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OPERATIONS AND QUALITY OF SERVICE
MOBILE SERVICE

INTERNATIONAL TWO-WAY MULTIPOINT TELECOMMUNICATION SERVICE VIA SATELLITE

ITU-T Recommendation F.141

(Previously “CCITT Recommendation”)

FOREWORD

The ITU-T (Telecommunication Standardization Sector) is a permanent organ of the International Telecommunication Union (ITU). The ITU-T is responsible for studying technical, operating and tariff questions and issuing Recommendations on them with a view to standardizing telecommunications on a worldwide basis.

The World Telecommunication Standardization Conference (WTSC), which meets every four years, establishes the topics for study by the ITU-T Study Groups which, in their turn, produce Recommendations on these topics.

The approval of Recommendations by the Members of the ITU-T is covered by the procedure laid down in WTSC Resolution No. 1 (Helsinki, March 1-12, 1993).

ITU-T Recommendation F.141 was prepared by ITU-T Study Group 1 (1993-1996) and was approved under the WTSC Resolution No. 1 procedure on the 1st of June 1994.

NOTE

In this Recommendation, the expression "Administration" is used for conciseness to indicate both a telecommunication administration and a recognized operating agency.

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SUMMARY

This Recommendation provides service and operational guidelines for the provision of international two-way multipoint telecommunication service via satellite.

International two-way multipoint telecommunication service via satellite is defined as a service provided to customers by Recognized Operating Agencies (ROAs) for the two-way transmission of information via satellite, between a central facility and a multiplicity of points where transmit/receive earth stations are located.

Recommendation F.141

INTERNATIONAL TWO-WAY MULTIPOINT TELECOMMUNICATION SERVICE VIA SATELLITE

(Geneva, 1994)

1 Scope

This Recommendation provides operational guidelines and a service description including quality of service requirements for international two-way multipoint telecommunication service via satellite.

1.1 Definition of service

international two-way multipoint telecommunication service via satellite is defined as a service provided to customers by Recognized Operating Agencies (ROAs) for the two-way transmission of information via satellite, between a central facility and a multiplicity of points where transmit/receive earth stations are located.

2 Service description

2.1 Functional elements of service provision

An international two-way multipoint telecommunication service via satellite generally includes the following nine elements (see Figure 1):

1) the customer central facility equipment;

2) the links between the customer central facility equipment and the service provider command and control management centre;

3) the service provider command and control management centre;

4) the link between the master earth station and the service provider command and control management centre;

5) the master earth station (hub);

6) the space segment capacity;

7) the remote earth station antennas;

8) the link between transmit/receive remote earth station antenna and user terminal equipment;

9) the user terminal equipment.

2.2 Service provision

The service may be provided on either a full-time (24-hour) basis, a scheduled part-time basis or an occasional basis. Where the hub and one or more of the remote earth stations are in different countries, the provision of service is governed by the appropriate national and international regulations and subject to agreement between the ROAs. The ROA in each country should be made aware of their scope of the service coverage and the traffic routing capabilities.

2.3 Types of service

The service may be digital or analogue, provided in the form of inbound (remote to hub) and outbound (hub to remote) channels at rates depending on the application and within the capacity available. The data rates, bandwidths, and frequencies of the outbound channels and those of the inbound channels may be different.

2.4 Area of service

The service may be provided on a national and/or international basis in accordance with relevant national regulatory requirements.

2.5 Service configuration

2.5.1 As illustrated in Figure 1, there are generally nine functional elements in the provision of an international two-way multipoint telecommunication service via satellite.

