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ITU-T Q.930

TELECOMMUNICATION
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DIGITAL SUBSCRIBER SIGNALLING SYSTEM No. 1

NETWORK LAYER

DIGITAL SUBSCRIBER SIGNALLING SYSTEM No. 1 (DSS 1) – ISDN USER-NETWORK INTERFACE LAYER 3 – GENERAL ASPECTS

ITU-T Recommendation Q.930

(Previously "CCITT Recommendation")

FOREWORD

The ITU Telecommunication Standardization Sector (ITU-T) is a permanent organ of the International Telecommunication Union. 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, established the topics for study by the ITU-T Study Groups which, in their turn, produce Recommendations on these topics.

ITU-T Recommendation Q.930 was revised by the ITU-T Study Group XI (1988-1993) and was approved by the WTSC (Helsinki, March 1-12, 1993).

NOTES

1 As a consequence of a reform process within the International Telecommunication Union (ITU), the CCITT ceased to exist as of 28 February 1993. In its place, the ITU Telecommunication Standardization Sector (ITU-T) was created as of 1 March 1993. Similarly, in this reform process, the CCIR and the IFRB have been replaced by the Radiocommunication Sector.

In order not to delay publication of this Recommendation, no change has been made in the text to references containing the acronyms "CCITT, CCIR or IFRB" or their associated entities such as Plenary Assembly, Secretariat, etc. Future editions of this Recommendation will contain the proper terminology related to the new ITU structure.

2 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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Recommendation Q.930

DIGITAL SUBSCRIBER SIGNALLING SYSTEM No. 1 (DSS 1) – ISDN USER-NETWORK INTERFACE LAYER 3 – GENERAL ASPECTS

(Málaga-Torremolinos, 1984; modified at Helsinki, 1993)

1 General

1.1 Introduction

This Recommendation describes in general terms the D-channel layer 3 functions and protocol employed across an ISDN user-network interface. Details are provided in Recommendations in the Q.930-Series and in the Q.950-Series.

The term "layer 3" is a general term used in these Recommendations to refer to the procedures described in Recommendation Q.931 [1] and in Recommendation Q.932 [2]. The term "layer 3" does not correspond to layer 3 of the OSI protocol reference model or to layer 3 of the control plane of the ISDN protocol reference model.

The layer 3 protocol provides the means to establish, maintain and terminate network connections across an ISDN between communicating application entities. In addition, it provides generic procedures which may be used for the invocation and operation of supplementary services. The detailed description of the layer 3 protocol in Recommen-dation Q.931, Recommendation Q.932 and Recommendation Q.933 [3] make use of the definition and terminology concepts of the ISDN protocol reference model given in Recommendation I.320 [4].

Procedures for basic call, to support a range of bearer services and teleservices are described. Recommendation Q.931 contains procedures for circuit-mode and packet-mode bearer capabilities. Recommendation Q.933 contains procedures for frame-mode bearer capabilities. Recommendation Q.939 [5] contains a detailed description of the coding of the compatibility information elements required to identify the various bearer services and teleservices.

Recommendation Q.932 contains a number of generic protocols for the provision of supplementary services.

The application of the functional protocol of Recommendation Q.932 to the detailed operation of each individual supplementary service will be the subject for the Recommendations in the Q.950-Series.

1.2 Connection control by the user of an ISDN requires:

a) application of layer 3 protocol for control of circuit-switched connections, packet-switched and/or frame-mode connections, in combination with;

b) application of an appropriate data link layer service (supported by an appropriate physical layer service).

Layer 3 provides to the user the functions associated with the establishment and operation of a network connection. Layer 3 makes invisible to the user how it utilizes underlying resources such as data link connections to provide a network connection.

1.3 Services provided by the data link layer

Layer 3 utilizes functions and services provided by the data link as defined in Recommendations Q.920 [6] and Q.921 [7]. These services are summarized below:

a) establishment of data link connections;

b) error-protected transmission of data;

c) re-establishment of data link connection (indicating loss of information).

1.4 Symmetry of the layer 3 protocol

It is intended that the layer 3 protocol is fully symmetrical to enable direct user-to-user communication.

