

JT-Q921 ISDN User-Network Interface Layer 2 - Specification

1. Relations with international standards

This Standard is based on the ITU-T Recommendation Q.921 approved in the WTSC-93 in March 1993.

2. Summary of departures from ITU-T Recommendations

The ITU-T Recommendation specifies options for each of the following items and TTC endorses the specific options described below as the standards.

(1) Initialization of link parameters

The ITU-T Recommendation provides an option for (a) initialization to the default values or (b) initialization based on negotiations with the peer as the methods of link parameter initialization. (Refer to the ITU-T Recommendation Q.921, 5.4, Appendix IV.)

TTC adopts (a) initialization to the default values as the standard method (see section 2 of JT-Q920, summary) for the following reasons. The above ITU-T Recommendation does not sufficiently specify detailed procedures using the XID frames. For example, judgement of whether or not the parameter negotiation is permitted, and negotiation failure procedures are not clearly defined.

Furthermore, the burden on the network because of the need to support parameter negotiations for individual links has not yet been properly analyzed. In addition, TTC has not yet reached the stage of offering the implementable procedure for parameter negotiation.

(2) LAPB operation on the D-channel

The ITU-T Recommendation specifies LAPB operation on the D-channel as an option for both the user and the network. (See ITU-T Recommendation Q.921, 2.3.)

TTC does not standardize LAPB operation on the D-channel, but LAPD operation only is specified for the following reasons. This Standard, concerned with LAPD operation, does not need to describe specifications for LAPB operation and moreover TTC does not find it necessary to implement LAPB on the D-channel.

(3) TEI value for point-to-point signaling connection

The ITU-T Recommendation acknowledges that in certain applications it may be advantageous to have a single point-to-point signaling connection provided for layer 3, and specifies a network option of using "0" as the TEI value in such applications. (Refer to ITU-T Recommendation Q.921, Annex A.)

TTC standardizes the use of "0" as the TEI value in the above application of a single point-to-point signaling connection, (Thus, any frame having a TEI value other than 0 will be discarded in the above application.)

The reason for the above standardization is as follows.

Only one TEI value should be defined for the user-network interface when the data link layer has only a single point-to-point signaling connection.

TTC deemed that defining a single TEI value would avoid confusion in determining the TEI value in the above application and would be effective from the point of view of national standardization.

3. History of revised versions

| Version | Date | Outline |
|---------|-------------------|---|
| 1 | April 28, 1987 | Established |
| 1.1 | July 28, 1987 | Added the notes for supplementary in Section 3.5.2.1. In order to abolish fear of misapprehension, enriched description of Section 5.3.4.2. |
| 2 | May 31, 1988 | Updated based on the result of the standard work progress of the corresponding international standard. Corrected clerical errors, and rationalized expression. |
| 2.1 | July 28, 1988 | Revised a part of Section 5.3.3.1 based on "Correction". |
| 2.2 | November 30, 1988 | Revised Section 5.3.1 and 5.3.3.2 based on "Correction" and "Compensation". |
| 3 | April 25, 1990 | Updated based on the formal establishment of the corresponding international standard. |
| 4 | April 27, 1993 | Updated based on the formal establishment of the corresponding international standard. |
| 4.1 | September 5, 1995 | Corrected about the contents of description. |
| 5 | November 26, 1998 | Updated based on ITU-T Recommendation Q.921 approved in the SG11 meeting (September 1997). |
| 5.1 | February 1, 2000 | Corrected clerical errors in "Table 3-2/ JT- Q921". |

4. Notes and Supplementary Explanations

(1) Provision of options

The following items can remain as options without causing problems with the user-network interface. Therefore, TTC specifies them as options.

| No. | Option | Selection Side | Description (section number) |
|-----|---|------------------|--|
| 1 | TEI ID verification procedure | User | Option that allows the user to request the network that invokes the identity check procedure for verification of multiple TEI assignments. (5.3.1/5.3.5.1.) |
| 2 | TEI check procedure to verify multiple TEI assignment | Network | Option associated with the ID verification procedure in item 1 above, and to allow the network to check multiple TEI assignments. (5.3.3.1) |
| 3 | Action may be taken upon receipt of an identity assigned message containing a TEI value in the Ai field | User | Option that allows the user to compare the TEI value in the Ai field with its TEI(s) on receipt of all Identity assigned messages. (5.3.2) |
| 4 | Provision of timer T203 | User/ Network | Option for provision of timer T203 that represents the maximum time allowed without the frame being exchanged. (5.6.4/5.10) |
| 5 | Retransmission of REJ response frame | User/ Network | Optional procedure for detecting an N(S) sequence error and retransmitting the REJ response frame under the REJ exception condition of an N(S) sequence error. (5.8.1/Appendix I) |
| 6 | Data link layer monitor function | User/ Network | Optional monitor function to detect abnormality of data link connection without the frame being exchanged through the use of timer T203 in item 4 above. (5.10) |
| 7 | Action in the event of timer T200 expiration in the multiple-frame-established state | User/ Network | Option that allows selection of either (1) "Transmit Enquiry" procedure or (2) Frame retransmission procedure as the action on transition to the timer recovery state from the multiple-frame-established state in the event of timer T200 expiration. (Fig. B-7(2/10), Annex B) |
| 8 | Action in the event of timer T200 expiration in the timer recovery state | User/ Network | Option that allows selection of either (1) or (2) in item 7 above in the event of timer T200 expiration in the timer recovery state, and $RC \neq N200$ and $V(S) \neq V(A)$. (Fig. B-8(2/9), Annex B) |

(2) Items related to XID frame

The use of the XID frame for purposes other than the link parameter negotiation procedure is still under consideration and not specified in the ITU-T Recommendation.

As described in 2-(1), this Standard does not specify the link parameter negotiation procedure using the XID frames. Thus, although this Standard describes the definition of the XID frame, it leaves any procedure using the XID frames for further study.

Because of the above situation, it is reasonable to interpret the Standard text concerning processing upon receipt of the XID frame as described below.

The data link layer entity that receives the XID frame identifies it as the frame defined in this Standard, and transfers it to the connection management entity (CME). The CME interprets the contents of the received XID frame, but it discards the XID frame without performing any operations because the subsequent procedures are not yet specified in this Standard.

(3) Item relate to DM response to ask for a mode-setting command

The ITU-T Recommendation needs further study where the state transition from the TEI assigned state to the multiple frame established state on receipt of a DM response with the F bit set to 0. Therefore TTC recommends not to send a DM response to 0 to ask for a modesetting command.

(4) Item related to an ISDN extension interface of PBX etc.

This standard would be adopted to reference point S and T, it's also appropriate to adopt to an ISDN extension interface of PBX etc.