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Information technology — Open Systems Interconnection — Distributed Transaction Processing: Protocol Implementation Conformance Statement (PICS) proforma

Technologies de l'information — Interconnexion de systèmes ouverts (OSI) — Traitement transactionnel réparti: Formulaire de déclaration de conformité de mise en œuvre du protocole (PICS)



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Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work.

In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1. Draft International Standards adopted by the joint technical committee are circulated to national bodies for voting. Publication as an International Standard requires approval by at least 75 % of the national bodies casting a vote.

International Standard ISO/IEC 10026-4 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology,* Subcommittee SC 21, *Open Systems Interconnection, data management and open distributed processing*, in collaboration with ITU-T. The identical text is published as ITU-T Recommendation X.863.

ISO/IEC 10026 consists of the following parts, under the general title *Information technology — Open Systems Interconnection — Distributed Transaction Processing*:

— *Part 1: OSI TP Model*

— *Part 2: OSI TP Service*

— *Part 3: Protocol specification*

— *Part 4: Protocol Implementation Conformance Statement (PICS) proforma*

— *Part 5: Application context proforma and guidelines when using OSI TP*

— *Part 6: Unstructured data*

— *Part 7: Message queueing*

— *Part 8: Transactional RPC*

Annex A forms an integral part of this part of ISO/IEC 10026. Annex B is for information only.

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Introduction

This Recommendation | International Standard for OSI Distributed Transaction Processing (TP) is one of a set of Recommendations | International Standards produced to facilitate the interconnection of computer systems. It is related to other CCITT Recommendations | International Standards in the set as defined by the Reference Model for Open Systems Interconnection (ITU-T Rec. X.200 | ISO/IEC 7498-1). The Reference Model subdivides the area of standardization for interconnection into a series of layers of specification, each of manageable size.

The aim of Open Systems Interconnection is to allow, with a minimum of technical agreement outside the interconnection standards, the interconnection of computer systems:

a) from different manufacturers;

b) under different management;

c) of different levels of complexity; and,

d) of different technologies.

The Recommendations | International Standard for OSI TP define a TP Model, a TP Service and specify a TP communications Protocol available within the Application Layer of the OSI Reference Model. The TP Service is of the category defined in the Application Layer Structure standard. It is concerned with identifiable information which can be related as transactions, which may involve two or more open systems.

The Recommendations | International Standard for OSI TP defines a basic TP Service. It provides sufficient facilities to support transaction processing, and establishes a framework for coordination across multiple TP resources in separate Open Systems.

The Recommendations | International Standard for OSI TP does not specify the interface to local resources or access facilities that are provided within the local system. However detailed consideration of access to the local resources and their management may lead to some enhancement in a future revision of the Recommendations | International Standard.

To evaluate conformance of a particular implementation, it is necessary to have a statement of which capabilities and options have been implemented for a given OSI protocol. Such a statement is called a Protocol Implementation Conformance Statement (PICS).

The PICS Proforma, Annex A, has been designed to be a self contained section of this Recommendation | Part of ISO/IEC 10026 for use in testing and procurement.

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INTERNATIONAL STANDARD

ITU-T RECOMMENDATION

INFORMATION TECHNOLOGY – OPEN SYSTEMS INTERCONNECTION – DISTRIBUTED TRANSACTION PROCESSING: PROTOCOL IMPLEMENTATION CONFORMANCE STATEMENT (PICS) PROFORMA

1 Scope

This Recommendation | International Standard provides the PICS proforma for the Distributed Transaction Processing protocol as specified in ITU-T Rec. X.862 | ISO/IEC 10026-3 in compliance with the relevant requirements, and in accordance with the relevant guidance, given in CCITT Rec. X.291 | ISO/IEC 9646-2. Details of the use of this proforma is provided in this Recommendation | Part of ISO/IEC 10026. Implementors of implementations claiming conformance to ITU-T Rec. X.862 | ISO/IEC 10026-3 shall complete the proforma as part of the conformance requirements. The level of detail required in the proforma exceeds that of the protocol specification by requiring details to uniquely identify the implementation and the supplier.

NOTE – PICS are related to base standards and only base standards. PICS Proforma structure might be expanded and refined for other documents (e.g. ISPs) using the base standards (e.g. ISPICS Proforma).

2 Normative references

The following Recommendations and International Standards contain provisions which, through reference in this text, constitute provisions of this Recommendation | International Standard. At the time of publication, the editions indicated were valid. All Recommendations and Standards are subject to revision, and parties to agreements based on this Recommendation | International Standard are encouraged to investigate the possibility of applying the most recent editions of the Recommendations and Standards listed below. Members of IEC and ISO maintain registers of currently valid International Standards. The Telecommunication Standardization Bureau of ITU maintains a list of currently valid ITU-T Recommendations.

References used in this TP PICS are defined in CCITT Rec. X.860 | ISO/IEC 10026-1 (TP Model), with the addition of those listed below:

2.1 Identical Recommendations | International Standards

- ITU-T Recommendation X.225[1] | ISO/IEC 8327-1:...:[1], *Information technology – Open Systems Interconnection – Connection-oriented session protocol: Protocol specification.*
- ITU-T Recommendation X.226 (1994) | ISO/IEC 8823-1:1994, *Information technology – Open Systems Interconnection – Connection-oriented presentation protocol: Protocol specification.*

2.2 Paired Recommendations | International Standards equivalent in technical content

- CCITT Rec. X.290 (1992) | ISO/IEC 9646-1:1994, *Information technology – Open Systems Interconnection – Conformance testing methodology and framework – Part 1: General concepts.*
- CCITT Rec. X.291 (1992) | ISO/IEC 9646-2:1994, *Information technology – Open Systems Interconnection – Conformance testing methodology and framework – Part 2: Abstract test suite specification.*
- ITU-T Rec. X.862 (1993) | ISO/IEC 10026-3:1992, *Information technology – Open Systems Interconnection – Distributed transaction processing – Part 3: Protocol specification.*

[1] Previously equivalent texts; to be republished as common text.

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3 Definitions

For the purpose of this Recommendation | International Standard, the following definitions apply:

3.1 Conformance testing definitions

This Recommendation | International Standard uses the following terms defined in CCITT Rec. X.290 | ISO/IEC 9646-1:

a) PICS Proforma;

b) Protocol Implementation Conformance Statement (PICS).

3.2 TP Model definitions

Terms used in ITU-T Rec. X.863 | ISO/IEC 10026-4 are defined in CCITT Rec. X.860 | ISO/IEC 10026-1, except the following terms.

3.3 TP PICS definitions

For the purpose of this Recommendation | International Standard, the following terms apply:

3.3.1 **sender**: The node that generates and transmits a TP APDU or a parameter of a TP APDU.

3.3.2 **receiver**: The node that receives and interprets a TP APDU or a parameter of a TP APDU.

4 Abbreviations

Abbreviations used in Recommendation | International Standard are defined in CCITT Rec. X.860 | ISO/IEC 10026-1 and clause 7 of this Recommendation | International Standard.

Additionally, the following abbreviation used in Recommendation | International Standard is defined in CCITT Rec. X.290 | ISO/IEC 9646-1:

– PICS

The following abbreviations are used in this Recommendation | International Standard:

FU	Functional Unit
ISP	International Standardized Profile
ISPICS	International Standardized Profile Implementation Conformance Statement
Sdr	Sender
Rcv	Receiver

5 Conformance

A conforming PICS shall be technically equivalent to the ITU-T | ISO/IEC published PICS Proforma (see Annex A) and shall preserve the numbering and ordering of items in the ITU-T | ISO/IEC PICS Proforma.

A PICS which conforms to ITU-T Rec. X.863 | ISO/IEC 10026-4 shall:

a) describe an implementation which conforms to ITU-T Rec. X.862 | ISO/IEC 10026-3;

b) be a conforming PICS proforma, which has been completed in accordance with the instructions for completion given in clauses 7 and 9; and

c) include the information necessary to uniquely identify both the supplier and the implementation.

