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Integrated Services Digital Network (ISDN); Signalling System No.7; Transaction Capabilities Application Part (TCAP)

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Foreword

This European Telecommunication Standard (ETS) has been produced by the Signalling Protocols & Switching (SPS) Technical Committee of the European Telecommunications Standards Institute (ETSI).

This ETS details exceptions and clarifications to CCITT Recommendations Q.771-Q.775 [1] - [5] defining the Transaction Capabilities (TC) of the Transaction Capabilities Application Part (TCAP) for inter-network dialogues on services such as the pan European Cellular Digital Radio System and Integrated Services Digital Network (ISDN).

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1 Scope

This ETS defines the Transaction Capabilities (TC) signalling requirements in and between networks, for non circuit related services which use the CCITT Signalling System No.7, for inter-network dialogues. Only those parts of TC need to be provided which are used by the above services.

This standard is based on CCITT Recommendations Q.771 to Q.775, normative references [1] to [5], as specified in the 1988 Blue Book. The requirements of these recommendations shall apply unless modified by the exception statements and clarifications contained in this standard.

For historical reasons, the terms TC and TCAP are used interchangeably.

2 Normative references

This ETS incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications listed hereafter. For dated references subsequent amendments to, or revisions of, any of these publications apply to this ETS only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

[1] CCITT Recommendation Q.771 (1988): "Specifications of Signalling System No.7; Functional description of transaction capabilities".

[2] CCITT Recommendation Q.772 (1988): "Specifications of Signalling System No.7; Transaction capabilities information element definitions".

[3] CCITT Recommendation Q.773 (1988): "Specifications of Signalling System No.7; Transaction capabilities formats and encoding".

[4] CCITT Recommendation Q.774 (1988): "Specifications of Signalling System No.7; Transaction capabilities procedures".

[5] CCITT Recommendation Q.775 (1988): "Specifications of Signalling System No.7; Guidelines for using transaction capabilities".

[6] CCITT Recommendation Q.711 (1988): "Specifications of Signalling System No.7; Functional description of the signalling connection control part".

[7] CCITT Recommendation X.229 (1988): "Open Systems Interconnection (OSI); Remote operations: Protocol specification".

[8] CCITT Recommendation X.208 (1988): "Open Systems Interconnection (OSI); Model and Notation: Service definition: Specification of Abstract Syntax Notation One (ASN.1)".

3 General exceptions and clarifications to CCITT Recommendations Q.771 to Q.775

3.1 Support of TC by terminal equipment

The support of TC by terminal equipment is outside the scope of this ETS.

3.2 Services assumed from a connectionless network layer

There is no requirement for TC to work over any network layer other than CCITT Signalling System No.7 Message Transfer Part (MTP) or Signalling Connection Control Part (SCCP).

The services assumed from the SCCP are provided via the N-UNITDATA and N-NOTICE primitives. Specific details of how TCAP processes the N-NOTICE indication are given in the following sections.

It is also assumed that the N-UNITDATA indication primitive shall contain the SCCP "Return Option" and "Sequence Control" parameters in addition to those parameters defined in the CCITT Recommendation Q.711 [6].

3.3 TC based on a connection-oriented network

TC based on a connection-oriented network service is outside the scope of this ETS.

3.4 Support of real-time/less real-time sensitive data

All data transfer by TC shall be considered as real-time sensitive.

3.5 Management of address information by the Transaction sub-layer

The procedures relating to address information (e.g. CCITT Recommendation Q.774 [4], subclause 3.3) are undefined in CCITT Recommendations Q.771 to Q.775 [1] to [5]. Although TC does not convey address information in any of its messages, the Transaction sub-layer must provide any necessary address information to the SCCP in every N-UNITDATA request primitive (e.g. global title and sub-system number with a "Global Title routing required" indication).

The procedures are intended to be analogous with those relating to Transaction IDs:

i) The calling address information received in the first N-UNITDATA indication primitive in each direction of a transaction, shall be used as called address in all subsequent messages to the peer within that transaction.

ii) Each SCCP user is responsible for providing its own address in the calling address information of every N-UNITDATA request primitive. This shall not change during the life of the transaction and shall be in a form which can be used by the SCCP to return messages, e.g. from the distant node.

iii) Once the transaction is established, the address information shall remain constant for the life of the transaction. TCAP shall use the address information for that transaction rather than that received in subsequent N-UNITDATA indication primitives for that transaction.

NOTE 1: In particular the above rules allow the B-SCCP-User to provide its own address as calling address information instead of the received called address information in the first N-UNITDATA indication primitive.

NOTE 2: The encoding of calling and called party address parameter in a SCCP message must follow the rules defined in CCITT Recommendation Q.713 (1992) (see also ETS 300 009).

4 Specific exceptions and clarifications to CCITT Recommendation Q.771

NOTE: The following notation is used in the tables included in this Clause:

M indicates a mandatory parameter;

O indicates an optional parameter;

(=) indicates that the parameter must have the same value in a request primitive and in the corresponding indication primitive.

