

NETWORK DEVELOPMENT AND MODERNIZATION

Network
digitization levels
and new services
place Telefónica in a
vanguard, leading
position

BASIC NETWORK DEVELOPMENT AND MODERNIZATION. During 1993, 1,019,674 local lines were installed, practically all of them digital. These lines correspond to both service expansion and plant upgrading. With regard to the latter 625,481 analog lines were replaced, with digitization levels in local exchanges reaching 41.4%.

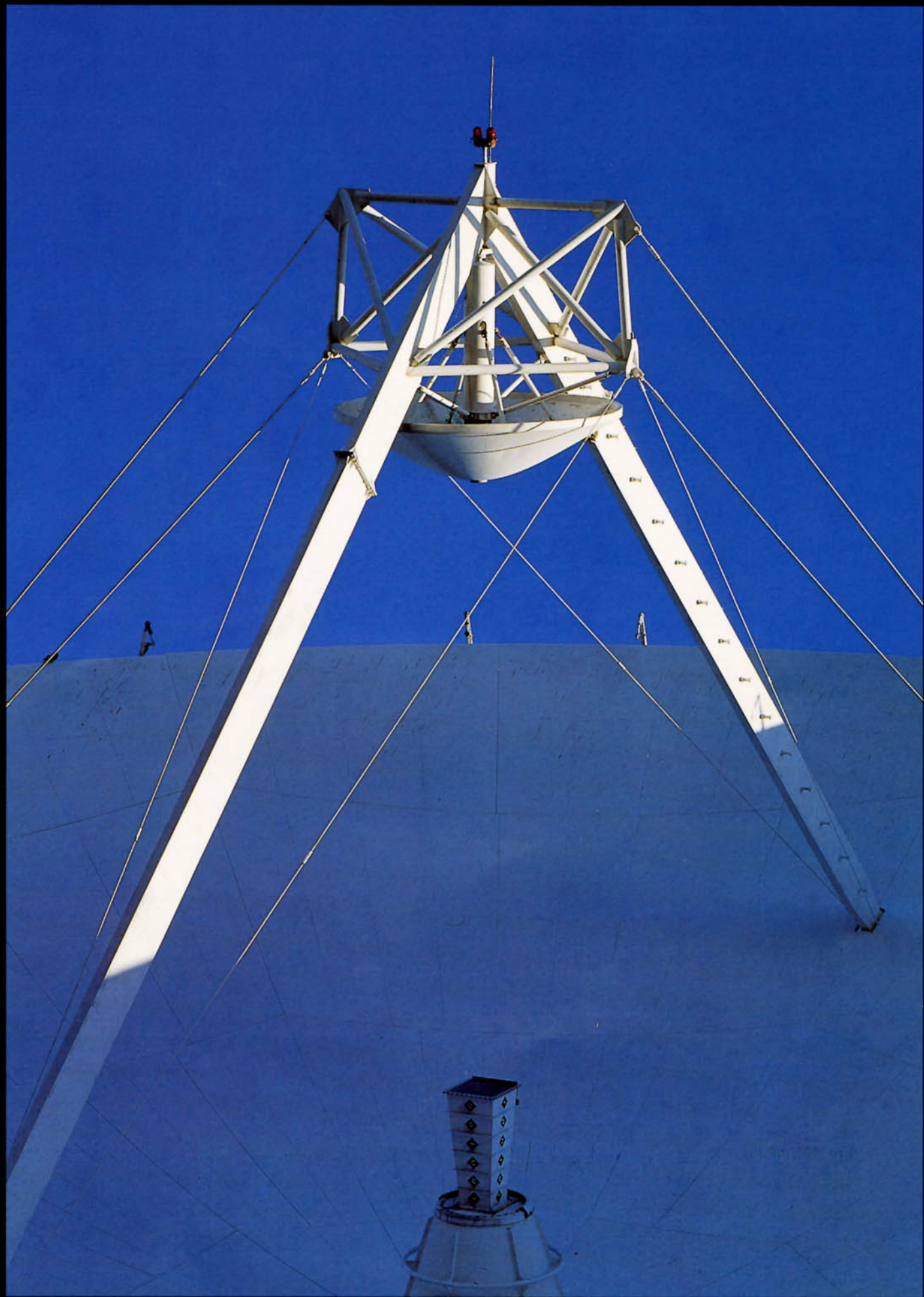
Work continued on all the digital switching systems, with greater emphasis on the older ones, to enable us to supply new services. In this way, we succeeded in achieving our target of itemized bill provision to 2.4 million lines.

Throughout the year, five new interprovincial and sixty intraprovincial digital transit exchanges came into operation, which, together with the extensions carried out, allowed us to reach digitization levels of 85.5% in trunk lines, rising to 93% if we consider only the interprovincial Transit Network. We should also mention that upgrading of all plant equipment continued throughout the year, aimed at incorporating new facilities as soon as possible.

At the same time, there was a consolidation of rural telephony technology via cellular access. New versions of software from the mobile communications centre of the TMA-900 analog system were made available, which improve service operations, as well as terminals offering new facilities such as voice encryption, authentication and data transmission.

As regards transmission, testing got underway of the Synchronous Digital Hierarchy equipment. In addition, we continued with experiments taking fibre optics right to the home in Tres Cantos and San Cugat. Under the Fotón Plan, specifications were drawn up for fibre optics systems for Narrow and Broadband Services.

