CYPRUS TODAY
Telecommunications in Cyprus

Telegraphy

The history of telecommunications in Cyprus began on 9th November, 1870, when it was decided to link telegraphically Cyprus with Lattakia by a submarine cable which was installed by the British "Newall Company". The Cyprus terminal site of the cable was at Ayios Theodoros of Karpasia to the north-east of Famagusta. From that point, an internal telegraphy network was constructed connecting Ayios Theodoros to Nicosia and Nicosia to Larnaka.

At that time, the commercial centres of Cyprus were Nicosia and Larnaka, Larnaka being also the main port of the island as well as the town where all the consulates were located.

This telegraphic link was the first step in the development of telecommunications in Cyprus.

In 1878, Cyprus came under British Colonial rule. During the same year the "Eastern Telegraph Company" obtained licence to install a new telegraphic cable which linked Larnaka with Alexandria and then with London through other submarine cables. This cable, which was inaugurated on the 19th October, 1878, did not employ any repeaters and its capacity was one telegraph channel.

A more comprehensive internal network was also established linking the six main towns, and the Troodos mountain area where government officials and the main government services moved during the summer periods. Larnaka, then a prominent commercial centre of Cyprus, became also the centre of the newly formed telegraph communications.

The transmission of telegraph messages was based on a manual system called the Morse-Recorder system. If there happened to be any intermediate stations between the source and destination points of the telegram, the message was relayed manually from station to station.

However, the cable operation was very unreliable and in 1910 communications over the Lattakia cable were abandoned.

At around 1905, a government controlled telegraph network was formed, operating along the railway network from Famagusta to Nicosia. This network gradually developed westwards following the railway network first to Morphou and then to Evrychou.

The period between 1925 and 1926 witnessed for the first time the appearance of private wireless telegraph stations, which according to the 1925 Regulations were granted licence for reception purposes only.

International Telegraphy was further developed when the Larnaka-Haifa submarine cable was laid. Communication was established on 19th January 1928. Once again this cable did not employ any repeaters and its capacity was one telegraph channel.

Wireless telegraphy, providing both transmission and reception facilities made its appearance in Cyprus in 1933, when Larnaka-Radio was installed by Cable and Wireless. The station was formally opened on 5th February 1934. It provided a ship-shore telegraph service and was also used as a stand-by route during submarine cable interruptions.

For the sake of historical accuracy it may be said that a wireless telegraphy station was installed temporarily in Limassol in 1932, pending the operation of the Larnaka-Radio. Furthermore, there existed a British military wireless telegraphy station at the same time.

Towards the end of the 1940s the Larnaka wireless station moved to Nicosia, and the ship-shore service was renamed "Cyprus Radio", whilst a wireless telegraph link using Double Current Cable Code (DCCC) was introduced. It was extensively used to communicate with London in 1956, during the Suez crisis when the Alexandria cable was cut-off.

Steps Towards the Automation of Telegraphy
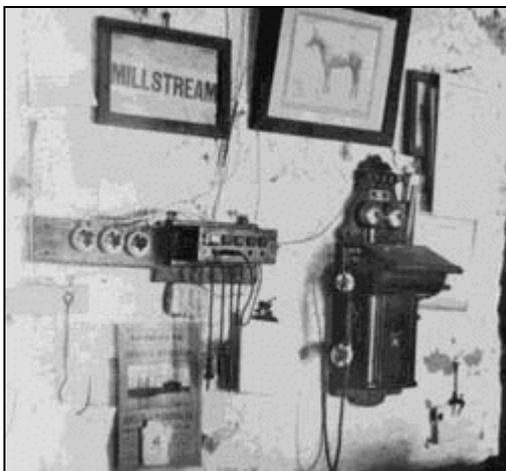
Manually - operated telephone station

In 1947 the "Regenerating System" was introduced in Larnaka and Nicosia followed in 1949. It was employed for overseas telegrams only. This was a significant improvement to the existing Morse-Recorder system. Messages were now punched on tape and could be transmitted automatically and at a much higher speed. Furthermore, messages were directly printed out at the destination point. The name "regenerating" was given to the system because of the data regeneration techniques employed at the intermediate stations, in a way which is conceptually

very similar to today's regeneration techniques employed at the intermediate stations, in modern digital links.