6 Description of the proforma

The Proforma defined in Annex A is divided into the following sections:

a) Identification of the PICS;

b) Conformance Claim;

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c) Support of FUs, Limits and Mechanisms;

d) Support of TP APDUs; and

e) Multi-layer dependencies.

6.1 Identification of the PICS

Subclause A.1 contains:

- the Date of Statement for the PICS;
- the Supplier and Implementation details which provide a number of items of information which allow a unique identification of an implementation and the supplier of the PICS.

6.2 Conformance claim

Subclause A.2 includes information on which protocol version numbers, amendments and technical corrigenda have been included in the implementation.

6.3 Support of functional units, limits and mechanisms

Subclause A.3 identifies the Functional Units supported by the implementation depending on the possible modes of operation. It also includes a statement of which roles and mechanisms have been implemented.

NOTE – The proforma defined in Annex B may be used for any practical limits the implementation may have, such as any limits on the concurrent number of dialogues and transaction branches that can be supported, and any APDU size limits.

6.4 Support of TP APDUs

Subclauses A.4 to A.10 comprise the major portion of the PICS, this part establishes which fields of which PDUs are implemented. It requires a statement of the values supported and a reference to further detail for many of the fields.

6.5 Multi-Layer dependencies

Subclause A.11 includes identification of the support of OSI standards used by, or implied by, the OSI TP protocol.

7 Notations defined for the proforma

In order to reduce the size of the tables in the PICS proforma, notations have been introduced. These have allowed the use of multi-column layout where the columns are PICS No., Item, Reference (to relevant clause of ISO/IEC 10026-3), Status, Support, Cross Reference (to another clause of the proforma – if any), VALUES, and Comment. Some of these columns are sub-divided to indicate separately the status or support as Sender ("Sdr") or Receiver ("Rcv"). The definition of each of these follows.

7.1 PICS number column

This column contains a serial number that increases monotonically down the table to enable reference to each row of the table. (Refer to clause 8).

7.2 Item column

This column contains an identification of the item addressed by this row in the table; examples of items include TP APDUs, fields or sub-fields of TP APDUs or roles.

7.3 Reference column

This column contains a reference to a clause in ITU-T Rec. X.862 | ISO/IEC 10026-3 that specifies the item addressed in this row of the table.

When ITU-T Rec. X.862 | ISO/IEC 10026-3 simply refers to CCITT Rec. X.861 | ISO/IEC 10026-2 for the definition of fields of TP APDUs, the reference to the relevant clause of CCITT Rec. X.861 | ISO/IEC 10026-2 is also added (between parentheses). This is not intended to mean that conformance to the service definition is required, but rather to give some extra tutorial information.

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7.4 Status column

Status – Defined in ITU-T Rec. X.862 | ISO/IEC 10026-3. This column indicates the level of support required for conformance to ITU-T Rec. X.862 | ISO/IEC 10026-3. These are detailed below:

'm' Mandatory support is required for conformance to ITU-T Rec. X.862 | ISO/IEC 10026-3.

'd' Mandatory support is required for conformance to ITU-T Rec. X.862 | ISO/IEC 10026-3. A default value is defined in the ASN.1 specification and for this special value a sender may omit this parameter when this value is intended. A receiver shall interpret the omission of an explicit value for this parameter as implying this default value.

'o' Optional support is permitted for conformance to ITU-T Rec. X.862 | ISO/IEC 10026-3. If implemented, it must conform to the specifications and restrictions contained in ITU-T Rec. X.862 | ISO/IEC 10026-3. These restrictions may affect the optionality of other parameters.

'o.n' The notation o.<n> signifies that at least one out of the n group shall be implemented (where <n> is a positive integer).

'cn' Conditional support as indicated by the predicate expression for cn (where <n> is a positive integer).

'n/a' Indicates that the item is not applicable.

When appropriate, the column is sub-divided into Sender (Sdr) and Receiver (Rcv) roles.

7.5 Support column

The "Support" column shall be completed by the supplier or implementor to indicate the level of implementation of each item in the role of Sender and Receiver. Where a column is preprinted with n/a, representing a non applicable entry, no entry shall be inserted at that position. Elsewhere entries shall be as defined in 7.9

7.6 Cross reference column

This column contains a cross reference to another clause in this document where the item addressed by this row of this table is addressed in more detail. If there is no such clause, then this is indicated:

- for tables related to TP APDUs, or details of TP APDUs, by the entry "n/a";
- for other tables by the absence of the column.

7.7 VALUES column

This column is sub-divided into "Status", which indicates any limitations on the allowed values specified in ITU-T Rec. X.862 | ISO/IEC 10026-3, and "Support", which shall be completed by the supplier or the implementor to indicate any restriction on the values supported by the implementation of each item in the role of Sender or Receiver. Where this column is preprinted with n/a, representing a non applicable entry, no entry shall be inserted at that position. Elsewhere entries shall be as defined in 7.9.

The following notation is used to express the allowed or implemented values of parameters in the VALUES column:

- For BITSTRING Types – For example 01100 where the left most bit is sent and received first, 0 means that the bit in that position shall be set to 0, and 1 that it shall be set to 1. An x means that the bit in that position may be set to 0 or 1. "Any" means any valid value of that Type. The number of bits shown is the number of significant bits.
- For ENUMERATED Types – The integer representation of the values of this particular enumerated type is utilised. A number of values may be listed separated by commas (e.g. 1,2,5,8) or a range of values indicated by giving the lower and upper limits of the range separated by a dash (e.g. 1-4 is the same as 1,2,3,4). "Any" means any valid value of that Type.

7.8 Comment column

This column is left blank for the implentor to add a comment on the responses given, or other relevant information. If the implementor has no comment to add then the entry should be left blank.

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7.9 Column entries

The PICS proforma has been designed such that the only entries required in the "Sender" and "Receiver" columns are:

"Y" Yes, the feature has been implemented. If "Y" is entered in a PICS table, the value of that entry when referenced in Boolean expressions is "TRUE".

"N" No, the feature has not been implemented. If "N" is entered in a PICS table, the value of that entry when referenced in Boolean expressions is "FALSE".

"Ig" Ignored, the occurence of the item is not treated as a protocol error, but is ignored rather than processed. If "Ig" is entered in a PICS table, the value of that entry when referenced in Boolean expressions is "FALSE".

"Err" Error, the occurrence of this item is treated as a protocol error. If "Err" is entered in a PICS table, the value of that entry when referenced in Boolean expressions is "FALSE".

"Ig" and "Err" shall only be used in the "Receiver" columns. They have the same static conformance semantic as "N". "N" shall never be used in the "Receiver" columns.

If an item is marked as "m" or "d" in the status column then only "Y" may be checked in the support column for the implementation to be conformant.

The "VALUES" column requires the specification of the range of values implemented for the item it is alongside, for each role, where relevant. The range of values implemented may be specified in terms of the values of the ASN.1 datatype, or in terms of the encoded length.

The headings of the Support column, or the Value/Support sub-column, indicate which of the above answers generally apply to the column. When a cell has been pre-printed with one of these entries followed by "[ ]", the [ ] box should be checked if that answer applies. If no pre-printed answer applies, a separate response should be supplied in the white space of the cell. Such an alternate response is an indication of non-conformance.

8 PICS numbers

Each line, within a clause of the PICS proforma, which requires implementation detail to be entered, is numbered in the left hand box of the line. This numbering is included as a means of uniquely identifying all possible implementation detail within the PICS proforma. The need for such unique referencing has been identified by the testing bodies.

All responses shall be referenced by specifying the following sequence:

a) a reference to the smallest subclause enclosing the relevant item;

b) a solidus character, "/";

c) the reference number of the row in which the response appears;

d) if, and only if, more than one response occurs in the row identified by the reference number, then each possible entry (where the PICS has to be completed) is implicitly labelled a, b, c, etc., from left to right, and this letter is appended to the sequence.

