



INTERNATIONAL TELECOMMUNICATION UNION

ITU-T

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

E.773

(10/96)

SERIES E: TELEPHONE NETWORK AND ISDN

Quality of service, network management and traffic
engineering – Traffic engineering – Mobile network traffic
engineering

**Maritime and aeronautical mobile grade of
service concept**

ITU-T Recommendation E.773

(Previously CCITT Recommendation)

ITU-T E-SERIES RECOMMENDATIONS
TELEPHONE NETWORK AND ISDN

OPERATION, NUMBERING, ROUTING AND MOBILE SERVICES	
INTERNATIONAL OPERATION	E.100–E.229
OPERATIONAL PROVISIONS RELATING TO CHARGING AND ACCOUNTING IN THE INTERNATIONAL TELEPHONE SERVICE	E.230–E.299
UTILIZATION OF THE INTERNATIONAL TELEPHONE NETWORK FOR NON-TELEPHONY APPLICATIONS	E.300–E.329
ISDN PROVISIONS CONCERNING USERS	E.330–E.399
QUALITY OF SERVICE, NETWORK MANAGEMENT AND TRAFFIC ENGINEERING	
NETWORK MANAGEMENT	E.400–E.489
International service statistics	E.400–E.409
International network management	E.410–E.419
Checking the quality of the international telephone service	E.420–E.489
TRAFFIC ENGINEERING	E.490–E.799
Measurement and recording of traffic	E.490–E.505
Forecasting of traffic	E.506–E.509
Determination of the number of circuits in manual operation	E.510–E.519
Determination of the number of circuits in automatic and semi-automatic operation	E.520–E.539
Grade of service	E.540–E.599
Definitions	E.600–E.699
ISDN traffic engineering	E.700–E.749
Mobile network traffic engineering	E.750–E.799
QUALITY OF TELECOMMUNICATION SERVICES: CONCEPTS, MODELS, OBJECTIVES AND DEPENDABILITY PLANNING	E.800–E.899
Terms and definitions related to the quality of telecommunication services	E.800–E.809
Models for telecommunication services	E.810–E.844
Objectives for quality of service and related concepts of telecommunication services	E.845–E.859
Use of quality of service objectives for planning of telecommunication networks	E.860–E.879
Field data collection and evaluation on the performance of equipment, networks and services	E.880–E.899

For further details, please refer to ITU-T List of Recommendations.

ITU-T RECOMMENDATION E.773

MARITIME AND AERONAUTICAL MOBILE GRADE OF SERVICE CONCEPT

Summary

This Recommendation introduces the Grade of Service (GOS) concept for both satellite- and terrestrial-based maritime and aeronautical mobile systems. This Recommendation confines initially the GOS concept to circuit-switched user plane traffic. Signalling traffic issues associated with the user plane traffic are covered under separate Recommendations.

Source

ITU-T Recommendation E.773 was prepared by ITU-T Study Group 2 (1993-1996) and was approved under the WTSC Resolution No. 1 procedure on the 8th of October 1996.

FOREWORD

ITU (International Telecommunication Union) is the United Nations Specialized Agency in the field of telecommunications. The ITU Telecommunication Standardization Sector (ITU-T) is a permanent organ of the 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).

In some areas of information technology which fall within ITU-T's purview, the necessary standards are prepared on a collaborative basis with ISO and IEC.

NOTE

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

© ITU 1997

All rights reserved. No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from the ITU.

CONTENTS

	Page
1 Scope.....	1
2 References.....	1
3 Definitions	1
4 Abbreviations.....	1
5 GOS concept	2
6 Principles to allocate GOS targets	2
7 Principles to select GOS maritime and aeronautical mobiles and fixed network interconnection parameters	3
8 History.....	3

Recommendation E.773

MARITIME AND AERONAUTICAL MOBILE GRADE OF SERVICE CONCEPT

(Geneva, 1996)

1 Scope

This Recommendation introduces the Grade of Service (GOS) concept for both satellite- and terrestrial-based maritime and aeronautical mobile systems. Circuit-switched and packet-switched services are provided by these systems.

This Recommendation confines initially the GOS concept to circuit-switched user plane traffic. Signalling traffic issues associated with the user plane traffic are covered under separate Recommendations.

2 References

The following Recommendations and other references contain provisions which, through reference in this text, constitute provisions of this Recommendation. At the time of publication, the editions indicated were valid. All Recommendations and other references are subject to revision; all users of this Recommendation are therefore encouraged to investigate the possibility of applying the most recent edition of the Recommendations and other references listed below. A list of the currently valid ITU-T Recommendations is regularly published.

The following Recommendations contain material that is either relevant to or provides background for this Recommendation:

- ITU-T Recommendation E.220 (1996), *Interconnection of public land mobile networks (PLMN)*.
- ITU-T Recommendation E.600 (1993), *Terms and definitions for traffic engineering*.
- CCITT Recommendation E.720 (1988), *ISDN Grade of Service concept*.
- ITU-T Recommendation E.752 (1996), *Reference connections for traffic engineering of maritime and aeronautical systems*.
- ITU-T Recommendation E.770 (1993), *Land mobile and fixed network interconnection traffic Grade of Service concept*.
- ITU-T Recommendation E.771 (1996), *Network Grade of Service parameters and target values for circuit-switched public land mobile services*.
- ITU-T Recommendation E.774 (1996), *Network Grade of Service parameters and target values for maritime and aeronautical mobile services*.
- ITU-T Recommendation F.110 (1996), *Operational provision for the maritime mobile service*.

3 Definitions

Definitions relevant to this Recommendation are contained in Recommendation E.752.

4 Abbreviations

For the purposes of this Recommendation, the following abbreviation is used.

5 GOS concept

For maritime and aeronautical mobile systems, transmission quality of the radio link, user behaviour and spectrum re-use are factors that may impact traffic Grade of Service parameters in a unique way. In turn, the Quality of Service (QOS) experienced by the users is dependent on the defined GOS targets.

The key aspects which characterize maritime and aeronautical services in a unique way are the mobility on a global scale for maritime service and the high-speed of users movement for the aeronautical service. This contributes to the complexity of the supporting communication infrastructure and the related control actions. Although future systems may envisage sophisticated radio coverage architecture, such as "spot beam" and "global beam" operation, GOS parameters for current systems apply for "global beam" only.

Similarly as with land mobile systems, users can appreciate GOS directly through failure to establish a connection due to poor channel quality, deterioration of the transmission quality on and possible cut-off of an established connection.

The identified GOS parameters may be utilized to define the GOS targets for different segments of the connection path between a maritime/aeronautical user and the interfacing network element in the fixed domain. The target values of the GOS parameters shall be set under normal and overload conditions.

6 Principles to allocate GOS targets

The principles to allocate GOS targets for connections including a maritime or aeronautical network segment are generally the same as those described in Recommendation E.720. Accordingly, GOS target values are initially set end-to-end (user GOS) and subsequently allocated to network segments.

In a connection, maritime and aeronautical network segments may replace, from a logical point of view, fixed network counterparts. However, it may not be possible, in general, for maritime and aeronautical network segments of existing systems to cost-effectively maintain some (or all) of the performance targets set for GOS parameters associated with corresponding fixed network segments. This is consistent with the current perception of maritime and aeronautical users that a service provided via a maritime and aeronautical network, or network segment, can hardly compare on an equal basis with the same service fully provided through the fixed network.

A differentiation of the GOS performance targets for specific network segments and in specific situations with respect to their fixed network logical counterparts is introduced in principle. The differentiation must, however, guarantee that specific bounds to the end-to-end GOS parameters values are met.

In connections comprising both maritime (or aeronautical) and fixed network segments, the allocation of GOS targets for the fixed network segments shall be the same as for end-to-end fixed network connections. In other words, interconnection of maritime and aeronautical and fixed networks should not impose any requirement for additional performance nor any restriction in the normal operation of the fixed network, in accordance with Recommendation E.220. This enables independent design and implementation of functional network elements, both fixed and maritime and aeronautical.

Different GOS budgets for the maritime and aeronautical network may result from different fixed network segment replacements.

The elements comprising a connection including maritime or aeronautical network segments are depicted in Figure 1. GOS parameters and target values are defined for the Satellite/Terrestrial Subsystem and the Ground Subsystem, as introduced in Recommendation E.752.

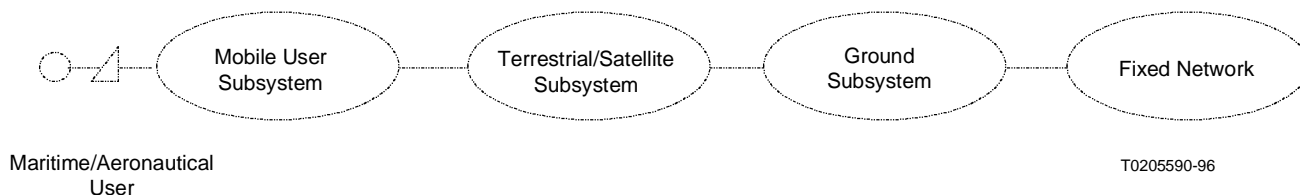


FIGURE 1/E.773

Elements in a connection including maritime or aeronautical network segments

7 Principles to select GOS maritime and aeronautical mobiles and fixed network interconnection parameters

For further study.

8 History

This is the first issue of Recommendation E.773.

ITU-T RECOMMENDATIONS SERIES

- Series A Organization of the work of the ITU-T
- Series B Means of expression
- Series C General telecommunication statistics
- Series D General tariff principles
- Series E Telephone network and ISDN**
- Series F Non-telephone telecommunication services
- Series G Transmission systems and media
- Series H Transmission of non-telephone signals
- Series I Integrated services digital network
- Series J Transmission of sound-programme and television signals
- Series K Protection against interference
- Series L Construction, installation and protection of cables and other elements of outside plant
- Series M Maintenance: international transmission systems, telephone circuits, telegraphy, facsimile and leased circuits
- Series N Maintenance: international sound-programme and television transmission circuits
- Series O Specifications of measuring equipment
- Series P Telephone transmission quality
- Series Q Switching and signalling
- Series R Telegraph transmission
- Series S Telegraph services terminal equipment
- Series T Terminal equipment and protocols for telematic services
- Series U Telegraph switching
- Series V Data communication over the telephone network
- Series X Data networks and open system communication
- Series Z Programming languages