

1st 4G Service in Antarctica

NovelSat NS4 Delivers Remote Telecom for Telefonica

“ Providing 4G in the inhospitable, remote environment of Antarctica is definitely a different kind of challenge that NovelSat helped us address.”

Adrián di Meo
CTIO, Telefonica Argentina



Telefonica

Challenge

Telefonica Argentina had committed to providing 4G/LTE cellular services to the Argentine Marambio Base in Antarctica. Over the course of several years, after trying various solutions, Telefonica finally rolled out services that met the quality standards that they demanded for cellular users.

Goal

Enable Telefónica to provide consistently high quality 4G cellular service using LTE over satellite for some 5,000 permanent residents and visitors at Marambio Base, one of the most remote and unforgiving locations on the planet.



Background

Telefónica, based in Spain, is one of the world's largest telecommunications companies. With presence in 21 countries and 349 million accesses around the world it prides itself on providing high quality customer experience in the mobile telecom market.

Following a number of trials with competing solutions, Telefonica Moviles Argentina (Movistar) recently launched Antarctica's first 4G LTE mobile network, enabled by NovelSat NS3000 Professional High-Data Rate Satellite Modems with the NovelSat NS4 4th generation satellite transmission waveform. At Marambio Base, a permanent research facility in Argentine Antarctic territory, the most remote region on the planet, the only viable method of data communication is through a satellite network. The trick was delivering enough bandwidth via satellite for a satisfactory 4G mobile experience.

In addition to increased data capacity to support 4G service for the 70 permanent residents and 5,000 annual visitors at Marambio, the NovelSat solution increased network stability and reliability compared with the previous communication network solution. According to Telefonica, at Marambio, where mobile data transfer speeds previously reached 1.5Mbps, researchers and tourists can now enjoy speeds of up to 20Mbps.

For more information, please contact NovelSat at info@novelsat.com

Solution

The Marambio Base is a scientific station run by the Argentine Air Force. It is located on a small island in Antarctica named Vicecomodoro Marambio. It is home to some 70 scientists and international staff.

To provide 4G service over LTE, data is transmitted and received through a point-to-point satellite backhaul link between Balcarce Teleport in continental Argentina and Marambio base. Using NovelSat NS3000 modems, Telefónica was able to take advantage of existing satellite bandwidth and even have bandwidth to spare for future expansion.

The success of the solution can be attributed to various innovative technologies from NovelSat. The primary supporting technologies include the NovelSat NS4 waveform, which outperforms industry standard DVB-S2 by up to 45%, and NovelSat DUET® CeC (Carrier Echo Cancellation) technology which enabled Telefonica to use existing bandwidth to both send and receive data and voice simultaneously.

The installation, performed jointly by Telefónica Argentina and the Argentine Airforce, provides consistent 4G coverage to the entire Marambio complex, including an airstrip 1km away from the main facility.

Compared with the previous 2G service, the new faster mobile service is a major improvement for the staff and for the scientific work that is carried out year round at the facility. For example, a download of scientific data that would have previously taken up to 2 hours can now be received in minutes.

Technology

The NovelSat NS3000 Professional High-Data Rate Satellite Modem supports all major satellite transmission industry standards, including DVB-S and DVB-S2. To support the level of 4G mobile service required, Telefónica chose to use the NovelSat NS4 software package. NovelSat NS4 offers the highest satellite MODCODS available and delivers up to 45% more capacity per MHz of bandwidth compared with industry standard DVB-S2 technology. Using NovelSat NS4, Telefónica can offer Marambio Base mobile users up to 21.6 Mbps/15Mbps (Down/Up) data rates on a 5.1MHz C band slot.

Additional industry leading NovelSat technologies that support this solution include 2% ROF, NovelSat DUET CeC for simultaneous bidirectional transmission, Fast ACM to dynamically adapt links to constantly changing conditions – especially important in remote locations.

NovelSat NS4 and all NovelSat software-based upgradable features and option can be installed over the air (OTA) on all NovelSat satellite devices. For remote locations such as Antarctica, OTA updates are a critical factor.

Summary

NovelSat NS3000 Satellite Modulators and NovelSat NS4, delivering superior spectral efficiency, scalability and high-end software-definable feature set, made it possible for Telefónica to reliably supply the first ever 4G mobile service in Antarctica. This solution now makes Telefónica and NovelSat among the few companies on Earth who can boast installations on all seven continents.



NovelSat NS3000 Professional High-Data Rate Satellite Modem

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