9 Completion of the PICS

The implementor shall complete all entries in the columns labelled "Support". In addition, other specifically identified information shall be provided by the implementor where requested.

Cells to be completed are left blank in the PICS proforma. All cells containing the symbol "n/a" shall be left as in the proforma.

No changes shall be made to the proforma except the completion as required. Recognising that the level of detail required may, in some instances, exceed the space available for responses, additional responses may be given by the addition of appendices to the PICS.

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Annex A[2)]

Protocol Implementation Conformance Statement (PICS) Proforma for OSI Distributed Transaction Processing

(This annex forms an integral part of this Recommendation | International Standard)

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This contents list has been designed to assist the reader in locating detailed information quickly and for this reason has been taken to a more detailed level than is usual in a contents listing.

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2) **Copyright release for PICS proforma**

Users of this Recommendation | International Standard may freely reproduce the PICS proforma in Annex A and Annex B so that it can be used for its intended purpose and may further publish the completed PICS.

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A.1 Identification

A.1.1 Date of statement

The date of the Protocol Implementation Conformance Statement shall be indicated in Table A.1.

Table A.1 – Date of Statement

1	Date of Statement (yy-mm-dd)	

A.1.2 Supplier and implementation details

This subclause allows for the specification of the information necessary to uniquely identify the implementation and the systems in which it may reside. This includes details of:

a) supplier, implementor name, operating systems, suitable hardwares;

b) system supplier and/or client of the test laboratory that is to test the implementation;

c) information on whom to contact if there are queries concerning the content of this PICS;

d) the relationship between this PICS and the System Conformance Statement for the system (see Note below).

NOTE – The System Conformance Statement is defined in CCITT Rec. X.290 | ISO/IEC 9646. It relates to a PICS covering more than one layer of the reference model.

A.1.2.1 Supplier details

The identification of the supplier of this PICS shall be given in Table A.2. At least, items 1, 2 and 3 shall be filled in.

Table A.2 – Supplier Details

1	Organization	
2	Contact Name(s)	
3	Address	
4	Telephone	
5	Telex Teletex	
6	Fax	
7	E-mail	
8	Other Information:	

A.1.2.2 Implementation details

The information necessary to uniquely identify the implementation, and the systems in which it may reside, shall be given in Table A.3. At least, items 1 through 5 shall be filled in.

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Table A.3 – Implementation details

1	Implementation Name	
2	Version	
3	Hardware Names and Versions	
4	Operating System Names and Versions	
5	Relationship between PICS and System Conformance Statement	
6	Special configuration requirements	
7	Other Information:	

A.2 Claimed conformance to Recommendations I Standards

A.2.1 ITU-T Rec. X.862 I ISO/IEC 10026-3

A.2.1.1 Version number(s)

This PICS relates to version 1 of the OSI TP protocol as defined in ITU-T Rec. X.862 I ISO/IEC 10026-3. The protocol version supported by an implementation is specified within the TP-INITIALIZE-RI and TP-INITIALIZE-RC APDUs, as stated in A.5.8 and A.5.9.

However, an implementation can conform to more than one protocol version. Other protocol versions supported by the implementation but not addressed by this PICS shall be identified in Table A.4. If no other version is supported by the implementation, the answer given in Table A.4 shall be "NONE".

Table A.4 – Other version numbers supported

		Version Number(s)
1	What other version(s) of the TP Protocol does your implementation support? (List of Version Numbers)	

A.2.1.2 Global conformance claim

Table A.5 indicates whether the implementation conforms to ITU-T Rec. X.862 I ISO/IEC 10026-3 or not.

Table A.5 – Global conformance claim

1	Are all mandatory features of at least one of the conformance classes of ITU-T Rec. X.862 I ISO/IEC 10026-3 implemented? (answer YES or NO)	

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Answer "YES" implies that at least one answer "YES" is given in A.2.4.

If a positive answer is not given to this box, then the implementation does not conform to ITU-T Rec. X.862 | ISO/IEC 10026-3. Any mandatory functions that are not supported are to be identified in the PICS, with an explanation of why the implementation has not implemented these functions.

A.2.2 ISO/IEC 10026 amendments

Table A.6 shall be used to identify the OSI TP Amendment number(s) implemented for each of the following Standards. If no OSI TP Amendment is supported by the implementation, the answer shall be "NONE".

Table A.6 – ISO/IEC 10026 amendments

1	ISO/IEC 10026-3	
2	ISO/IEC 10026-4	

A.2.3 ISO/IEC 10026 Technical Corrigenda

Table A.7 shall be used to identify the Technical Corrigendum number(s) implemented for each of the following Standards. If no OSI TP Technical Corrigendum is supported by the implementation, the answer shall be "NONE".

Table A.7 – ISO/IEC 10026 Technical Corrigenda

1	ISO/IEC 10026-3	
2	ISO/IEC 10026-4	

A.2.4 Conformance class(es) supported

For each of the conformance classes defined in ITU-T Rec. X.862 | ISO/IEC 10026-3, Table A.8 shall be used to indicate if all mandatory features have been implemented in the implementation.

Table A.8 – Conformance class(es) supported

	Conformance Class Name	Reference (subclause)	Status	Support (Y/N)	Comment
1	Application Transaction Branches	13.1.1.2	o.1		
2	Chained Provider Supported Transaction Branches	13.1.1.3	o.1		
3	Unchained Provider Supported Transaction Branches	13.1.1.4	o.1		
o.1 At least one of the Application Transaction Branches, Chained Provider Supported Transaction Branches and Unchained Provider Supported Transaction Branches conformance classes shall be supported.					

A.3 Functional units, limits and protocol mechanisms

The tables to be found in Annex B may be used to report any practical limits the implementation may have.

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A.3.1 Support of functional units

The conformance to one of the classes defined in the ITU-T Rec. X.862 | ISO/IEC 10026-3 standard implies the support of a specific set of Functional Units. Table A.9 shall be used to identify the Functional Units supported by one implementation.

It has been noted that one implementation may include the protocol mechanisms necessary to support a particular Functional Unit (for instance Handshake), but does not allow, or ignores, any use of the associated functionalities when functioning in a particular mode of operation (for instance Handshake allowed when alone with Dialogue and Shared or Polarized Control, that is for Application Supported Transaction Branches; but not when functioning in Chained Sequences of Provider Supported Transaction Branches). For this purpose, the supplier of this PICS shall consider the support of the Functional Units for each of the defined conformance classes.

Table A.9 – Support of Functional Units

	Functional Unit	Status			Support (Y/N)			Cross-reference (subclause)	Comment
		AS	CP	UP	AS	CP	UP		
1	Dialogue	m	m	m	Y [ ]	Y [ ]	Y [ ]	A.5	
2	Shared Control	o.2	o.3	o.4				A.6	
3	Polarized Control	o.2	o.3	o.4				A.7	
4	Handshake	o	o	o				A.8	
5	Commit	n/a	m	m	n/a	Y [ ]	Y [ ]	A.9	
6	Chained Transactions	n/a	m	n/a	n/a	Y [ ]	n/a	n/a (Note 1)	
7	Unchained Transactions	n/a	n/a	m	n/a	n/a	Y [ ]	n/a (Note 1)	
8	Recovery	n/a	m	m	n/a	Y [ ]	Y [ ]	A.10	

o.2: At least one of Shared Control and Polarized Control functional units shall be implemented.

o.3: At least one of Shared Control and Polarized Control functional units shall be implemented.

o.4: At least one of Shared Control and Polarized Control functional units shall be implemented.

AS Conformance class for Application Transactions branches.

CP Conformance class for Chained Provider Supported Transactions branches.

UP Conformance class for Unchained Provider Supported Transactions branches.

NOTE 1 – No specific support of OSI TP APDUs is defined for the Chained Transactions and Unchained Transactions functional units.