In the provinces of Alicante, Murcia and the Canary Islands implementation went ahead of the new network model in which the nodal areas are composed of two exchanges working to share the load.



Barcelona. We also proceeded with the connection of all the Transit Network exchanges via these systems and consolidated in 1993 the availability of all the programmed routes. This enabled us to reach a 100% retrieval capacity in the Transit Network during the same year, except for some frames carried by the Underwater Systems with the Balearic Islands and the Canary Islands.

Over 3,000 kms. of fibre optics land cable was laid, 1000 kms. of which correspond to the Transit Network. In addition, optical connection of all the provincial capital cities was completed, with a structure of approximately 14,400 kms. of cable, and the underwater optical cable Penbal IV was extended during the year.

Network retrieval capacity as a result of plant breakdown was significantly improved during 1993, due to the completion of 18 Telecontrolled Automatic Switching Systems for the retrieval of 140 Mbit/s frames.

Digitization of the External Plant Register continued and reached a 41% penetration level nationally, which corresponds with a register digitization equivalent to 6.4 million lines.

INTERNATIONAL LAND EXCHANGES AND NETWORK. The increase of traffic supervision in real time by the International Network Dynamic Management system led to the start of a process of network optimization, which in turn meant that, for the first time in many years, there was no growth in circuits. As a result, following major modernization, the international network amounted to 23,665 circuits, with digitization levels reaching 87.2% and call inefficiency rate standing at 2.26% (December 1993), well below the 4% established in the Contract with the State.

During the year, the following installations were completed and came into service:

- Extensions of the Madrid-Alcobendas, Barcelona-Castellbisbal and Seville-Pineda International Exchanges.
- 565 Mbit/s fibre optical systems between the Buitrago and Guadalajara Satellite Communications Centres.
- International Customer Support Centre (CISC) in Madrid-Alcobendas.

As for the dismantling of analog plant, operations were completed at the Valencia-Campanar International Exchange and the special subscriber Barcelona-Sepúlveda exchange, together with the radiolinks with Portugal (Cáceres-Torresnovas and Conil-Sesimbra).

INTERNATIONAL UNDERWATER CABLE. In 1993 two international underwater cables came into operation: the SAT-2 and the BARMAR. The former links the Republic of South Africa with Europe and has a mooring in Tenerife. It has a 7,680 Kbit/sec capacity and a length of 206 kms. in Spanish waters. BARMAR links Spain with France, is 362 kms. long and has a capacity of 15,369 basic 64 Kbit/s circuits. Mooring points are in Barcelona and Marseilles.

Including these cables, the total length of optical fibre underwater cable moored in Spanish territory was 9,057 kms. at 1993 year-end. These figures confirm once again Telefónica's status as one of the world's leaders in infrastructures of this type.

Concerning maintenance, we should mention the commissioning of the Spanish cable ship

Teneo, under the terms of the Underwater Cable Mediterranean Agreement. This agreement, signed in 1993 for a period of 5 years, ensures the maintenance and repair of underwater cables belonging to the 14 countries situated in the Mediterranean, Adriatic and Red Seas. Concerning network modernization, the analog plant corresponding to the TAT-5 cables between Spain-United States and Spain-United Kingdom was dismantled.

SATELLITE COMMUNICATIONS. During 1993 the plant upgrading plan was completed, with the incorporation of digital technology into all the stations which access to the INTELSAT satellites for the Atlantic areas and EUTELSAT for Europe. Hence, Telefónica's satellite communications plant is fully equipped to supply any kind of public service, no matter how advanced.

The plant restructuring process went ahead as scheduled. The Barcelona 7 and 9 earth stations were adapted to carry out underwater cable repair services and TV EUTELSAT control respectively.

With regards to business communications, the Valencia-Paterna Teleport entered into service with two aerials: Valencia 1, which will work with the EUTELSAT system and Valencia 2, which will operate in the INTELSAT system. In addition, a new station (Madrid 6) was installed in the Madrid-Alcobendas Teleport to work with the Hispasat national system.

OPERATION AND INFORMATION STRUCTURE. With the commissioning of the Espatel service in 24 Centres in 1993, implementation of the Espatel Network was completed in all provinces. The first phase of the Espatel National Management Centre was also implemented, which includes the control of alarm systems and centralized distribution and network traffic control.

The quality of the Operation and Information services was enhanced by the incorporation of new recordings and of the Automatic Audible Reply System (SARA). There were also major improvements in accesses to the 003 Data Base Service, to facilitate consulting operations and increase the efficiency of response to clients.

NEW NETWORK OPERATION AND MAINTENANCE STRUCTURE. By the end of 1993, 45 Provincial Supervision and Operation Centres were in service, albeit provisionally. Each centre supervises, operates, manages and maintains the Network in the corresponding provincial area.

Proceedings also commenced for the creation and configuration of the National Supervision and Operation Centre. With a global view of the network and services, this centre will form the highest hierarchy in the New Operation and Maintenance Structure.

SECURITY. During the year, integral security systems were installed in 40 strategic buildings. In addition, 376 other buildings were provided with remote security systems, which allow for the reception of and response to alarms from a permanently manned centre and the supply of various types of teleservices. This system earned Telefónica the Trophy for the "Best Domestic Security System" in 1993.