Telegraph Office at Platres (1920)

In the years that followed, no significant extension was effected to the telegraph network because of the introduction of telephony in the island. By 1955, the Cable and Wireless telegraphy network covered the six main towns and sixteen villages.

A development in telegraphy before the establishment of Cyprus Telecommunications Authority deserving mention was the installation of teleprinter equipment. By 1957, teleprinter telegraphy was operating between the towns in Cyprus, whilst by 1959, it was extended to various villages. This modernization of telegraph equipment included the introduction of multi-channel Voice Frequency Telegraph equipment (V.F.T.) enabling the transmission of several telegraph channels over one telephone channel.

The first evidence for the existence of telephones in Cyprus dates back to the period between 1911 and 1913. At that time, there existed a few official and private telephones.

The official telephones were installed at the residences and offices of government officials. By 1920, small telephone exchanges connecting various government offices and officials residences in Nicosia, Famagusta and Troodos, during the summer, were in operation. Long lines were deployed connecting Troodos with various stations along the railway, which by that time had its own telephone network. Other lines connected Famagusta with Cape Andreas and Cape Greco. In 1921, Larnaka was connected to this officials' network.

According to unconfirmed evidence, a very elementary private telephone network connecting Limassol with a few neighbouring villages existed at around 1914. This was established by George Yiordamlis of Limassol. In 1925, the same person established a private telephone exchange in Limassol, housed at 1, Salamis Street. The network around it comprised overhead cable on a 1 mile and 1.320 yard route. Subscribers were mainly merchants and hotels, and numbered about 100. The exchange service hours were 7 a.m. - 11 p.m. except on Sundays and holidays when they were 8 a.m. - 8 p.m.

The above mentioned private exchange was granted a formal licence in 1926. However, the exchange was closed down in 1936, when the public telephone service employing manual magnets telephones was introduced on an island-wide basis by Cable and Wireless. On 1st April 1936, with the inauguration of the manual exchange at Nicosia, Troodos became the new centre of telecommunications in Cyprus.

The network consisted initially of overhead cables, whereas underground cables started appearing later on. At first, the intercity trunk lines were actually the same as those used for telegraphy. The number of such lines was very limited and was only increased during the Second World War period. Taking as an illustration the Nicosia - Famagusta route, in 1936 it employed only 2 wires, on which the telegraph service was superimposed. In 1944 there were 4 wires along this route, whilst in 1946 they were increased to 18.

The reluctance with which the public - and especially the merchants who were afraid of leakage of business information via the telephone - accepted the new service, led Cable and Wireless to market the service by offering a three-month free telephone service. Furthermore, an advertising campaign was launched. It turned out in the end that this campaign was so successful that soon Cable and Wireless had to start extending the telephone exchanges and increasing the trunk lines in order to cope with the demand for new telephones.

As mentioned above the extension of trunk lines coincided with the period of the Second World War. During the same period extensions to villages were installed and by 1949, 115 villages were connected to the public network.

The Appearance of Local Automatic Telephony

The next landmark in the history of telephony in Cyprus was the introduction of the automatic dialling system with the installation of "step-by-step" automatic exchanges for local calls. Trunk calls continued, however, to be handled manually.

The first automatic exchange installed was the 400-line government exchange in Nicosia operated in 1951. During the same year the Nicosia public exchange was also automated.

The other towns followed in the coming year as follows: Limassol and Famagusta in 1952, Kyrenia in 1953, Paphos in 1958, and Larnaka in 1959. Automatic exchanges were also installed at villages, such as Skarinou, Kakopetria and Lefka.