A.3.2 Protocol mechanisms implemented

A.3.2.1 Dialogue establishment

Table A.10 shall indicate the support of the roles related to dialogue establishment.

Table A.10 – Dialogue establishment

	Role	Reference (subclause)	Status	Support (Y/N)	Comment
1	Initiator	13.1.2.1 c)	o.5		
2	Acceptor	13.1.2.1 c)	o.5		
3	Rejector	13.1.2.1 f)	m	Y [ ]	

o.5: At least one of the Dialogue Initiator or Dialogue Acceptor roles shall be supported.

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A.3.2.2 Roles in a transaction tree supported

Table A.11 shall indicate the support of the different roles in a Provider Supported Transactions tree.

Table A.11 – Roles in a transaction tree supported

	Role	Status	Support (Y/N)	Comment
1	Root node	c1		
2	Intermediate node	c2		
3	Leaf node	c3		

c1: If (A.2.4/2 *-- i.e. Chained Provider Supported Transaction branches are supported*
or A.2.4/3) *-- i.e. Unchained Provider Supported Transaction branches are supported*
and (A.3.2.1/1) *-- i.e. the implementation is capable of initiating dialogues*
then o.6 else n/a

c2: If (A.2.4/2 *-- i.e. Chained Provider Supported Transaction branches are supported*
or A.2.4/3) *-- i.e. Unchained Provider Supported Transaction branches are supported*
and (A.3.2.1/1) *-- i.e. the implementation is capable of initiating dialogues*
and (A.3.2.1/2) *-- i.e. the implementation is capable of accepting dialogues*
then o.6 else n/a

c3: If (A.2.4/2 *-- i.e. Chained Provider Supported Transaction branches are supported*
or A.2.4/3) *-- i.e. Unchained Provider Supported Transaction branches are supported*
and (A.3.2.1/2) *-- i.e. the implementation is capable of accepting dialogues*
then o.6 else n/a

o.6: At least one of the Root node, Intermediate node or Leaf node roles shall be supported.

A.3.2.3 Transaction branch establishment

Table A.12 shall indicate the support of the roles related to the establishment of Provider Supported Transaction branches.

Table A.12 – Transaction branch establishment

	Role	Reference (subclause)	Status	Support (Y/N)	Comment
1	Initiator	13.1.2.1 d)	c4		
2	Acceptor	13.1.2.1 d)	c5		

c4: If A.3.2.2/1 *-- i.e. the implementation is capable of acting as a root node*
or A.3.2.2/2 *-- i.e. the implementation is capable of acting as an intermediate node*
then m else n/a

c5 If A.3.2.2/2 *-- i.e. the implementation is capable of acting as an intermediate node*
or A.3.2.2/3 *-- i.e. the implementation is capable of acting as a leaf node*
then m else n/a

A.3.2.4 Support of recovery

Table A.13 shall indicate which of the one-way and two-way recovery mechanisms the implementation supports.

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Table A.13 – Support of recovery

	Role	Reference (subclause)	Status	Support (Y/N)	Comment
1	One-Way recovery	9.3.1	c6		
2	Two-Way recovery	9.3.1	c7		

c6: If A.2.4/2 *-- i.e. Chained Provider Supported Transaction branches are supported*
or A.2.4/3 *-- i.e. Unchained Provider Supported Transaction branches are supported*
then m else n/a

c7: If A.2.4/2 *-- i.e. Chained Provider Supported Transaction branches are supported*
or A.2.4/3 *-- i.e. Unchained Provider Supported Transaction branches are supported*
then o else n/a

A.3.2.5 Concatenation / separation

The support of the Concatenation and Separation mechanisms shall be indicated in Table A.14.

Table A.14 – Support for concatenation/ separation

	Role	Reference (subclause)	Status	Support (Y/N)	Comment
1	Concatenation	6.1.6	o		
2	Separation	6.1.6	m	Y [ ]	

A.3.2.6 Association establishment

The support of the capabilities for Application Association establishment shall be indicated in Table A.15.

Table A.15 – Association establishment

	Role	Reference (subclause)	Status	Support (Y/N)	Comment
1	Initiator	8.5.4 8.5.7	c8		
2	Acceptor	8.5.5 8.5.6	c8		
3	Rejector	8.5.5 8.5.6	o		

c8: If A.2.4/2 *-- i.e. Chained Provider Supported Transaction branches are supported*
or A.2.4/3 *-- i.e. Unchained Provider Supported Transaction branches are supported*
then m else o.7

o.7: At least one of the Association Establishment Initiator or the Association Establishment Acceptor roles shall be supported.

A.3.2.7 Contention

Table A.16 shall indicate if the implementation supports the management of application association(s) as contention loser and/or contention winner.

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Table A.16 – Support for contention management

	Role	Reference (subclause)	Status	Support (Y/N)	Comment
1	Contention Winner	13.1.2.1 b)	o.8		
2	Contention Loser	13.1.2.1 b)	o.8		
o.8: At least one of the Contention Winner or Contention Loser roles shall be supported.					

A.3.2.8 Bid mechanism

Table A.17 shall indicate whether the implementation is capable of initiating a bid, or capable of responding to a bid.

Table A.17 – Support for the bid mechanism

	Role	Reference (subclause)	Status	Support (Y/N)	Comment
1	Initiator		c9		
2	Responder		c10		

c9: If A.3.2.7/2 *-- i.e. the implementation is capable of acting as contention loser*
then if A.3.2.8/3 *-- i.e. initiating application associations with bid mandatory is supported*
or A.3.2.8/5 *-- i.e. responding to application associations with bid mandatory is supported*
then m else o
else n/a

c10: If A.3.2.7/1 *-- i.e. the implementation is capable of acting as contention winner*
then m else n/a

Table A.18 shall indicate the support of the bid-related attribute of application associations.

Table A.18 – Support for mandatory and optional bidding

	Role	Reference (subclause)	Status	Support (Y/N)	Comment
3	Initiator with Bid mandatory	8.5.4 c) 8.5.5 c)	c11		
4	Initiator with Bid optional	8.5.4 c) 8.5.5 c)	c11		
5	Responder with Bid mandatory	8.5.6 b) 4) iv)	c12		
6	Responder with Bid optional	8.5.6 b) 4) iv)	c12		

c11: If A.3.2.6/1 *-- i.e. the implementation is capable of initiating application associations*
then o.9 else n/a

o.9: At least one of the Initiator with Bid mandatory and the Initiator with Bid optional roles shall be supported.

c12: If A.3.2.6/2 *-- i.e. the implementation is capable of accepting application associations*
then o.10 else n/a

o.10: At least one of the Responder with Bid mandatory and the Responder with Bid optional roles shall be supported.

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A.4 TP protocol – General

The remaining clauses detail the level of support for the TP protocol and its APDU fields. State which fields are, and which are not, implemented in each APDU.

If an APDU field is implemented, then its range of values shall be specified. Fields not implemented shall be so marked.

NOTE – In order to keep the protocol tables compact some forward references have been introduced to clauses which expand upon the detail of field support.

A.5 TP protocol – Support of the dialogue functional unit

A.5.1 Dialogue functional unit APDUs

The support of the APDUs related to the Dialogue Functional Unit shall be indicated in Table A.19.