4.1 Primitives for dialogue handling - Q.771, subclause 3.1.1, table 1/Q.771

In addition to the dialogue handling primitives identified in table 1/Q.771, the Component sub-layer shall support the TC-NOTICE indication primitive.

NOTE: TC-NOTICE informs the TC-user that the service provider has been unable to provide the requested service.

4.2 Primitives for component handling - Q.771, subclause 3.1.1, table 2/Q.771

The TC-R-REJECT in table 2/Q.771 shall be used to inform the local TC-user that a component was rejected by the remote component sub-layer.

4.3 Overview of the Component sub-layer primitives - Q.771, subclause 3.1.1

The abstract syntax of parameters included in primitives must contain sufficient information to enable the concrete syntax to be encoded from the parameters supplied e.g. whether an operation/error code is local or global.

4.4 Definition of parameters within dialogue handling primitives - Q.771, subclause 3.1.2.1

The following exceptions and clarifications are made to the parameters within the Component sub-layer dialogue handling primitives.

4.4.1 Address parameters

In addition to the CCITT definition of address parameters, it shall also indicate the address type, for example a global title and sub-system number.

4.4.2 "Components Present" parameter

The reference to Q.771, subclause 3.1.3.8 should read as Q.771, subclause 3.1.3.7.

The "Components Present" parameter indicates whether or not components are present. If components are present they are delivered by TC to the TC-user in the order received from the originating TC-user.

4.4.3 "Parameters" parameter

The "Parameters" parameter is not used in any dialogue handling primitive.

4.4.4 "Quality of Service" parameter

The Quality of Service parameter shall indicate the SCCP sequence control and return option, for the SCCP connectionless network layer service as defined in CCITT Recommendation Q.711 [6].

4.4.5 "Report Cause" parameter

The "Report Cause" parameter contains information indicating the reason for the exception report, for example that the message was returned by the SCCP with the reason as specified in CCITT Recommendation Q.711 [6]. This parameter is in addition to those defined in Q.771, subclause 3.1.2.1, and is required for the TC-NOTICE indication primitive.

4.5 Dialogue facilities - Q.771, subclause 3.1.2.2

4.5.1 TC-NOTICE

In addition to the dialogue facilities mentioned in Q.771, subclause 3.1.2.2, the ability for TC-users to be notified of non-delivery of user data shall be provided by the TC-NOTICE indication primitive.

A TC-NOTICE indication primitive is only passed to the TC-user if the service requested cannot be provided (i.e. the network layer cannot deliver the message to the remote node) and the TC-user requested the return option in the "Quality of Service" parameter.

Table 1: TC-NOTICE primitive

Parameter	Primitive : TC-NOTICE
	Indication
Dialogue ID	M
Report Cause	M

4.5.2 Quality of Service

The "Quality of Service" parameter shall be optionally provided in all TC dialogue request primitives and not just the TC-BEGIN primitive as stated in Q.771.

In addition to the parameters defined by CCITT for the TC dialogue primitives (see Q.771 tables 4/Q.771, 5/Q.771, 6/Q.771, 7/Q.771 and 14/Q.771) the "Quality of Service" parameter shall be provided as indicated below, in table 2.

Table 2: "Quality of Service" requirements for TC-primitives

Quality of Service			
TC-primitive	Table	Request	Indication
TC-BEGIN	4/Q.771	O (NOTE)	M
TC-CONTINUE	5/Q.771	O (NOTE)	M
TC-END	6/Q.771	O (NOTE)	M
TC-U-ABORT	7/Q.771	O (NOTE)	M
TC-P-ABORT	14/Q.771		M
TC-NOTICE			

NOTE: When the "Quality of Service" parameter is not present in a dialogue request primitive, the Component sub-layer shall not request a quality of service to the Transaction sub-layer. The Transaction sub-layer shall request SCCP Class 0 and no return option to the SCCP.

4.6 Unstructured dialogue - Q.771, subclause 3.1.2.2.1, table 3/Q.771

The "Components Present" parameter should not be present in the TC-UNI request primitive. Table 3 shows the parameters that are required in the TC-UNI request and indication primitive.

Table 3: TC-UNI primitives

Parameter	Primitive : TC-UNI	
	Request	Indication
Quality of Service	O (NOTE)	M
Destination Address	M	M
Originating Address	M	M (=)
Dialogue ID	M	
Components Present		M

NOTE: When the "Quality of Service" parameter is not present in a dialogue request primitive, the Component sub-layer shall not request a quality of service to the Transaction sub-layer. The Transaction sub-layer shall request SCCP class 0 and no return option to the SCCP.

4.7 End of a dialogue - Q.771, subclause 3.1.2.2.2.3.b

Components are delivered to the Component sub-layer and not directly to the Transaction sub-layer as stated in the first bullet item of Q.771, subclause 3.1.2.2.2.3.b. The text should therefore read:

"The basic scenario uses the TC-END primitives for two purposes:

- delivery of any component(s) for which transmission is pending;

- indication that no more components will be exchanged for this dialogue in either direction."