INTERNATIONAL TELECOMMUNICATION UNION

# CCITT

THE INTERNATIONAL
TELEGRAPH AND TELEPHONE
CONSULTATIVE COMMITTEE

# I.500

(11/1988)

SERIES I: INTEGRATED SERVICES DIGITAL NETWORK (ISDN)

Internetwork interfaces

## General structure of the ISDN interworking Recommendations

Reedition of CCITT Recommendation I.500 published in the Blue Book, Fascicle III.9 (1989)

**NOTES**

1 CCITT Recommendation I.500 was published in Fascicle III.9 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 I.500**

## GENERAL STRUCTURE OF THE ISDN INTERWORKING RECOMMENDATIONS

*(Melbourne, 1988)*

### 1 Introduction

An ISDN is a network, in general evolving from a telephony Integrated Digital Network, that provides end-to-end digital connectivity to support a wide range of services, including voice and non-voice services, to which users have access by a limited set of standard multi-purpose user network interfaces. In contrast, existing dedicated networks have always been developed for specific (types of) services. Therefore, especially in the initial phase, the ISDN may support many services which in principle are still existent in dedicated networks. Thus, it is necessary to provide interworking between ISDN and dedicated networks to allow communication between terminals belonging to equivalent services offered through different networks.

There will be a need for interworking functions (IWF) between ISDN and dedicated networks to cope with the different environments given by the various networks. The structure of these IWFs showing the functions necessary for the mapping should be uniform to permit, if possible, a common use of functional parts in several IWFs. Detailed description of these IWFs, which (as far as is possible), should permit conveyance of ISDN features through existing networks, is given in the I.500-Series of Recommendations.

The I.500-Series of Recommendations deal with network aspects of interworking.

### 2 Organization of ISDN interworking Recommendations

Figure 1/I.500 shows the organization of the ISDN interworking Recommendations contained in the I.500-Series Recommendations, and the relationship with other Recommendations. The Recommendations in Figure 1/I.500 have been grouped by level of detail into:

– general level;

– scenario level;

– functional level;

– protocol level.

#### 2.1 *General level*

Recommendations I.500 and I.510 form the general level, i.e., the basis for Recommendations in the scenario and functional levels.

Recommendation I.500 describes the organization of the (ISDN interworking) Recommendations and the structure of the I.500-Series of Recommendations, whilst I.510 sets out the ISDN interworking principles.

#### 2.2 *Scenario level*

The scenario level of Recommendations describes the general arrangements for interworking between ISDN and ISDN, and between ISDN and dedicated networks. Recommendation I.515 specifying the parameter exchange which may be necessary for interworking situations, is also located at the scenario level.

#### 2.3 *Functional level*

The detailed level is formed by those Recommendations that are specifying the interworking functional requirements of the interworking scenarios shown in the scenario level Recommendations.

2.4 *Protocol level*

In the protocol level, the protocols listed are those that appear at the reference points $K_X$ and $N_X$.

*Note* – ISDN interworking related subjects that correspond to the above four levels are also dealt with in the Recommendations I.310, I.324, I.340, X.300 and X.301. Recommendation I.310 defines the interworking reference points and an outline description of IWF.

Recommendation I.340 defines ISDN Connection Types.

Recommendations X.300 and X.301 give the guiding principles and functions for interworking between networks offering data services described in Recommendations X.1 and X.10.

2.5 Recommendations which relate to interworking are shown in Figure 1/I.500 and are assigned to the levels listed in § 2. As the contents of some Recommendations cover more than one level, these Recommendations appear at each level to which they relate.