Table A.19 – Dialogue Functional Unit APDUs

	TP APDU Name	Reference (subclause)	Status		Support		Cross-reference (subclause)	Comment
			Sdr	Rcv	(Y/N) Sdr	(Y/Ig/ Err) Rcv		
1	TP-BEGIN-DIALOGUE-RI	9.3.1	c13	c14			A.5.2	
2	TP-BEGIN-DIALOGUE-RC	9.3.1	c14	c13			A.5.3	
3	TP-END-DIALOGUE-RI	9.3.3	c15	c15			A.5.4	
4	TP-END-DIALOGUE-RC	9.3.3	c15	c16			n/a	
5	TP-U-ERROR-RI	9.3.4	m	m	Y [ ]	Y [ ]	n/a	
6	TP-ABORT-RI	9.3.5	m	m	Y [ ]	Y [ ]	A.5.5	
7	TP-BID-RI	9.3.2	c18	c17			A.5.6	
8	TP-BID-RC	9.3.2	c17	c18			A.5.7	
9	TP-INITIALIZE-RI	8.5.4 8.5.5	c20	c19			A.5.8	
10	TP-INITIALIZE-RC	8.5.6 8.5.7	c19	c20			A.5.9	

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Table A.19 – Dialogue Functional Unit APDUs *(end)*

c13:	If A.3.2.1/1 then m else n/a	*-- i.e. the implementation is capable of initiating dialogues*
c14:	If A.3.2.1/2 or A.3.2.7/2 or A.3.2.8/4 or A.3.2.8/6 then m else n/a	*-- i.e. the implementation is capable of accepting dialogues* *-- i.e. the implementation is capable of acting as contention loser* *-- i.e. initiating application associations with bid optional is supported* *-- i.e. responding to application associations with bid optional is supported*
c15:	If A.2.4/1 or A.2.4/3 then m else n/a	*-- i.e. Application Transaction Branches are supported* *-- i.e. Unchained Provider Supported Transaction Branches are supported*
c16:	If A.5.4/1c includes 'true' then m else n/a	*-- i.e. confirmed dialogue termination can be requested*
c17:	If A.3.2.8/2 then m else n/a	*-- i.e. the implementation is capable of responding to a bid*
c18:	If A.3.2.8/1 then m else n/a	*-- i.e. the implementation is capable of initiating a bid*
c19:	If A.3.2.6/2 or A.3.2.6/3 then m else n/a	*-- i.e. the implementation is capable of accepting application associations* *-- i.e. the implementation is capable of rejecting application associations*
c20:	If A.3.2.6/1 then m else n/a	*-- i.e. the implementation is capable of initiating application associations*

A.5.2 TP-BEGIN-DIALOGUE-RI APDU

A.5.2.1 Detail of "dialogue" field of TP-BEGIN-DIALOGUE-RI APDU

The support of the "dialogue" field of the TP-BEGIN-DIALOGUE-RI APDU shall be indicated in Table A.20.

Table A.20 – Detail of "dialogue" field of TP-BEGIN-DIALOGUE-RI APDU

	TP-BEGIN-DIALOGUE-RI:"dialogue" Field Sub-field Name	Reference (subclause)	Status		Support		Cross-reference (subclause)	Values			Comment
					(Y/N)	(Y/Ig/Err)		Status	Support		
			Sdr	Rcv	Sdr	Rcv			Sdr	Rcv	
1	initiating-tpsu-title	9.3.1 (Svc 10.2.2.2)	o	m		Y [ ]	A.5.2.1.1	Any			
2	recipient-tpsu-title	9.3.1 (Svc 10.2.2.4)	o	m		Y [ ]	A.5.2.1.2	Any			
3	functional-units	9.3.1 a (Svc 10.2.2.5)	d	d	Y [ ]	Y [ ]	n/a	xxxxx0			
4	begin-transaction	9.3.1 (Svc 10.2.2.8)	c21	c21			n/a	True/ False			
5	confirmation	9.3.1 (Svc 10.2.2.9)	d	d	Y [ ]	Y [ ]	n/a	1,2			
6	correlator	9.3.1 d	m	m	Y [ ]	Y [ ]	n/a	Any			
7	last-partner-identifier	9.3.1 g	o	m		Y [ ]	n/a	Any			
8	user-data	9.3.1 (Svc 10.2.2.13)	o	m		Y [ ]	n/a	Any			

c21: If A.2.4/3 then m else n/a — *-- i.e. the Unchained Provider Supported Transaction Branches are supported*

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A.5.2.1.1 Types for the "initiating-tpsu-title" in the "dialogue" field of TP-BEGIN-DIALOGUE-RI APDU

The support of the "initiating-tpsu-title" in the "dialogue" field of the TP-BEGIN-DIALOGUE-RI APDU shall be indicated in Table A.21.

Table A.21 – Types for the "initiating-tpsu-title" in the "dialogue" field of TP-BEGIN-DIALOGUE-RI APDU

	TP-BEGIN-DIALOGUE-RI:Support for "initiating-tpsu-title"	Reference (subclause)	Status		Support		Cross-reference (subclause)	Values			Comment
					(Y/N)	(Y/Ig/Err)		Status	Support		
			Sdr	Rcv	Sdr	Rcv			Sdr	Rcv	
1	T61String	12.1	o.11	m		Y [ ]	n/a	Any			
2	PrintableString		o.11	m		Y [ ]	n/a	Any			
3	INTEGER		o.11	m		Y [ ]	n/a	Any			
o.11: At least one of the T61String, PrintableString and INTEGER forms shall be supported.											

A.5.2.1.2 Types for the "recipient-tpsu-title" in the the "dialogue" field of TP-BEGIN-DIALOGUE-RI APDU

The support of the "recipient-tpsu-title" in the "dialogue" field of the TP-BEGIN-DIALOGUE-RI APDU shall be indicated in Table A.22.

Table A.22 – Types for the "recipient-tpsu-title" in the "dialogue" field of TP-BEGIN-DIALOGUE-RI APDU

	TP-BEGIN-DIALOGUE-RI: Support for "recipient-tpsu-title"	Reference (subclause)	Status		Support		Cross-reference (subclause)	Values			Comment
					(Y/N)	(Y/Ig/Err)		Status	Support		
			Sdr	Rcv	Sdr	Rcv			Sdr	Rcv	
1	T61String	12.1	m	o.12	Y [ ]		n/a	Any			
2	PrintableString		m	o.12	Y [ ]		n/a	Any			
3	INTEGER		m	o.12	Y [ ]		n/a	Any			
o.12: At least one of the T61String, PrintableString and INTEGER forms shall be supported.											

A.5.3 TP-BEGIN-DIALOGUE-RC APDU

A.5.3.1 Detail of "dialogue" field of TP-BEGIN-DIALOGUE-RC APDU

The support of the "dialogue" field of the TP-BEGIN-DIALOGUE-RC APDU shall be indicated in Table A.23.

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Table A.23 – Detail of "dialogue" field of TP-BEGIN-DIALOGUE-RC APDU

	TP-BEGIN-DIALOGUE-RC: "dialogue" Field Sub-field Name	Reference (subclause)	Status		Support		Cross-reference (subclause)	Values			Comment
			Sdr	Rcv	(Y/N) Sdr	(Y/Ig/Err) Rcv		Status	Support Sdr	Support Rcv	
1	functional-units	9.3.1 a (Svc 10.2.2.5)	o	m		Y [ ]	n/a	xxxxx0			
2	result	9.3.1 b (Svc 10.2.2.10)	d	d	Y [ ]	Y [ ]	n/a	1-3			
3	diagnostic	9.3.1 c (Svc 10.2.2.11)	m	m	Y [ ]	Y [ ]	n/a	1-8			
4	correlator	9.3.1 d	m	m	Y [ ]	Y [ ]	n/a	Any			
5	user-data	9.3.1 (Svc 10.2.2.13)	o	m		Y [ ]	n/a	Any			

A.5.4 TP-END-DIALOGUE-RI APDU

The support of the field of the TP-END-DIALOGUE-RI APDU shall be indicated in Table A.24.

Table A.24 – TP-END-DIALOGUE-RI APDU

	TP-END-DIALOGUE-RI: Field Name	Reference (subclause)	Status		Support		Cross-reference (subclause)	Values			Comment
			Sdr	Rcv	(Y/N) Sdr	(Y/Ig/Err) Rcv		Status	Support Sdr	Support Rcv	
1	confirmation	9.3.3 (Svc 10.3.2.1)	d	d	Y [ ]	Y [ ]	n/a	True/ False			

A.5.5 TP-ABORT-RI APDU

A.5.5.1 Detail of "user" field of TP-ABORT-RI APDU

The support of the "user" field of the TP-ABORT-RI APDU shall be indicated in Table A.25.

