology and business strategy assessment and planning. Please contact cbaugh@nsr.com for more information.