The introduction of automatic telephony produced an unprecedented demand for telephone service which could not be met, despite the introduction of the shared service for telephone subscribers all over the island.

International Telephony is Introduced

During the 1950s two developments regarding the telephone network deserve special mention.

One was the introduction of international radio-telephony in May 1951 between Cyprus and the U.K. which was soon extended to most European countries, U.S.A. and Canada. The Saranta Spilia and Kolokoshi High Frequency (HF) stations were used for this purpose. The other development was the deployment of Very High Frequency (VHF) radio equipment in the mid 1950s, to supplement the existing

overhead lines, as part of the trunk telephone network.

Other Services

Even before the establishment of Cyprus Telecommunications Authority, the spectrum of services offered by the Body responsible for telecommunication services in the island extended beyond public telephony and telegraphy.

As seen above, the Larnaka-Radio (call-sign ZFE) which opened in 1933 was mainly used for ship-shore communication.

In 1935 the first transmission of meteorological data for aircraft was undertaken by Cable and Wireless which also took over the operation of Civil Aviation signals at Nicosia from International Air Radio.

After the installation of the Kolokoshi receiving station and the Saranta Spilia transmitting station, the ship-shore service moved from Larnaka to Nicosia. The inauguration to mark the transfer of the radio equipment of this service, which was renamed "Cyprus Radio", took place on 7th March 1951.

In 1955 the Cyprus Inland Telecommunications Authority (C.I.T.A.) is established, a Corporate Body which undertook the provision of inland telecommunications.

On 19th August, 1956 the first two-way voicecast took place between BBC, London and the Forces Broadcasting Service, Cyprus, via the Saranta Spilia and Kolokoshi stations.

During the same year a photo-telegraph service to London was introduced.

The Beginning of a New Era

In 1961 Cyprus Inland Telecommunications Authority (C.I.T.A.) is renamed into the Cyprus Telecommunications Authority (CY.T.A.) following the take over of external telecommunications from Cables and Wireless Ltd.

Cyprus becomes a member of ITU (International Telecommunications Union) and CTO (Commonwealth Telecommunications Organisation) where it is represented by Cyprus Telecommunications Authority. Moreover, in 1963 Cyprus becomes a member of CEPT (European Commission of Posts and Telecommunications) where it is represented again, by Cyprus Telecommunications Authority.

In 1968 an important step for overseas telephony was accomplished when Cyprus-Greece Tropospheric Link of 60 speech channel capacity was introduced to traffic, replacing the previous HF link to Greece. The radio equipment was installed at Kili, Paphos district.

Telex Service

The Nicosia international telex exchange was put into operation in 1969 with an initial capacity of 300 subscribers. An important development was the introduction

of a fully electronic Stored Programme Control (SPC) telex exchange which was inaugurated in 1975 and by the end of the year automatic telex was available with 80 countries. Since then the expansion of the service has continued and with the rising demand a new digital SPC exchange was put in operation in 1987.

Automatic National Telephony

The installation of crossbar equipment together with the simultaneous installation of microwave radio equipment for the National Network trunk links enabled Subscriber Trunk Dialling (STD), i.e. automatic telephony on an island-wide basis to be introduced. The official inauguration of the STD service took place in July 1971.

The next target was the development of the international telephone service and its automation. In December 1971 a new 24-channel V.H.F. link with Israel was put into service and in 1971 submarine cable systems were installed between Cyprus, Greece and Lebanon. Furthermore, an order was placed for the installation of an international telephone exchange to enable International Subscriber Dialling (ISD).

Effects of the Turkish invasion

In the summer of 1974, Turkey invades Cyprus and occupies 37% of the island from which 70% of the national income emanated. As a result 200.000 Greek Cypriots (2/5 of the island's Greek population) were forcibly evicted from their homes and the fate of 1.619 persons is still unknown. Since then more than 40.000 Turkish troops remain on the occupied part of the island.

The Cyprus Telecommunications Authority, as a result of the Turkish occupation, lost approximately 33% of its assets and 25% of its subscribers and was deprived of approximately 50% of its income.