Table A.25 – Detail of "user" field of TP-ABORT-RI APDU

	TP-ABORT-RI "user" Field Sub-field Name	Reference (subclause)	Status		Support		Cross-reference (subclause)	Values			Comment
			Sdr	Rcv	(Y/N) Sdr	(Y/Ig/Err) Rcv		Status	Support Sdr	Support Rcv	
1	user-data	9.3.5 (Svc 10.5.2.2)	o	M	Y [ ]	Y [ ]	n/a	Any			

A.5.5.2 Detail of "provider" field of TP-ABORT-RI APDU

The support of the "provider" field of the TP-ABORT-RI APDU shall be indicated in Table A.26.

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Table A.26 – Detail of "provider" field of TP-ABORT-RI APDU

	TP-ABORT-RI "provider" Field Sub-field Name	Reference (subclause)	Status		Support		Cross-reference (subclause)	Values			Comment
			Sdr	Rcv	(Y/N) Sdr	(Y/Ig/Err) Rcv		Status	Support Sdr	Support Rcv	
1	diagnostic	9.3.5 (Svc 10.6.2.1)	m	m	Y [ ]	Y [ ]	n/a	1-4			

A.5.6 TP-BID-RI APDU

The support of the fields of the TP-BID-RI APDU shall be indicated in Table A.27.

Table A.27 – TP-BID-RI APDU

	TP-BID-RI Field Name	Reference (subclause)	Status		Support		Cross-reference (subclause)	Values			Comment
			Sdr	Rcv	(Y/N) Sdr	(Y/Ig/Err) Rcv		Status	Support Sdr	Support Rcv	
1	ccr-token-requested	9.3.2 a	d	d	Y [ ]	Y [ ]	n/a	True/ False			
2	last-partner-identifier	9.3.2 b	o	m		Y [ ]	n/a	Any			

A.5.7 TP-BID-RC APDU

The support of the field of the TP-BID-RC APDU shall be indicated in Table A.28.

Table A.28 – TP-BID-RC APDU

	TP-BID-RC Field Name	Reference (subclause)	Status		Support		Cross-reference (subclause)	Values			Comment
			Sdr	Rcv	(Y/N) Sdr	(Y/Ig/Err) Rcv		Status	Support Sdr	Support Rcv	
1	result	9.3.2 c	d	d	Y [ ]	Y [ ]	n/a	1,2			

A.5.8 TP-INITIALIZE-RI APDU

The support of the fields of the TP-INITIALIZE-RI APDU shall be indicated in Table A.29.

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Table A.29 – TP-INITIALIZE-RI APDU

	TP-INITIALIZE-RI Field Name	Reference (subclause)	Status		Support		Cross-reference (subclause)	Values			Comment
					(Y/N)	(Y/Ig/Err)		Status	Support		
			Sdr	Rcv	Sdr	Rcv			Sdr	Rcv	
1	protocol-version	8.5.4 a 8.5.5 a	d	d	Y [ ]	Y [ ]	n/a	1xxx...			
2	contention-winner-assignment	8.5.4 b 8.5.5 b	d	d	Y [ ]	Y [ ]	n/a	True/ False			
3	bid-mandatory	8.5.4 c 8.5.5 c	d	d	Y [ ]	Y [ ]	n/a	True/ False			
4	recovery-context-handle	8.5.4 d 8.5.5 d	c7	c6			n/a	Any			

NOTES

1 If the implementation is capable of being the initiator of application associations on which bid is optional (see A.3.2.8/4) (respectively mandatory, see A.3.2.8/3), then it should support sending the value 'False' (respectively 'True') in the "bid-mandatory" field.

2 If the implementation is capable of being the responder to application associations on which bid is optional, (see A.3.2.8/6) (respectively mandatory, see A.3.2.8/5), then it should support receipt and acceptance of the value 'False' (respectively 'True') in the "bid-mandatory" field.

A.5.9 TP-INITIALIZE-RC APDU

The support of the fields of the TP-INITIALIZE-RC APDU shall be indicated in Table A.30.

Table A.30 – TP-INITIALIZE-RC APDU

	TP-INITIALIZE-RC Field Name	Reference (subclause)	Status		Support		Cross-reference (subclause)	Values			Comment
					(Y/N)	(Y/Ig/Err)		Status	Support		
			Sdr	Rcv	Sdr	Rcv			Sdr	Rcv	
1	protocol-version	8.5.6 a2 8.5.6 b2 8.5.7 a 8.5.7 b	d	d	Y [ ]	Y [ ]	n/a	1xxx...			
2	recovery-context-handle	8.5.6 a3 8.5.6 b3 8.5.7 c	c7	c6			n/a	Any			
3	diagnostic	8.5.6 a4 8.5.6 b4	c22	m		Y [ ]	n/a	xxxxx			

c22: If A.3.2.6/3 then m else n/a -- *i.e. association establishment can be rejected*

A.6 TP protocol – Support of the shared control functional unit

This subclause shall be completed only if (A.3.1/2a or A.3.1/2b or A.3.1/2c) = TRUE, i.e. the Shared Control Functional Unit is supported.

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A.6.1 Shared control functional unit APDUs

The support of the APDU related to the Shared Control Functional Unit shall be indicated in Table A.31.

Table A.31 – Shared Control Functional Unit APDUs

	TP APDU Name	Reference (subclause)	Status		Support		Cross-reference (subclause)	Comment
			Sdr	Rcv	(Y/N) Sdr	(Y/Ig/Err) Rcv		
1	TP-U-ERROR-RC	9.3.4	m	m	Y [ ]	Y [ ]	n/a	

A.7 TP protocol – Support of the polarized control functional unit

This subclause shall be completed only if (A.3.1/3a or A.3.1/3b or A.3.1/3c) = TRUE, i.e. the Polarized Control Functional Unit is supported.

A.7.1 Polarized control functional unit APDUs

The support of the APDUs related to the Polarized Control Functional Unit shall be indicated in Table A.32.

Table A.32 – Polarized Control Functional Unit APDUs

	TP APDU Name	Reference (subclause)	Status		Support		Cross-reference (subclause)	Comment
			Sdr	Rcv	(Y/N) Sdr	(Y/Ig/Err) Rcv		
1	TP-GRANT-CONTROL-RI	9.3.6	m	m	Y [ ]	Y [ ]	n/a	
2	TP-REQUEST-CONTROL-RI	9.3.7	m	m	Y [ ]	Y [ ]	n/a	

A.8 TP protocol – Support of the handshake functional unit

This subclause shall be completed only if (A.3.1/4a or A.3.1/4b or A.3.1/4c) = TRUE, i.e. the Handshake Functional Unit is supported.

A.8.1 Handshake functional unit APDUs

The support of the APDUs related to the Handshake Functional Unit shall be indicated in Table A.33.

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Table A.33 – Handshake Functional Unit APDUs

	TP APDU Name	Reference (subclause)	Status		Support		Cross-reference (subclause)	Comment
			Sdr	Rcv	(Y/N) Sdr	(Y/Ig/Err) Rcv		
1	TP-HANDSHAKE-RI	9.3.8	m	m	Y [ ]	Y [ ]	A.8.2	
2	TP-HANDSHAKE-RC	9.3.8	m	m	Y [ ]	Y [ ]	n/a	
3	TP-HANDSHAKE-AND-GRANT-CONTROL-RI	9.3.9	c23	c23			A.8.3	
4	TP-HANDSHAKE-AND-GRANT-CONTROL-RC	9.3.9	c23	c23			n/a	

c23: If (A.3.1/3a and A.3.1/4a) *-- i.e. the Handshake and Polarized Control functional units are both supported within Application Transactions Branches*

or (A.3.1/3b and A.3.1/4b) *-- i.e. the Handshake and Polarized Control functional units are both supported within Chained Provider Supported Transactions Branches*

or (A.3.1/3c and A.3.1/4c) *-- i.e. the Handshake and Polarized Control functional units are both supported within Unchained Provider Supported Transactions Branches*

then m else n/a

A.8.2 TP-HANDSHAKE-RI APDU

The support of the field of the TP-HANDSHAKE-RI APDU shall be indicated in Table A.34.

