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CONSULTATIVE COMMITTEE

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SERIES F: NON-TELEPHONE TELECOMMUNICATION
SERVICES

Data transmission services

**Service and operational principles for
packet-switched public data networks**

Reedition of CCITT Recommendation F.601 published in
Blue Book, Fascicle II.5 (1989)

NOTES

1 CCITT Recommendation F.601 was published in Fascicle II.5 of the *Blue Book*. This file is an extract from the *Blue Book*. While the presentation and layout of the text might be slightly different from the *Blue Book* version, the contents of the file are identical to the *Blue Book* version and copyright conditions remain unchanged (see below).

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

Recommendation F.601

SERVICE AND OPERATIONAL PRINCIPLES FOR PACKET-SWITCHED PUBLIC DATA NETWORKS

The CCITT

considering

- (a) that Recommendation X.1 specifies the user classes of service applicable to networks offering packet-switched services;
- (b) that Recommendation X.2 specifies the virtual call service as an essential service to be provided by all networks offering packet-switched services.
- (c) that Recommendation X.25 specifies the DTE/DCE interface for packet mode terminals in networks providing packet-switched services.
- (d) that Recommendation X.75 specifies signalling procedures between packet-switched networks.
- (e) that Recommendation X.92 specifies hypothetical reference connections packet-switched services;
- (f) that Recommendation X.96 specifies the call progress signals in public data networks;
- (g) that Recommendation X.110 specifies the routing plan to be applied in the international portion of networks providing packet-switched services;
- (h) that Recommendation X.121 specifies the international numbering plan for public data networks;
- (i) that Recommendation X.134 specifies boundaries and packet level reference events;
- (j) that Recommendation X.135 specifies the delay aspects of the grade of service in networks providing packet-switched services;
- (k) that Recommendation X.136 specifies the blocking aspects of the grade of service of networks providing packet-switched services;
- (l) that Recommendation X.137 specifies availability performance values for public data networks;
- (m) that Recommendation X.140 specifies the user-oriented quality of service parameters applicable to all services;
- (n) that Recommendation X.213 specifies the OSI network layer service;
- (o) that Recommendation F.600 specifies the general service and operational principles for public data transmission services.

unanimously declares

That the provisions specified in this Recommendation fix the rules to be followed for international data transmission services via packet-switched public data networks, PSPDN. The Recommendation covers service definitions, quality of service and provision of customer support aspects.

1 Introduction

1.1 Definition

1.1.1 The definition of packet-switched public data network (PSPDN) is found in Recommendation X.1.

1.1.2 Issues of an essentially technical nature concerning compatibility of terminals and connected equipment are dealt with in Recommendations A.20 and A.21.

1.2 Class of service (Recommendation X.2)

The definition of PSPDNs is found in Table 1/X.2.

1.3 *Types of traffic*

The packet-switched data transmission service accepts different types of traffic originated by the users either Permanent Virtual Circuits (PVC) or Virtual Calls (VC). The following table lists the most frequent of these types. Also indicated is a technical solution which could provide a definition of the corresponding type of traffic.

The following list is not exhaustive, but indicative only. New services may spawn different classifications, and possibly create the need to define new facilities in Recommendations X.25 and X.75.

<i>Traffic types</i>	<i>Possible technical solution</i>
Short transactions	Fast select with restriction process
Interactive (average duration and volume) transactions	No specific technical frame
Batch mode transactions	No specific technical frame Also possible on other services

The need to associate specific, or a group of specific, quality of service parameters to each of the perceived or identified traffic types is for further study.

2 **Terms**

2.1 **data transmission relations**

A data transmission relation between two terminal countries exists when there is between them an exchange of data traffic (and normally a settlement of accounts).

2.2 **data service calls**

Those data calls that relate to the operation of the international services via PSPDNs.

2.3 *Other terms*

These are given in the appropriate CCITT Recommendations in particular Annex A of Recommendation X.110.

3 **Access to the service**

Access can be either in a packet mode (Recommendations X.25 or X.32) or in a start-stop mode (Recommendation X.28). Details of services offered are contained in Table 1/X.1, parts (c) and (d).

