



Case Study: Becoming The #1 Mobile Network Operator in Latam Using Cellular Backhaul Over Satellite

TIM Brasil is the first network operator with coverage to 100% of Brazilian Cities and is leading the innovative use of IoT in agriculture



Executive Summary

The Challenge

- Enable mobile connectivity in regions lacking the necessary network technology
- Enable the digital transformation of rural areas of Brazil

The Solution

- Develop the Sky Coverage and “4G TIM No Campo” projects, providing 4G mobile coverage throughout the country
- Provide and deploy a robust network and cutting-edge infrastructure including Gilat’s cellular backhaul over satellite solution

Benefits of Gilat

- Experience (providing 75% of the LTE sites backhauled by satellite)
- High performance, reliable solution
- Meet strict MNO requirements



“Reaching this goal wouldn’t have been possible without the strong and continuous support of the entire Gilat team, working closely with us to connect sites in the most remote regions of the country.”



Marco Di Costanzo,
Engineering Director at TIM Brasil

The Challenge:

Brazil has a population of over 210 million people in a territory of 8.5 million square kilometers. While most of the population lives in urban areas and has access to high-quality internet connections, there are still significant numbers of people, especially in rural areas, who do not fully enjoy the benefits of digital transformation. For perspective, 49.37 million people in Brazil did not use the internet at the start of 2022, meaning that 23.0 percent of the population remained offline at the beginning of the year.

A subsidiary of Telecom Italia Mobile, TIM Brasil is one of the most prominent mobile operators in the country, serving all Brazilian states via their Sky Coverage Project. The project currently covers more than 1,500 sites and is the largest 4G Cellular Backhaul over Satellite Network in Latin America. One of the project's objectives is to bring carrier-grade service levels to support extended 4G rural coverage to more distant areas of Brazil, where there is a deficit in terrestrial infrastructure. This includes using satellite connectivity to cover districts, localities, highways, and resorts in remote areas, extending the reach of their 4G networks faster than terrestrial alternatives.

In addition to the Sky Coverage Project, TIM Brasil is leading the innovative use of IoT in agriculture with their "4G TIM No Campo" project. The project's main objective is to make digitization possible and to offer innovative solutions for Brazilian Agribusinesses. Specifically, the project's goal is to enable time-sensitive decision-making for better crop management by collecting, transferring and analyzing data bi-directionally between farmers, machines, and administrative offices.

The challenge of implementing these programs was finding the most efficient, effective and financially viable way to extend TIM Brasil's cellular network outside of crowded urban areas and into the rural areas where small communities lacking connectivity are living around massive farms growing a wide variety of crops.

The Solution:

In the past, cellular backhaul (CBH) over satellite was often used only as a fallback solution for hard-to-reach rural and remote areas such as islands, mountains and deserts, where terrestrial infrastructure such as fiber, next-generation copper, or microwave was either too expensive or unfeasible. However, today more and more Tier-1 MNOs like TIM Brasil are adopting satellite backhauling, as they are looking for a reliable solution that can provide enhanced Quality of Service (QoS) and Quality of Experience (QoE) that easily extends connectivity to rural sites and integrates seamlessly with their terrestrial network.

TIM Brasil decided to implement a satellite backhaul solution to extend coverage and support the agribusiness market as a means of improving the quality of life of the region's population by enabling access to pervasive 4G mobile connectivity for the first time. In partnership with TIM, Gilat supplied and deployed 4G backhaul over a multi-spot beam Ku-band satellite to reach Brazil's most remote areas. Gilat's satellite backhauling solution enables TIM to support thousands of sites with fast bandwidth allocation. Furthermore, Gilat's 4G embedded VSAT acceleration provides the excellent user experience that TIM requires for its subscribers.

One example of a farm participating in the "4G TIM No Campo" solution is Citrusuco, one of the largest orange juice companies in the world. The solution expands far beyond the company's groves and brings connectivity to several neighboring cities, serving an area of 1.9 million hectares. Citrusuco is the first agricultural company to go 100 percent digital and will have the technology in all its farms located in the interior of São Paulo and Minas Gerais.

According to Citrusuco, robust cellular technology and backhauling over satellite provide the necessary infrastructure to optimize processing, enable easier decision-making and support all digitalization initiatives. This investment is driving the company to higher operational and sustainability standards.

The Gilat Advantage:

Cellular backhaul over satellite is proving to be the best solution to rapidly and efficiently expand a cellular network to rural areas, thus answering the need to bridge the digital divide and satisfy the growing demand for connectivity.

The Sky Project and "4G TIM No Campo" projects with Gilat's satellite backhaul technology provide a robust network and cutting-edge infrastructure to provide people, machines and software with the much-needed connectivity to thrive in today's digital world.

For satellite backhauling to meet MNO requirements, Gilat's solution provides end-to-end encryption, maintaining IPSec data security with CMPv2 without compromising performance under fade conditions. Furthermore, it has the flexibility to be configurable for either layer-3 or layer-2 services, thus providing seamless integration to the cellular network core.

With over 35 years of experience, Gilat creates and delivers deep technology solutions for satellite, ground and new space connectivity and provides comprehensive end-to-end solutions and services, powered by our innovative technology. We believe in the right of all people to be connected and are united in our resolution to provide communication solutions to all reaches of the world.