Table A.34 – TP-HANDSHAKE-RI APDU

	TP-HANDSHAKE-RI Field Name	Reference (subclause)	Status		Support		Cross-reference (subclause)	Values			Comment
			Sdr	Rcv	(Y/N) Sdr	(Y/Ig/Err) Rcv		Status	Support Sdr	Support Rcv	
1	confirmation-urgency	9.3.8 (Svc 13.2.2.1)	c24	c24			n/a	1,2			

c24: If (A.3.1/2a or A.3.1/2b or A.3.1/2c) then m else n/a *-- i.e. The Shared Control Functional Unit is supported*

A.8.3 TP-HANDSHAKE-AND-GRANT-CONTROL-RI APDU

This subclause shall be completed only if ((A.3.1/3a and A.3.1/4a) or (A.3.1/3b and A.3.1/4b) or (A.3.1/3c and A.3.1/4c)) = TRUE, i.e. the Handshake functional unit and the Polarized Control functional unit are both supported within at least one conformance class.

The support of the field of the TP-HANDSHAKE-AND-GRANT-CONTROL-RI APDU shall be indicated in Table A.35.

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Table A.35 – TP-HANDSHAKE-AND-GRANT-CONTROL-RI APDU

	TP-HANDSHAKE-AND-GRANT-CONTROL-RI Field Name	Reference (subclause)	Status		Support		Cross-reference (subclause)	Values			Comment
					(Y/N)	(Y/Ig/Err)		Status	Support		
			Sdr	Rcv	Sdr	Rcv			Sdr	Rcv	
1	confirmation-urgency	9.3.9 (Svc 13.3.2.1)	d	d	Y [ ]	Y [ ]	n/a	1,2			

A.9 TP protocol – Support of the commit functional unit

This subclause shall be completed only if (A.3.1/5a or A.3.1/5b) = TRUE, i.e. the Commit Functional Unit is supported.

A.9.1 Commit functional unit APDUs

The support of the APDUs related to the Commit Functional Unit shall be indicated in Table A.36.

Table A.36 – Commit Functional Unit APDUs

	TP APDU Name	Reference (subclause)	Status		Support		Cross-reference (subclause)	Comment
			Sdr	Rcv	(Y/N) Sdr	(Y/Ig/Err) Rcv		
1	TP-PREPARE-RI	9.3.11	c25	c26			A.9.2	
2	TP-DEFER-RI	9.3.10	c25	c26			A.9.3	
3	TP-HEURISTIC-REPORT-RI	9.3.12	c26	c25			A.9.4	
4	TP-TOKEN-GIVE-RI	9.3.15	m	m			A.9.5	

c25: If A.3.2.3/1 then m else n/a -- *i.e. the implementation is capable of initiating transaction branches*

c26: If A.3.2.3/2 then m else n/a -- *i.e. the implementation is capable of accepting transaction branches*

A.9.2 TP-PREPARE-RI APDU

This subclause shall be completed only if (A.9.1/1a or A.9.1/1b) = TRUE, i.e. the TP-PREPARE-RI can be either sent or received.

The support of the field of the TP-PREPARE-RI APDU shall be indicated in Table A.37.

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Table A.37 – TP-PREPARE-RI APDU

	TP-PREPARE-RI Field Name	Reference (subclause)	Status		Support		Cross-reference (subclause)	Values			Comment
					(Y/N)	(Y/Ig/ Err)		Status	Support		
			Sdr	Rcv	Sdr	Rcv			Sdr	Rcv	
1	data-permitted	9.3.11 (Svc 14.9.2.1)	c27	c27			n/a	True/ False			
c27: If A.3.1/3b) *-- i.e. the Polarized Control Functional Unit is supported during Chained Provider Supported Transaction Branches* or A.3.1/3c *-- i.e. the Polarized Control Functional Unit is supported during Unchained Provider Supported Transaction Branches* then m else n/a											

A.9.3 TP-DEFER-RI APDU

This subclause shall be completed only if (A.9.1/2a or A.9.1/2b) = TRUE, i.e. the TP-DEFER-RI APDU can be either sent or received.

The support of the field of the TP-DEFER-RI APDU shall be indicated in Table A.38.

Table A.38 – TP-DEFER-RI APDU

	TP-DEFER-RI Field Name	Reference (subclause)	Status		Support		Cross-reference (subclause)	Values			Comment
					(Y/N)	(Y/Ig/ Err)		Status	Support		
			Sdr	Rcv	Sdr	Rcv			Sdr	Rcv	
1	type	9.3.10 a	d	d	Y [ ]	Y [ ]	n/a	1,2			

A.9.4 TP-HEURISTIC-REPORT-RI APDU

This subclause shall be completed only if (A.9.1/3a or A.9.1/3b) = TRUE, i.e. the TP-HEURISTIC-REPORT-RI can be either sent or received.

The support of the field of the TP-HEURISTIC-REPORT-RI APDU shall be indicated in Table A.39.

Table A.39 – TP-HEURISTIC-REPORT-RI APDU

	TP-HEURISTIC-REPORT-RI Field Name	Reference (subclause)	Status		Support		Cross-reference (subclause)	Values			Comment
					(Y/N)	(Y/Ig/ Err)		Status	Support		
			Sdr	Rcv	Sdr	Rcv			Sdr	Rcv	
1	heuristic-report	9.3.12 (Svc 14.18.2.1)	d	d	Y [ ]	Y [ ]	n/a	1,2			

A.9.5 TP-TOKEN-GIVE-RI APDU

The support of the fields of the TP-TOKEN-GIVE-RI APDU shall be indicated in Table A.40.

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Table A.40 – TP-TOKEN-GIVE-RI APDU

	TP-TOKEN-GIVE-RI Field Name	Reference (subclause)	Status		Support		Cross-reference (subclause)	Values			Comment
					(Y/N)	(Y/Ig/Err)		Status	Support		
			Sdr	Rcv	Sdr	Rcv			Sdr	Rcv	
1	reason	9.3.15 a	d	d	Y [ ]	Y [ ]	n/a	1-3			
2	correlator	9.3.15 b	m	m	Y [ ]	Y [ ]	n/a	Any			

A.10 TP protocol – Support of the recovery functional unit

This subclause shall be completed only if (A.3.1/8a or A.3.1/8b) = TRUE, i.e. the Recovery Functional Unit is supported.

A.10.1 Recovery functional unit APDUs

The support of the APDUs related to the Recovery Functional Unit shall be indicated in Table A.41.

