



INSTALLING  
RELIABILITY



[www.ndsatcom.com](http://www.ndsatcom.com)

# SATCOM SYSTEMS & SOLUTIONS

## CELLULAR BACKHAUL SERVICES OVER SATELLITE



The rapidly growing demand for LTE will lead to new challenges for mobile network operators. LTE users are expecting much higher bandwidths for their communication needs.

Ever since remote areas lacking infrastructure have been linked using satellite communications, the demand has remained strong. However, the existing Satcom infrastructure currently serving 2G and 3G is not ideally suited to support the new requirements coming with IP-based technologies such as LTE and future evolutions. Simple upgrades are not possible anymore and mobile network operators are facing major investments for new and expensive Satcom systems. This is where ND SATCOM's innovative technology provides a cost-effective solution.

**SKYWAN offers industry leading quality features, enabling modern Cellular Backhaul for LTE and beyond, cost – effective & ready to grow!**

#### BENEFITS FOR CUSTOMERS

- One hardware with cost-effective “pay as you grow” model, keeping CAPEX as low as possible
- One common bandwidth pool with up to 160 Mbit/s, dynamically shared between all nodes, max. MF-TDMA uplink rate per node 20 Mbit/s, keeping TCO (CAPEX & OPEX) as low as possible
- Optimised QoS mechanism meeting industry leading minimum jitter requirements and best voice quality via satellite (e.g., MOS 4.0@G.729)
- No switching delay due to statistical multiplexing (TDMA) with best channel fill rate for maximum spectral efficiency
- Failsafe network operation due to Hub and NMS independence, backup master concept and multiple redundancy options

#### FULL MESH SINGLE HOP CONNECTIVITY

SKYWAN networks efficiently connect your IP- and/or E1-based cell sites to the MME/S-GW, RNC or BSC without additional expenses in terms of hardware or software. This is managed by SKYWAN's full mesh, single hop MF-TDMA technology. Full mesh over satellite also enables seamless rehomeing of base stations, e.g., if one RNC is over-utilised, some base stations can automatically be switched to another RNC via satellite link, thus optimising RAN performance without using expensive transport links between the regions. When rehomeing hundreds of base stations, such as to prepare for a high number of roaming customers during vacation season, seamless rehomeing directly saves OPEX because it eliminates the need for additional transport capacities. Thanks to SKYWAN's full mesh capability, every base station can be connected to any controller, anywhere. Whether it is GERAN, UTRAN, E-UTRAN or Single RAN solution, with SKYWAN, availability can be realised anywhere and anytime.

#### OPTIMUM BANDWIDTH ALLOCATION AND TRAFFIC ROUTING

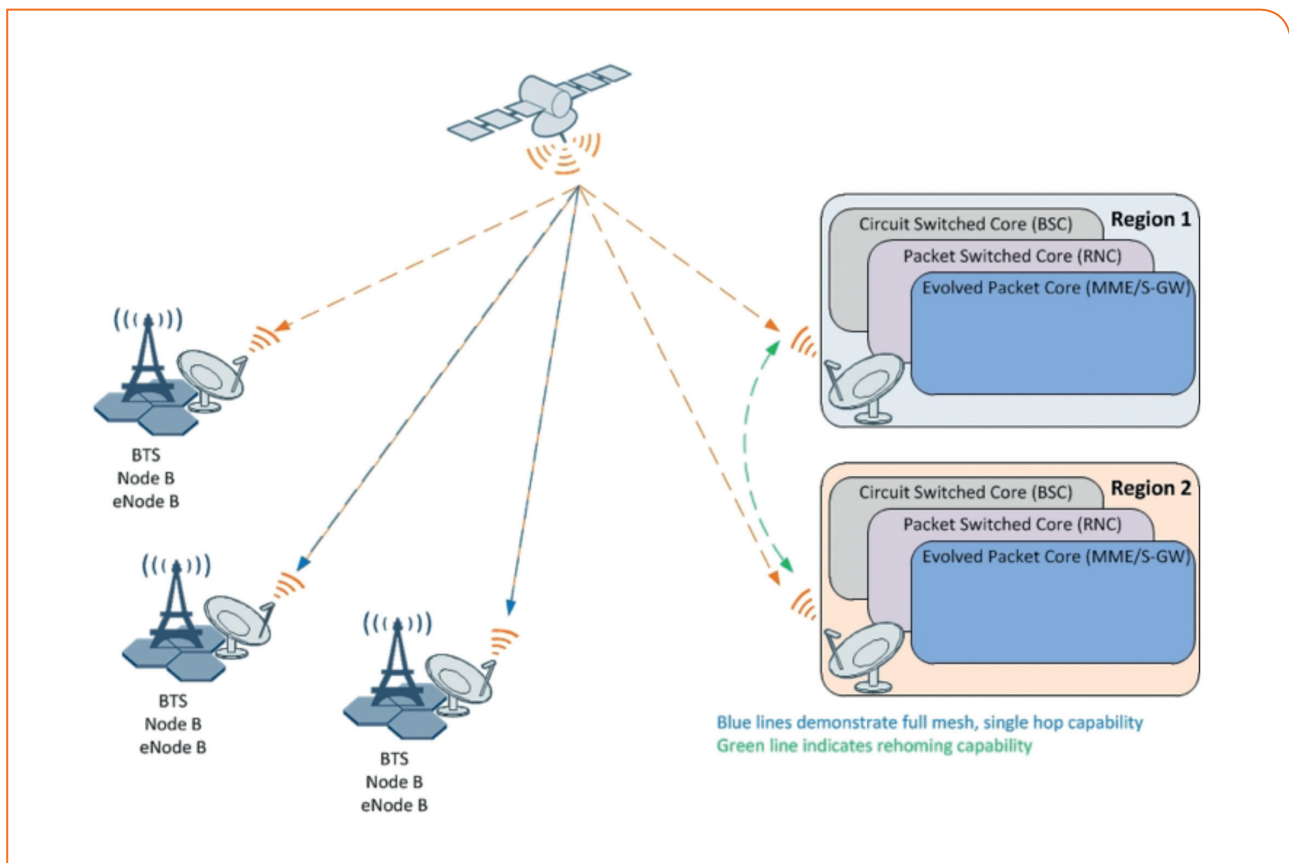
Additionally, all implemented state-of-the-art routing functions, together with the optimised QoS, acceleration and compression functionalities tailored especially for satellite communication, make SKYWAN a must-have to ensure the highest quality experience for your users. Our long-term experience in the field of satellite based voice communication, together with our state-of-the-art voice data multiplexer, ensure the most reliable turnkey solution for any of your network access requirements.

## ND SATCOM'S SKYWAN SOLUTION INCLUDES

- Unrivaled timing precision of  $\pm 0.001$  ppm achieved with high precision clocks for failsafe and highly dynamic MF-TDMA operation
- Failsafe network operation with geographic redundancy and NMS independence
- Additional network security with built-in encryption technology
- Increased cell site availability achieved by redundancy
- Full mesh, single hop connectivity without additional hardware
- Highest MF-TDMA uplink rate of up to 20 Mbit/s per unit

SKYWAN easily connects to any IP device/network as well as legacy interfaces. On the WAN side all SKYWAN nodes connect to each other automatically. The SKYWAN hub functions like a traffic hub with no control function over the network. The control function ensured by multiple masters enables failsafe operation and maximum availability. No matter what application, the inherent granularity allows SKYWAN to function as an optimal access transport network offering the best efficiency for statistical multiplexing transport networks.

**SKYWAN offers single hop connectivity today, cell to cell, ready for the future!**



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