INTERNATIONAL STANDARDIZED PROFILE

ISO/IEC ISP 12061-2

First edition
1995-06-15

Information technology — Open Systems Interconnection — International Standardized Profiles: OSI Distributed Transaction Processing —

Part 2:
Support of OSI TP APDUs

Technologies de l'information — Interconnexion de systèmes ouverts (OSI) — Profils normalisés internationaux: Traitement transactionnel réparti —

Partie 2: Prise en charge des APDU d'OSI TP

Reference number
ISO/IEC ISP 12061-2:1995(E)

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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. In addition to developing International Standards, ISO/IEC JTC 1 has created a Special Group on Functional Standardization for the elaboration of International Standardized Profiles.

An International Standardized Profile is an internationally agreed, harmon-ized document which identifies a standard or group of standards, together with options and parameters, necessary to accomplish a function or set of functions.

Draft International Standardized Profiles are circulated to national bodies for voting. Publication as an International Standardized Profile requires approval by at least 75 % of the national bodies casting a vote.

International Standardized Profile ISO/IEC ISP 12061-2 was prepared with the collaboration of

— Asia-Oceania Workshop (AOW);

— European Workshop for Open Systems (EWOS);

— Open Systems Environment Implementors' Workshop (OIW).

ISO/IEC ISP 12061 consists of the following parts, under the general title *Information technology — Open Systems Interconnection — International Standardized Profiles: OSI Distributed Transaction Processing*:

— *Part 1: Introduction to the Transaction Processing Profiles*

— *Part 2: Support of OSI TP APDUs*

— *Part 3: Support of CCR APDUs*

— *Part 4: Support of Session, Presentation and ACSE PDUs*

— *Part 5: Application supported transactions — Polarized control (ATP11)*

— *Part 6: Application supported transactions — Shared control (ATP12)*

— *Part 7: Provider supported unchained transactions — Polarized control (ATP21)*

— *Part 8: Provider supported unchained transactions — Shared control (ATP22)*

— *Part 9: Provider supported chained transactions — Polarized control (ATP31)*

— *Part 10: Provider supported chained transactions — Shared control (ATP32)*

Annex A forms an integral part of this part of ISO/IEC ISP 12061.

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Introduction

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

- from different manufacturers,
- under different management,
- of different levels of complexity,
- of different technologies.

Transaction Processing is concerned with identifiable information which can be related as transactions, which may involve two or more Open Systems. In the framework of Open Systems Interconnection (OSI) a transaction is defined as "a set of related operations characterized by four properties: atomicity, consistency, isolation and durability."

The definition highlights that a distributed transaction is more than a simple exchange of messages, but that the exchanges form a protected indivisible set.

This multi-part International Standardized Profile contains the complete specification of the six profiles identified in ISO/IEC TR 10000-2.[1]

Part 1 Introduces the overall structure of the specification of the OSI TP Profiles, including the definitions and abbreviations used through out the various parts of ISO/IEC 12061.

Part 2 contains the specification of the support of OSI TP APDUs for each of the profiles specified in parts 5 to 10.

Part 3 contains the specification of the support of the CCR APDUs for each of the profiles specified in parts 5 to 10.

Part 4 contains the specification of the support of ACSE, Presentation and Session APDUs for each of the profiles specified in parts 5 to 10.

Parts 5 to 10 specify the six profiles which are defined, based on the OSI TP standard. These six parts make reference to parts 2 to 4.

[1]ISO/IEC TR 10000-2: 1992, Information Technology - Framework and Taxonomy of International Standardized Profiles - Part2: Taxonomy of OSI Profiles

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Information technology — Open Systems Interconnection — International Standardized Profiles: OSI Distributed Transaction Processing —

Part 2:
Support of OSI TP APDUs

1 Scope

This part of this ISO/IEC ISP 12061 specifies the status for the support of the OSI TP protocol for the profiles identified in ISO/IEC ISP 12061-1.

2 Normative references

The following documents contain provisions which, through reference in this text, constitute provisions of this part of ISO/IEC ISP 12061. At the time of publication, the editions indicated were valid. All documents are subject to revision, and parties to agreements based on this part of ISO/IEC ISP 12061 are warned against automatically applying any more recent editions of the documents listed below, since the nature of references made by ISPs to such documents, is that they may be specific to a particular edition. Members of IEC and ISO maintain registers of currently valid International Standards and ISPs, and ITU-T maintains published editions of its current Recommendations.

ISO/IEC 8327: 1987[1],	*Information processing systems - Open Systems Interconnection - Basic connection oriented session protocol specification*
ISO/IEC 8327:1987 /Amd 3:1992,	*Information processing systems - Open Systems Interconnection - Basic connection oriented session protocol specification - Amendment 3: Additional synchronization functionality.*
ISO/IEC 8327-2:—[2]	*Information technology - Open Systems Interconnection - Basic connection oriented session PICS Proforma - Part 2: Protocol Implementation Conformance Statement (PICS) Proforma.*
ISO/IEC 8650:1988,	*Information processing systems - Open Systems Interconnection - Protocol specification for the Association Control Service Element.*
ISO/IEC 8650-2:1995,	*Information technology - Open Systems Interconnection - Protocol specification for the Association Control Service Element - Part 2: Protocol Implementation Conformance Statement (PICS) Proforma.*
ISO/IEC 8823:1988,	*Information processing systems - Open Systems Interconnection - Connection oriented presentation protocol specification.*

[1] Under revision
[2] To be published

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ISO/IEC 8823:1988 /Amd 5:1992, *Information processing systems - Open Systems Interconnection - Connection oriented presentation protocol specification - Amendment 5: Additional synchronisation functionality to the presentation service user.*

ISO/IEC 8823-2:—[2] *Information technology - Open Systems Interconnection - Connection oriented presentation protocol specification - Part 2: Protocol Implementation Conformance Statement (PICS) Proforma.*

ISO/IEC 8825:1990, *Information technology - Open Systems Interconnection - Specification of Basic Encoding Rules for Abstract Syntax Notation One (ASN.1).*

ISO/IEC 9805:1990, *Information technology - Open Systems Interconnection - Protocol Specification for the Commitment, Concurrency and Recovery service element.*

ISO/IEC 9805-2:—[2] *Information technology - Open Systems Interconnection - Commitment, Concurrency and Recovery protocol - Part 2: Protocol Implementation Conformance Statement (PICS) Proforma.*

ISO/IEC 9805:1990 /Amd 2:1992, *Information technology - Open Systems Interconnection - Protocol Specification for the Commitment, Concurrency and Recovery service element - Amendment 2: Session mapping changes.*

ISO/IEC 10026-1:1992, *Information technology - Open Systems Interconnection - Distributed Transaction Processing - Part 1: OSI TP Model.*

ISO/IEC 10026-2:1992, *Information technology - Open Systems Interconnection - Distributed Transaction Processing - Part 2: OSI TP Service.*

ISO/IEC 10026-3:1992, *Information technology - Open Systems Interconnection - Distributed Transaction Processing - Part 3: OSI TP Protocol specification.*

ISO/IEC 10026-4:1995, *Information technology - Open Systems Interconnection - