INTERNATIONAL TELECOMMUNICATION UNION

CCITT

E.430

THE INTERNATIONAL
TELEGRAPH AND TELEPHONE
CONSULTATIVE COMMITTEE

TELEPHONE NETWORK AND ISDN

QUALITY OF SERVICE, NETWORK MANAGEMENT AND TRAFFIC ENGINEERING

QUALITY OF SERVICE FRAMEWORK

Recommendation E.430

Geneva, 1992

FOREWORD

The CCITT (the International Telegraph and Telephone Consultative Committee) is a permanent organ of the International Telecommunication Union (ITU). CCITT 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 Plenary Assembly of CCITT which meets every four years, establishes the topics for study and approves Recommendations prepared by its Study Groups. The approval of Recommendations by the members of CCITT between Plenary Assemblies is covered by the procedure laid down in CCITT Resolution No. 2 (Melbourne, 1988).

Recommendation E.430 was prepared by Study Group II and was approved under the Resolution No. 2 procedure on the 16th of June 1992.

CCITT NOTE

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

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QUALITY OF SERVICE FRAMEWORK

1 Introduction

A typical user is not interested in how a particular service is implemented, but he is interested in comparing one service with another in terms of certain universal performance parameters which apply to any service. Quality of Service (QOS) is expressed by parameter which:

— do not depend on assumptions about the network internal design;

— are referred to in terms of user-perceivable effects and not by their causes in the network;

— are described in network independent terms and create a common language understandable by both the user and the provider;

— take into account all aspects of the service which can be objectively measured at the service access point.

A network provider is concerned with the efficiency and effectiveness of the network. From the network providers point of view, network performance is best expressed by parameters which give information for:

— system development;

— network planning;

— operation and maintenance.

The user orientated QOS parameters provide a valuable framework for network design, but they are not necessarily usable in specifying network performance requirements for particular connections.

Similarly, the network performance (NP) parameters primarily determine the Quality of Service, but they do not, necessarily, describe that quality in a way that is meaningful to users.

Both types of parameters are needed, and their values must be related if a network is to be effective in serving its users. The definition of QOS and NP parameters should make mapping of values clear in cases where there is not a simple one-to-one relationship between them.

2 Purpose

It is recognised that NP parameters make a major contribution to the QOS. The purpose of this Recommendation is to identify a relationship between Quality of Service (QOS) and network performance (NP) parameters.

3 Scope

This Recommendation covers the technical performance of a connection. For compatibility and completeness, Quality of Service aspects are considered in the form of a high level 3×3 matrix.

4 Matrix

A matrix has been designed to enable cross correlation between QOS parameters and relevant QOS and NP Recommendations covering all aspects of telecommunications.

The matrix forms the prime structure for identifying all QOS sources and relationships, relevant to network performance.

The intention is that, by cross-relating the appropriate general identifiers, it will be possible to source the required detailed parameter.

The performance parameters are classified according to the three basic communication functions; access, user information transfer and disengagement, and are described according to speed, accuracy and dependability criteria.

Speed is the time-related criterion used to describe the function performance.

Accuracy is the criterion that describes the degree of correctness with which the function is performed.

Dependability is the performance criterion that describes the degree of certainty (or surety) with which a function is performed regardless of speed or accuracy, but within a given observation interval (from Recommendation I.350).

Criterion/Function	Speed	Accuracy	Dependability
Connection set-up (access)	E.431 See List A	E.845 (Rev.1) See List B	E.845, E.846 See List C
User information transfer	E.432 See List D	E.432, E.855 (Rev.1) See List E	E.850 (Rev.1) See List F
Connection disengagement (release)	E.431 See List G	See List H	See List I

FIGURE 1/E.430

High-level 3 × 3 matrix

TABLE 1/E.430

Recommendations related the entries of the 3 × 3 matrix

List A	List B	List C
E.431 X.135 I.352 E.422 E.427 E.721	E.845 (Rev.1) X.136 I.352 E.422 E.424 E.425 E.426 E.427	E.845 E.846 X.136 I.352
List D	**List E**	**List F**
E.432 X.135 I.35B I.35C I.35P	G.821 G.82x E.422 E.424 E.432 E.855 (Rev.1) X.136 I.35B I.35P	E.850 (Rev.1) X.136 I.35C I.35P I.35B E.428
List G	**List H**	**List I**
E.431 X.135 I.352 E.721	 X.136 I.352 	 X.136 I.352