In spite of the heavy loses and the gloomy outlook, the Authority decided to refocus its development programme and to press on with its implementation recognising that sufficient and efficient telecommunication services were of extreme importance in the efforts of the government to rebuilt the economy of the country:

> reinstatement of the service to parts of the island which were served by installations that were in the occupied areas,
> expansion of its network in the non-occupied areas in order to meet expected business demand, implementation of a balanced development programme, for rural and urban areas,
> enhancing of its international network facilities by laying submarine cables connecting Cyprus with Greece and Lebanon,
> provision of satisfactory service both local and overseas,
> introduction of measures to avoid interruptions with regard to ship-to-shore and ground- to-air services.

Cyprus becomes a member of INTELSAT (International Telecommunications Satellite Organisation), where it is represented by Cyprus Telecommunications

Authority.

One year after the invasion the APHRODITE and ADONIS submarine cable system connecting Cyprus to Greece and Lebanon respectively, each of 480 telephone channel capacity were commissioned. In June 1975 the International Telephone Exchange was inaugurated and International Subscriber Dialling (ISD) was introduced. By the year's end, subscribers from Cyprus could automatically dial telephone subscribers in 34 countries of the world.

For comparative purposes, nowadays the figure has risen to 241 countries.

The Arrival of Space Communications

International telephony was further developed, especially with respect to flexibility and reliability when in 1980 the Makarios Satellite Earth Station was inaugurated. The Makarios-1 Standard A Antenna Station communicating via the Atlantic Ocean Region INTELSAT Satellite was operated with 51 international channels.

In 1981, the APOLLO submarine cable system connecting Cyprus to Greece was commissioned and in 1982 the MAKARIOS-2 Satellite Earth Station was put into operation. This station employed Standard B Antenna and operated with the Indian Ocean Region INTELSAT Satellite. It provided telephone channels to Australia and the Middle East, as well as sound programme and television reception facilities.

In February 1981, the SPADE system for the MAKARIOS-1 station was introduced enabling international telephone service-access on demand. In 1986, the MAKARIOS-3 Satellite Earth Station was put into operation.

Nowadays, the island is primarily connected with the outside world via 6 major satellite earth stations and a number of smaller ones, as well as through 8 submarine cables, 5 of which employ fibre optic technology.

The earth stations operate via INTELSAT and EUTELSAT, as well as via the Russian satellite network, serving the ever-increasing telecommunications traffic between Cyprus and Russia and other countries of the Commonwealth of Independent States.

Moreover, in accordance with its policy of establishing Cyprus as a telecommunications hub in the Eastern Mediterranean and the Middle East region, CYTA has, over the past few years, invested heavily in a submarine fibre optic cable network connecting Cyprus with neighbouring countries and allowing worldwide cable access.

Today, submarine fibre optic cable systems connect Cyprus with Greece, Syria, Israel, Lebanon and Egypt. The latter constitutes part of the vast submarine cable network SEA-ME-WE 2 which stretches from Singapore to Marseilles, with CYTA being one of the 60 telecommunications organisations which have participated in its establishment.

Jointing of underground fibre optic cable

The international submarine network enables Internet providers in the eastern Mediterranean and Middle East region to be linked through the Cyprus hub to the Internet network. This is achieved by offering an exceptionally high quality of service at competitive prices.

Furthermore, CYTA with an investment of U.S.$28,5 million, has made Cyprus a landing point of SEA-ME-WE 3, a 38.000 km long 10 Gbit/s state-of-the-art submarine fibre optic cable network linking the Pacific Rim, South Eastern Asia, the Middle East and Western Europe. The planned Ready-for-Service date of the SEA-ME-WE 3 network is the end of 1998, up to South Eastern Asia, and early 1999 for its extension to the Pacific Rim.

CYTA is also involved in the establishment of a submarine fibre optic cable system in the Black Sea (BSFOCS) which will provide the countries of the Black Sea region with access to Europe and the Middle East.

