INTERNATIONAL TELECOMMUNICATION UNION

CCITT

I.464

THE INTERNATIONAL
TELEGRAPH AND TELEPHONE
CONSULTATIVE COMMITTEE

INTEGRATED SERVICES DIGITAL NETWORK (ISDN)

OVERALL NETWORK ASPECTS AND FUNCTIONS, ISDN USER-NETWORK INTERFACES

MULTIPLEXING, RATE ADAPTION AND SUPPORT OF EXISTING INTERFACES FOR RESTRICTED 64 kbit/s TRANSFER CAPABILITY

Recommendation I.464

Geneva, 1991

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 I.464 was prepared by Study Group XVIII and was approved under the Resolution No. 2 procedure on the 25th of October 1991.

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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MULTIPLEXING, RATE ADAPTION AND SUPPORT OF EXISTING INTERFACES FOR RESTRICTED 64 kbit/s TRANSFER CAPABILITY

(Malaga-Torremolinos 1984: amended at Melbourne, 1988 and in Geneva, 1991)

Restricted 64 kbit/s transfer capability is defined as “64 kbit/s octet-structured capability with the restriction that an all-zero octet is not permitted”.

The procedures given in Recommendations I.460, I.461(X.30), I.462(X.31), I.463(V.110) and I.465(V.120) for rate adaption, multiplexing and support of existing interfaces for 64 kbit/s, are fully compatible with the restricted 64 kbit/s transfer capability except for the following limitations:

i) For time division multiplexing, the eighth bit of each octet of the 64 kbit/s stream will be set to binary 1. This procedure is the same as that used for time division multiplexing into an unrestricted 64 kbit/s channel where the full 64 kbit/s is not utilized.

ii) For adapting X.25 DTEs as described in Recommendation I.462(X.31) where rate adaption (§ 7.3.2 of Recommendation X.31) is accomplished by "flag stuffing" or adapting DTEs for circuit mode as described in Recommendation I.465(V.120), for use with restricted 64 kbit/s transfer capabilities, the data is first rate adapted to a 56 kbit/s rate and the resulting bit stream is placed into a 64 kbit/s channel using the first seven bits of each byte with the eighth bit of each byte set to a binary 1. An alternative approach, which uses the full 64 kbit/s capacity of the transport capability and which may be used by mutual agreement, is described in Appendix I.

The procedures in Recommendation I.462(X.31) apply only to synchronous terminals.

The procedures in Recommendations I.460, I.461(X.30) and I.463(V.110) apply to both synchronous and asychronous terminals.

The procedures in Recommendation I.465(V.120) apply to synchronous HDLC based, synchronous bit transparent, and asynchronous terminals.

APPENDIX I

(to Recommendation I.464)

HDLC inverted mode for restricted transport capabilities

Inverted HDLC is adequate for the transmission of data sequences using HDLC based protocols (i.e. Recommendations X.25 and V.120) over B-channel connections independent of whether such connection is restricted or unrestricted. In the inverted mode, a binary 1 is sent as a pulse and a binary 0 is sent as the absence of a pulse. An "abort" must be restricted to a sequence of seven consecutive binary 1s and on all binary 1s idle must be sent as repeated transmission of a sequence of seven consecutive binary 1s followed by a binary 0. The all 1s idle appears as a string of continuous aborts. A receiver, which must distinguish the all binary 1s idle, shall interpret two or more consecutive aborts as idle. Where continuous aborts cause difficulties, the receiver must include the capability of converting continuous aborts to an all binary 1s idle.

For basic access, when the used B-channel is not connected, the TE must send all 1s. When the B-channel is connected, the TE shall initiate the transmission of interframe time fill (flags) immediately.