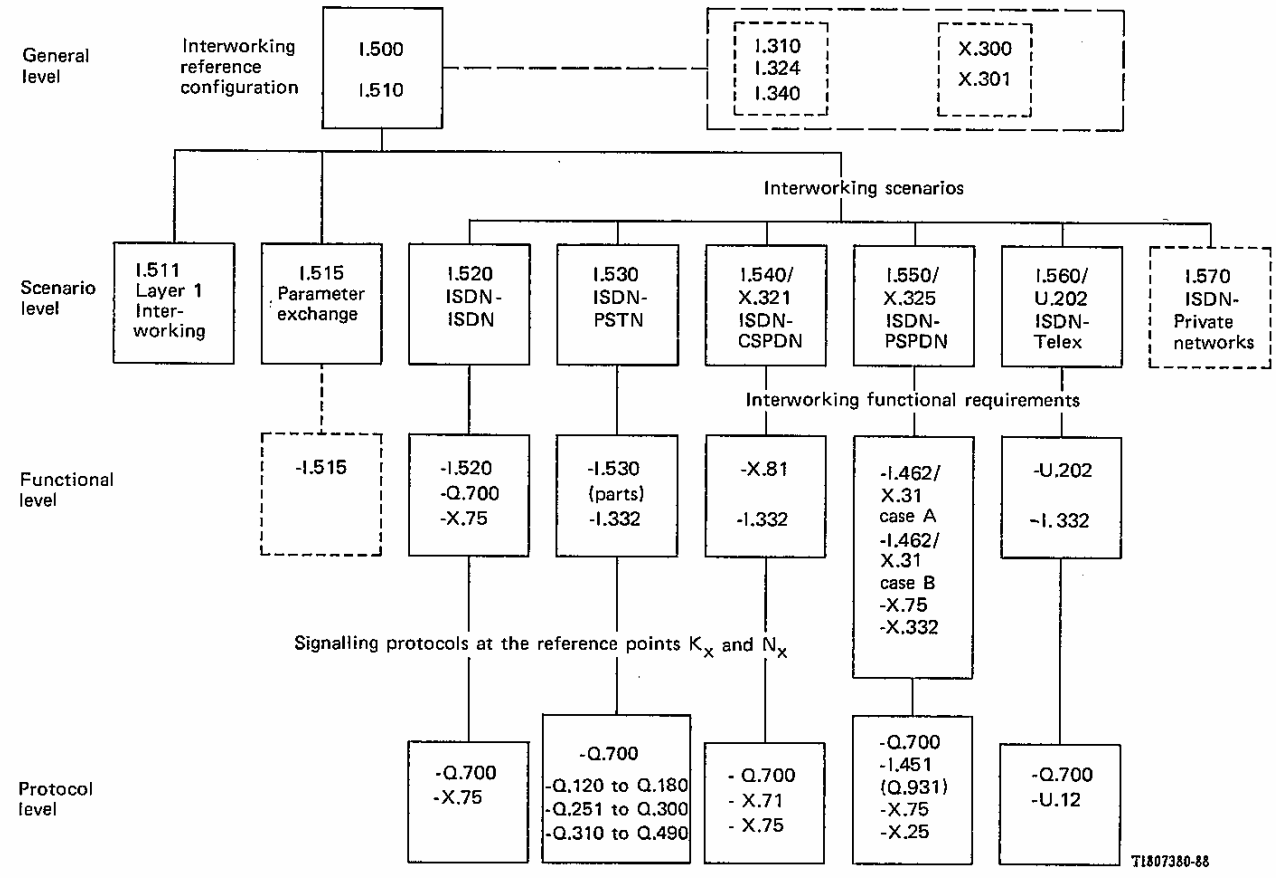


FIGURE 1/I.500

**Organization of ISDN interworking Recommendations**

## 3 References

The references are general to all I.500 Recommendations and are to be read in conjunction with Figure 1/I.500, where the organization of ISDN interworking Recommendations is shown.

3.1 *Interworking*

| | |
|---|---|
| X.300-Series | Interworking between public networks, and between public networks and other networks for the provision of data transmission services |
| I.324 | ISDN architecture functional model |
| I.340 | Connection types/elements for ISDN-ISDN interworking |
| X.31 | Support of packet-mode terminal equipment by an ISDN |
| X.81 | Interworking between an ISDN circuit switched and a circuit switched public data network (CSPDN) |

3.2 *Services and network capabilities*

| | |
|---|---|
| X.1 | International user classes of service in public data networks and integrated services digital networks (ISDNs) |
| X.2 | International data transmission services and optional user facilities in public data networks and ISDNs |
| X.10 | Categories of access for data terminal equipment (DTE) to public data transmission services |
| I.122 | Framework for providing additional packet-mode bearer services |
| I.200-Series | Service aspects supported by an ISDN |
| I.310 | ISDN – Network functional principles |
| I.320 | ISDN protocol reference model |
| I.325 | Reference configurations for ISDN connection types |
| I.411 | ISDN user-network interfaces – reference configurations |
| I.412 | ISDN user-network interfaces – Interface structures and access capabilities |
| I.420 | Basic rate user-network interface |
| I.421 | Primary rate user-network interface |
| I.441<br>(Q.921) | ISDN user-network interface data link layer specification |
| I.451<br>(Q.931) | ISDN user-network interface layer 3 specification |

3.3 *Signalling*

| | |
|---|---|
| Q.700 | Network protocols (MTP, ISUP, etc.) |
| Q.120-Q.180 | Specification of Signalling Systems No. 4 and No. 5 |
| Q.251-Q.300 | Specification of Signalling System No. 6 |
| Q.310-Q.490 | Specification of Signalling Systems R1 and R2 |
| X.25 | Interface between data terminal equipment (DTE) and data circuit equipment (DCE) for terminals operating in the packet-mode and connected to public data networks by dedicated circuits |
| X.71 | Decentralized terminal and transit control signalling system on international circuits between synchronous data networks |
| X.75 | Packet switched signalling system between public networks providing data transmission services |
| U.12 | Terminal and transit control signalling system for telex and similar services on international circuits (type D signalling) |

3.4 *Rate adaptation*

| | |
|---|---|
| I.460 | Multiplexing, rate adaptation and support of existing interfaces |
| I.461<br>(X.30) | Support of X.21, X.21 *bis* and X.20 *bis* based DTEs by an ISDN |
| I.462<br>(X.31) | Support of packet-mode terminal equipment by an ISDN |
| I.463<br>(V.110) | Support of DTEs with V-Series type interfaces by an ISDN |
| I.464 | Multiplexing, rate adaptation and support of existing interfaces for restricted 64 kbit/s transfer capability |
| I.465<br>(V.120) | Support by ISDN of DTEs with V-Series type interfaces with provision for statistical multiplexing |

3.5 *Numbering*

| | |
|---|---|
| X.121 | International numbering plan for public data networks |
| X.122 | Numbering plan interworking between a Packet Switched Public Data Network (PSPDN) and an Integrated Services Digital Network (ISDN) or Public Switched Telephone Network (PSTN) in the short-term |
| I.331<br>(E.164) | Numbering plan for the ISDN era |
| E.166 | Numbering plan interworking in the ISDN era |
| I.330 | ISDN numbering and addressing principles |
| I.332 | Numbering principles for interworking between ISDNs and dedicated networks with different numbering plans |
| F.69 | Plan for telex destination codes |

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

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Printed in Switzerland

Geneva, 2007