

Efficient GSM Backhaul over Satellite

A Combined Ericsson/Gilat Solution



As GSM expands into underserved areas in developing markets, the cost per added subscriber must continue to fall. There is a need to improve network architecture and significantly save in Total Cost of Ownership in order to adapt to a new environment and help to realize the vision of universal service for everybody, even in areas that were previously impossible to serve at an affordable price.

Ericsson, a world-leading provider of telecommunications equipment and related services to mobile and fixed network operators, has certified Gilat's SkyAbis™ cellular backhaul solution as a key technology for GSM backhaul within its Radio Access Networks (RAN). The combined solution will cost-effectively utilize satellite backhaul to deliver GSM services to remote or underserved areas, which were previously cost-prohibitive to serve.

Four Layers of Technology

The Ericsson/Gilat product solution comprises four integrated layers of advanced technology leveraging the expertise of both companies to ensure a highly efficient and cost-effective solution:

- **Packet Abis**

Ericsson's Packet Abis is an integral part of the Ericsson BSS. It enables a VSAT to directly receive native Abis over IP traffic that is already highly optimized, eliminating the need for a third party external optimizer.

- **Local Connectivity Feature**

Ericsson's Local Connectivity Feature (LCF) enables voice calls belonging to the same BTS, or a cluster of BTS's to be switched locally, hence removing the need to backhaul voice payload to a Mobile Switching Center (MSC).

- **DAMA Technology**

Gilat's SkyEdge™ platform uses DAMA (Demand Assign Multiple Access) technology to dynamically adjust bandwidth depending on real-time requirements at each BTS.

- **ACM – Adaptive Code Modulation**

Gilat's ACM (adaptive inbound) with 3 dimensions of adaptivity provides high availability and bandwidth efficiency.

“ We are very excited about offering the Ericsson/Gilat solution to cellular providers. Fundamental to meeting the challenge of expanding GSM to underserved areas is to reduce TCO and one area of particular potential is the efficient utilization of transmission resources. By leveraging the expertise of both companies, new improvements to the GSM network architecture not only reduce OPEX and CAPEX, they also vastly improve the ability to introduce voice and data services anywhere, creating greater revenue opportunities. ”

Richard Swardh,
Business Manager, Ericsson Satellite Systems



C E L L U L A R B A C K H A U L

Benefits of the Ericsson/ Gilat Solution:

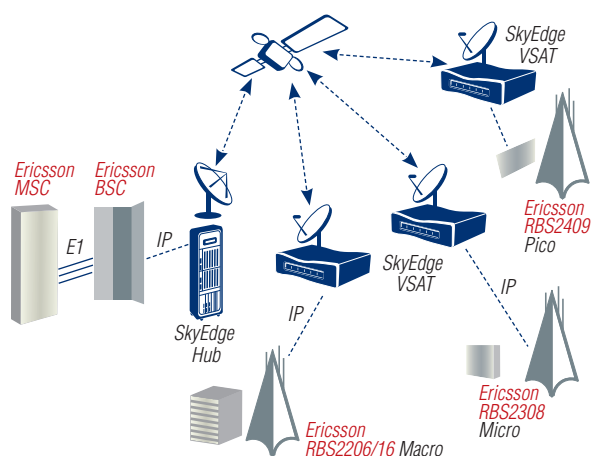
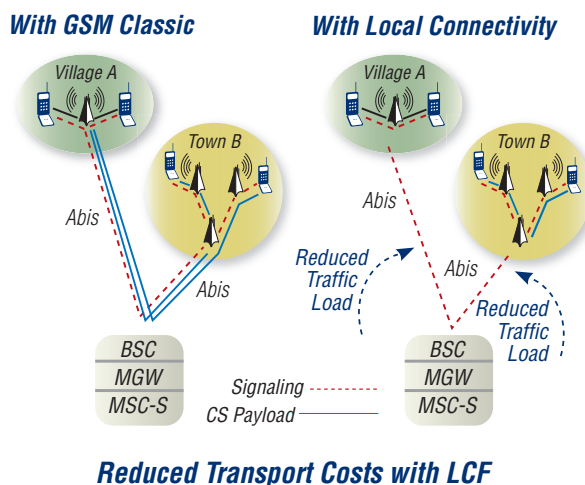
- Reduced backhaul bandwidth by up to 75% from Abis optimization, 30-40% of which comes from DAMA technology
- Advanced congestion management between the air interface and the Abis to ensure telecom grade quality and performance
- High performance mobile data services over GPRS + EDGE without increasing transmission costs
- Builds coverage where E1/T1 is not readily available
- Conforms to customers' high SLA standards

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The Ericsson/Gilat Solution

Ericsson has integrated SkyAbis™ and its underlying SkyEdge™ technology into a full end-to-end Abis solution for Ericsson GSM. Gilat's cellular backhaul offering underwent rigorous integration and regression testing at Ericsson's labs deeming the solution commercially ready for GSM backhaul. Ericsson Packet Abis optimizes GSM traffic by never inserting any unneeded data such as silent packets and padding bits in to the IP-based Abis. The sophisticated optimization significantly reduces required inbound and outbound bandwidth compared to traditional TDM transmission. By utilizing DAMA (Demand Assign Multiple Access) technology, SkyEdge™ dynamically adjusts bandwidth depending on real-time requirements at each BTS. Since not all sites are transmitting peak traffic at the same time, the bandwidth is shared by allocating space to each site according to needs while maintaining the same block rates. The result is more communications per bandwidth, requiring less space segment for the same amount of traffic.

base station, substantially reducing transmission costs. Traffic measurements show that up to 70% of all calls made within a given geographical area are local. Therefore, LCF enables further savings by switching local calls at the hub site of a cluster or within the BTS itself, as shown by the following diagram.



Bandwidth on Demand

One of the key technologies behind the benefits is BoD (Bandwidth on Demand) SkyEdge's ability to dynamically allocate satellite bandwidth to improve performance and control costs. Using BoD presents a major advantage over traditional technology, which uses a predefined "busy hour" to determine permanent bandwidth required to ensure satisfactory service. Directional coverage by TRX antennas is one example of where BoD can help. Another example is that of areas that have different peak hours. With BoD, a robust yet efficient RAN can be created, sharing bandwidth between each coverage area, to maximize peak hour usage while minimizing bandwidth overhead.

Local Connectivity Feature

The solution leverages Ericsson's Softswitch expertise, enabling local switching to be performed far out in the RAN, with the help of routers integrated in the

Cooperation with Ericsson

Ericsson and Gilat are working together to market and sell the combined solution, engaging together in presales to common customers and in market development activities.



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