Table A.41 – Recovery Functional Unit APDUs

	TP APDU Name	Reference (subclause)	Status		Support		Cross-reference (subclause)	Comment
			Sdr	Rcv	(Y/N) Sdr	(Y/Ig/Err) Rcv		
1	TP-BEGIN-DIALOGUE-RI	9.3.1	m	m	Y [ ]	Y [ ]	A.10.2	
2	TP-BEGIN-DIALOGUE-RC	9.3.1	m	m	Y [ ]	Y [ ]	A.10.3	
3	TP-BID-RI	9.3.2	c18	c17			A.10.5	
4	TP-BID-RC	9.3.2	c17	c18			A.5.7	
5	TP-RECOVER-RI	9.3.14	m	c28	Y[ ]		A.10.6	
6	TP-TOKEN-PLEASE-RI	9.3.16	c29	c29			n/a	
7	TP-TOKEN-GIVE-RI	9.3.15	c29	c29			A.9.5	
8	TP-END-DIALOGUE-RI	9.3.3	m	m	Y [ ]	Y [ ]	A.10.4	
9	TP-INITIALIZE-RI	8.5.4 8.5.5	m	m	Y [ ]	Y [ ]	A.5.8	
10	TP-INITIALIZE-RC	8.5.6 8.5.7	m	m	Y [ ]	Y [ ]	A.5.9	

c28: If A.5.8/4a *-- i.e. a local value for the "recovery-context-handle" field can be sent on the TP-INITIALIZE-RI APDUs*
or A.5.9/2a *-- i.e. a local value for the "recovery-context-handle" field can be sent on the TP-INITIALIZE-RC APDUs*
then m else n/a

c29: If A.3.2.9/2 *-- i.e. the two-way recovery mechanism is supported*
then m else n/a

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A.10.2 TP-BEGIN-DIALOGUE-RI APDU

A.10.2.1 Detail of "channel" field of TP-BEGIN-DIALOGUE-RI APDU

The support of the "channel" field of the TP-BEGIN-DIALOGUE-RI APDU shall indicated in Table A.42.

Table A.42 – Detail of "channel" field of TP-BEGIN-DIALOGUE-RI APDU

	TP-BEGIN-DIALOGUE-RI: "channel" Field Sub-field Name	Reference (subclause)	Status		Support		Cross-reference (subclause)	Values			Comment
			Sdr	Rcv	(Y/N) Sdr	(Y/Ig/Err) Rcv		Status	Support Sdr	Support Rcv	
1	functional-units	9.3.1 a (Svc 10.2.2.5)	d	d	Y [ ]	Y [ ]	n/a	000001			
2	correlator	9.3.1 d	m	m	Y [ ]	Y [ ]	n/a	Any			
3	channel-utilization	9.3.1 e	d	d	Y [ ]	Y [ ]	n/a	1,2			
4	last-partner-identifier	9.3.1 g	o	m		Y [ ]	n/a	Any			

A.10.3 TP-BEGIN-DIALOGUE-RC APDU

A.10.3.1 Detail of "channel" field of TP-BEGIN-DIALOGUE-RC APDU

The support of the "channel" field of the TP-BEGIN-DIALOGUE-RC APDU shall be indicated in Table A.43.

Table A.43 – Detail of "channel" field of TP-BEGIN-DIALOGUE-RC APDU

	TP-BEGIN-DIALOGUE-RC: "channel" Field Sub-field Name	Reference (subclause)	Status		Support		Cross-reference (subclause)	Values			Comment
			Sdr	Rcv	(Y/N) Sdr	(Y/Ig/Err) Rcv		Status	Support Sdr	Support Rcv	
1	result	9.3.1 b (Svc 10.2.2.10)	d	d	Y [ ]	Y [ ]	n/a	1,2			
2	diagnostic	9.3.1 c (Svc 10.2.2.11)	m	m	Y [ ]	Y [ ]	n/a	1-5			
3	correlator	9.3.1 d	m	m	Y [ ]	Y [ ]	n/a	Any			

A.10.4 TP-END-DIALOGUE-RI APDU

The support of the field of the TP-END-DIALOGUE-RI APDU shall be indicated in Table A.44.

Table A.44 – TP-END-DIALOGUE-RI APDU

	TP-END-DIALOGUE-RI: Field Name	Reference (subclause)	Status		Support		Cross-reference (subclause)	Values			Comment
			Sdr	Rcv	(Y/N) Sdr	(Y/Ig/Err) Rcv		Status	Support Sdr	Support Rcv	
1	confirmation	9.3.3 a	d	d	Y [ ]	Y [ ]	n/a	False			

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A.10.5 TP-BID-RI APDU

The support of the fields of the TP-BID-RI APDU shall be indicated in Table A.45.

Table A.45 – TP-BID-RI APDU

	TP-BID-RI Field Name	Reference (subclause)	Status		Support		Cross-reference (subclause)	Values			Comment
					(Y/N)	(Y/Ig/ Err)		Status	Support		
			Sdr	Rcv	Sdr	Rcv			Sdr	Rcv	
1	ccr-token-requested	9.3.2 a	m	m	Y [ ]	Y [ ]	n/a	True			
2	last-partner-identifier	9.3.2 b	o	m		Y [ ]	n/a	Any			

A.10.6 TP-RECOVER-RI APDU

The support of the field of the TP-RECOVER-RI APDU shall be indicated in Table A.46.

Table A.46 – TP-RECOVER-RI APDU

	TP-RECOVER-RI Field Name	Reference (subclause)	Status		Support		Cross-reference (subclause)	Values			Comment
					(Y/N)	(Y/Ig/ Err)		Status	Support		
			Sdr	Rcv	Sdr	Rcv			Sdr	Rcv	
1	recovery-context-handle	9.3.14 a)	m	m	Y [ ]	Y [ ]	n/a	Any			

A.11 Multi-layer dependencies

Table A.47 reflects the support for the dependencies indicated in ITU-T Rec. X.862 | ISO/IEC 10026-3 and allows to add comments as appropriate to the implementation. (For instance, the comment box for the item 4 may be used to indicate all the versions of Session that are implemented in the system and accessible by the TP implementation).

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Table A.47 – Multi-layer dependencies

	Dependency	Reference (subclause)	Status	Support (Y/N)	Comment
1	ACSE (CCITT Rec. X.227 I ISO 8650:1989)	7.3 Table 2	m	Y [ ]	
2	Presentation – Kernel (CCITT Rec. X.226 I ISO 8823:1988) plus Amendment 5 for provision of Session Data Separation FU	7.5	c6		
3	Presentation – Kernel (CCITT Rec. X.226 I ISO 8823:1988)	7.5	m	Y [ ]	
4	Session protocol V.2 and/or subsequent – Kernel and Full Duplex (CCITT Rec. X.225 I ISO/IEC 8327:...[3)]		m	Y [ ]	
5	Other Session FUs as required by CCR plus Amendment 4 for use of Session Data Separation FU		c6		
6	CCR (CCITT Rec. X.852 I ISO/IEC 9805:1990) plus Amendment for use of Session Data Separation FU	7.4	C6		

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Annex B[4)]

Implementation capability detail

(This annex does not form an integral part of this Recommendation I International Standard)

Each implementation may have specific limits concerning some features of the TP Protocol. Global limits are identified in this clause. Limits specific to particular TP APDUs are specified in A.5 to A.9 of this PICS Proforma.

For each item, limits may be specific to the role of the implementation (e.g. sender or receiver, superior or subordinate, ...). These cases are identified in the table hereafter.

When needed, the total limit is also requested. The total limit is the upper limit of the implementation independently of roles.

The upper limits (if any) of the implementation for some items are specified in Table B.1. If the implementation has no limit, answer "NO LIMIT".

Other information on the capabilities of the implementation may be added in free format on extra pages.

Table B.1 – Implementation capability detail

	Item		Upper Limit(s)
1	Number of associations your implementation can support when acting as:	Association Initiator/ Contention Winner	
		Association Initiator/ Contention Loser	
		Association Responder/ Contention Winner	
		Association Responder/ Contention Loser	
2	Total number of associations your implementation can support:		
3	Total Number of dialogues your implementation can simultaneously support when acting as:	Superior	
		Subordinate	
		Total	
4	Number of dialogues your implementation can simultaneously support per node when acting as a superior:		
5	Number of TPSUIs involved in a Provider Supported Transaction your implementation can support simultaneously: (Note)		
6	Number of Provider Supported Transaction Branches per TPSUI your implementation can coordinate simultaneously: (Note)		
7	Size of an individual APDU: When acting as:	Sender	
		Receiver	
8	Number of APDUs that can be concatenated onto a single Presentation Service when acting as:	Sender	
		Receiver	
9	Overall size of a concatenation of APDUs when acting as:	Sender	
		Receiver	
NOTE – If the commit functional unit is not supported, then answer "n/a".			

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