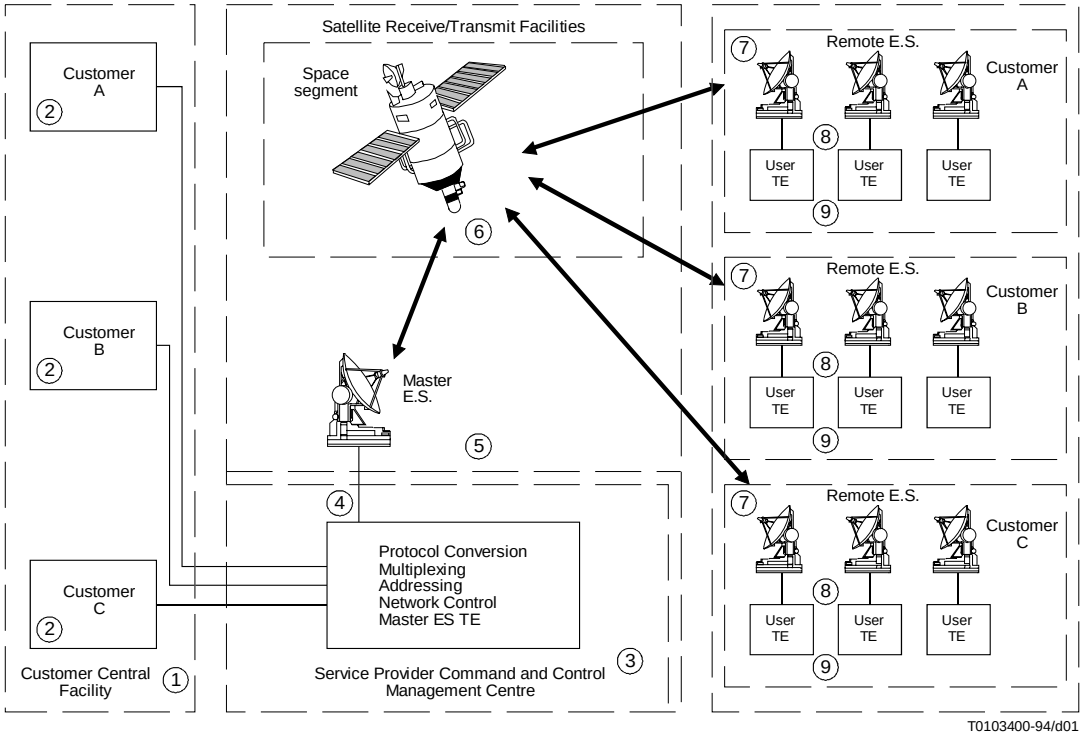

FIGURE 1/F.141

International two-way multipoint telecommunication service via satellite

2.5.2 Owing to the need for flexibility, the service may be adapted to meet a variety of requirements taking into account the regulations governing the operation of the space segment providers and ROAs involved.

2.5.3 Subject to national regulatory arrangements, interconnection may be offered with the public switched network, a customer's private network and/or by other arrangements designed to meet specific customer requirements.

2.5.4 The two-way operation is in a star configuration enabling communications between several remote locations and the hub, and communications among remote locations through the hub. The two-way operation can be achieved under proven multiple access procedures, such as those defined in G-, M-, and N-Series Recommendations.

2.5.5 The master hub, consisting of a master earth station and a service provider command and control management centre, may be dedicated to a single customer or may be shared by a number of customers; it may be located either on a customer's site or may be remotely connected.

2.5.6 The conditions for use of the master earth station (5), the remote transmit/receive earth stations (7), the service provider command and control management centre (3) and the links (2, 4) are a national matter.

2.5.7 The conditions for the use of the space segment capacity (6) are defined by the satellite system space segment providers.

2.5.8 The remote transmit/receive earth stations (7) would normally be located at the user premises near the user equipment; but the user equipment may also be remotely connected by a link (8) to the transmit/receive earth stations.

3 Quality of Service

The efficiency of operation and therefore the quality of service provided to the customers are linked to the relationship of all parties which contribute to the provision of the service, i.e. the technical equipment and the entities in charge of the operation.

4 Service availability

The service availability, as defined in CCITT Recommendation X.140, is the ratio of aggregate time, during which satisfactory or tolerable service is or could be provided, to the total observation period. Service availability depends on the class of space segment capacity, the earth station configuration and interference effects, and the bit error rate required. It is not possible to specify a service availability requirement for all two-way multipoint telecommunication services implementations via satellite. The availability for each implementation will have to be calculated on an individual basis considering all the points mentioned above.

5 Class of space segment capacity

Services offered may take account of classes of space segment capacity available from the space segment provider. The following classes of space segment capacity may be utilized to provide services:

a) *Non-pre-emptible* – A service which may not be interrupted or terminated for the provision of a service to another customer. There are two types of non-pre-emptible services:

   1) *protected* – A service for which restoration is guaranteed; and

   2) *unprotected* – A service for which restoration is not guaranteed and which may only be restored subject to availability of an alternate facility.

b) *Pre-emptible* – A service which may be interrupted to provide a service of higher priority.