3.1 *Packet mode access*

3.1.1 *Access via X.25 DTEs*

The access to a packet-switched public data network by means of equipment capable of handling X.25 is automatic. In general, there is no human intervention required.

3.1.2 *Access via X.32 DTEs*

The access to a packet-switched public data network by means of equipment capable of handling and interfacing to the network using Recommendation X.32 in general does need manual intervention. Where manual intervention is required the operational procedures should be standardized (according to Recommendation A.20), user friendly, and automatable.

3.2 *Start-stop mode access*

The access to a packet-switched public data network by means of equipment capable of handling and interfacing to the network via Packet Assembler/Disassembler equipment is referred to in Recommendations X.3, X.28 and X.29. This access method in general requires manual intervention. Where manual intervention is required the operational procedures should be standardized (according to Recommendation A.20) and user-friendly. For further study.

3.3 *Access methods*

Log-on procedures should be user-friendly and provide security of access. The access methods as specified in §§ 3.1.2 and 3.2 require manual intervention and hence standardized log-on procedures are desirable. The international log-on procedure standardization is for further study.

4 **International data route**

4.1 An international data route is established and operated between Administrations for the specific purpose of providing an international packet-switched public data service.

4.2 The networks of the Administrations operating PSPDNs should be directly connected when justified. If international transit points are used, they should be restricted to the definitions given in Recommendation X.92.

4.3 For each PSPDN relation, the Administrations concerned should provide alternative data routes where practical, in accordance with Recommendation X.110.

4.4 In the event of interruption to the international data route every effort must be made to restore the service with minimum delay, taking into account Recommendation X.137.

5 **Duration of service**

International PSPDNs are in principle continuously available.

6 **Type of call**

Types of call correspond to calls based on PVCs or on VCs. Calls based on VCs may be service calls or subscriber calls, the latter being included in international accounting.

6.1 *Service calls*

Service calls should be kept to a minimum and not hamper subscriber calls.

7 **Modes of operation**

7.1 *General provisions*

Administrations should provide PSPDN services in accordance with Recommendations X.25, X.28 and, if possible, Recommendation X.32 protocols.

7.2 *Automatic operation*

All call operations in the network are automatic (see Recommendations X.25, X.28, X.29, X.75, etc.). Call operations may be manual or automatic when initiated by the user from his DTE.

7.3 *Semi-automatic and manual operation*

Semi-automatic and manual operation are not available.

8 **Directories - compilation and supply**

See Recommendation F.600, § 8.

9 **Call progress signals on PDNs**

Call progress signals are defined in Recommendation X.96. The interpretation of these codes shall be user friendly and details are for further study.

10 Quality of service

The quality of service criteria for the PSPDNs to be defined under the following headings taking due account of existing CCITT Recommendations.

10.1 Service availability

Service availability is the ratio of aggregate time during which satisfactory or tolerable service is or could be provided to the total observation period, Recommendation X.137 refers. This is for further study.

10.2 Percentage of effective calls

Technical aspects are examined in Recommendation X.136. For further study.

10.3 Data throughput

Technical aspects are examined in Recommendation X.135. For further study.

10.4 Bit error rate

A bit error rate (BER) of at least 1 in 10^6 is required. (For further study with particular respect to the effect of access networks.)

10.5 Transmission delay

This should be expressed in milliseconds. See Recommendation X.135. For further study.

10.6 Blocking aspects

Recommendation X.136 sets forth values of unavailability of the packet-switched service due to network congestion.

The end to end user service blocking aspects with particular respect to the network used is for further study.

11 Provisions of customer support

11.1 Procedures for updating customer information

The provision of service information should be available to the user on request. This is for further study.

11.2 Procedures for updating inter-administration information

For further study.

11.3 Procedures for handling customer international difficulties

Administrations should provide customer support facilities, which may include a “Help Desk”, to provide:

- accurate information from the operator at the time of problem;
- explanation of corrective action subsequent to failure;
- further assistance in the event of unresolved problems.

For further study.

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