In order to achieve this objective, several options are incorporated in Recommendation Q.931. They are described in Annex D/Q.931.

2 Structure of layer 3 Recommendations

The following is the structure of the layer 3 Recommendations:

Q.930 – ISDN user-network interface layer 3 – General aspects

Q.931 – ISDN user-network interface layer 3 specification for basic call control

Q.932 – Generic procedures for the control of ISDN supplementary services

Q.933 – Specification for frame-mode basic call control

Q.939 – Typical DSS 1 service indicator codings for ISDN telecommunications services

Q.950 – Supplementary service protocols – Structure and general principles

Further supplementary service Recommendations are described in Recommendation Q.950 [8].

3 Interface between layer 3 and the adjacent layers

3.1 Interface between layer 3 and data link layer

Overview of the interface between ISDN user-network interface layer 3 and the data link layer from the view point of the data link layer is given in 2/Q.920. Primitives and primitive procedures for this interface are specified in 4/Q.921.

3.2 Interface to call control

Both basic call and supplementary service protocols interface to call control. A general view of this structure is given in Figure 1.

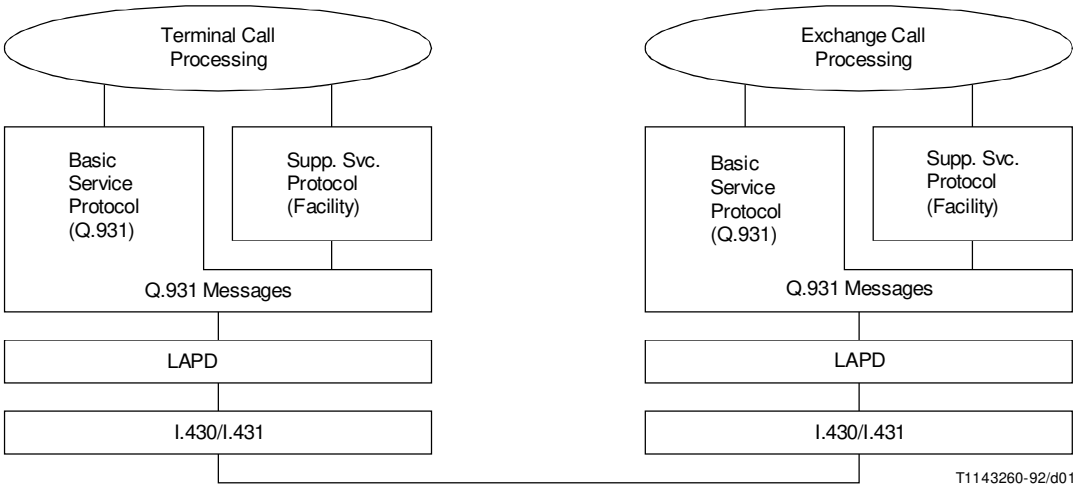

FIGURE 1/Q.930

Modelling of basic and supplementary services

3.3 Abbreviations used in Recommendations Q.930(I.450) and Q.931(I.451)

See list at the end of Recommendation Q.931.

References

[1] CCITT Recommendation *ISDN user-network interface layer 3 specification for basic call control*, Rec. Q.931(I.451).

[2] CCITT Recommendation *Generic procedures for the control of ISDN supplementary services*, Rec. Q.932(I.452).

[3] CCITT Recommendation *Digital subscriber Signalling System No. 1 (DSS 1) – Signalling specification for frame mode basic call control,* Rec. Q.933.

[4] CCITT Recommendation *ISDN protocol reference model*, Rec. I.320.

[5] CCITT Recommendation *Typical DSS 1 service indicator codings for ISDN telecommunications services*, Rec. Q.939.

[6] CCITT Recommendation *ISDN user-network interface data link layer – General aspects*, Rec. Q.920(I.440).

[7] CCITT Recommendation *ISDN user-network interface data link layer specification*, Rec. Q.921(I.441).

[8] CCITT Recommendation *Supplementary services protocols – Structure and general principles*, Rec. Q.950.