Digital Telephone Exchange

During 1985 the installation of an overlay digital transmission commenced, comprising medium and high capacity digital microwave radio systems, optical fibre transmission systems, digital line transmission systems over symmetrical pairs and associated muldex equipment and transmultiplexers.

In 1986, the digital network was introduced by using an overlay approach in parallel with the existing analogue network. By the end of the year there were 11 exchanges in operation which employed digital switching technology and accounted for 12,9% of the total line capacity.

At present Cyprus can boast one of the highest degrees of digitalisation anywhere, with over 83% of its switching capacity and 96% of its transmission network now digital, while it is anticipated that they will be fully digital before the turn of the century.

Furthermore, the Authority is in the process of implementing a full scale Synchronous Digital Hierarchy (SDH) Network at national, regional and local level which will be completed in phases by the end of the century.

Customer Service

CYTA places special emphasis on customer service and to this end it has been expanding and upgrading its Customer Service Offices in terms of functionality, equipment and information systems, as well as appearance and decor. The expansion involves the establishment of a Customer Service Office in a prime area in the capital of Cyprus, Nicosia. A permanent exhibition on Telecommunications

(past, present and future) will also be housed, in the same building.

Portfolio of services

Apart from conventional telecommunications services such as telephony, telex and telegraphy, the Authority offers a portfolio of other services such as the Packet Switched Public Data Network (CYTAPAC) and Value-Added services such as videoconferencing audiotex and access to the Internet.

In the fast growing area of mobile communications, CYTA is also making strides to enable users to keep in touch while on the move. Two different types of mobile telephony are offered today: an NMT-900 and a GSM type (CYTAGSM). As a result of the high demand for the provision of the GSM Service, CYTA's 5 year development plan provides for an increase in network capacity from 80.000 to 180.000 subscribers.

Furthermore, in 1997 a new Integrated Services Digital Network (ISDN) was introduced to the national and international network. The ISDN network offers a host of advantages and a number of new services such as video-telephony, file transfer, leased line back up, group-4 fax, LAN access/interconnection etc.

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Future projects

In order to upgrade the quality of its network an enhance the services offered to its customers, CYTA has embarked on an ambitious development programme which provides for the introduction of state-of-the-art technology to its network and a number of new services, including Videotex, the ERMES Pan-European Service and broadband services (ATM and Frame Relay).

The Authority plans also include the procurement in 1998 of an Intelligent Network, which will improve substantially the quality of a number of existing services such as freephone services, audiotex and others, and will enable the introduction of a number of new services such as Virtual Private Networks, Universal Personal Telecommunications, Credit Card Calling etc.

Furthermore, an International Network Traffic Management System is due to be established in 1998, while transmission systems utilising Synchronous Digital Hierarchy (SDH) technology will continue to be installed through the year.

CYTA's future plans also include the introduction of a new type of payphone using prepaid chip-cards by the middle of 1998.

*"Kionia" Repeater
Station*

Strategic Alliances

CYTA's aim is for Cyprus to be a telecommunications
hub not only in terms of having an extensive network
infrastructure in the area but also with regard to the
provision of services, by forming strategic alliances with
other telecommunications organisations.

In December 1997 an agreement was signed between
Digimed Communications Ltd, which is a fully owned
subsidiary of CYTA, and the French Company Matra
Marconi Space for the creation of EAST Ltd company.
This company will promote the operation of a satellite
system and mobile telecommunication services to the
countries of the Eastern and Western Europe, Middle
East and Africa, complementing and supporting their existing networks, especially
in remote areas.

The Challenge of Competition

CYTA is fully aware of international developments in the field of
telecommunications, especially the introduction of competition and the
liberalisation of services.

Despite numerous difficulties and a certain degree of inflexibility caused by the
existing legal framework in which it currently operates, CYTA is doing everything
in its power to transform its internal environment, to increase productivity even
more, and to prepare itself for any future challenges.

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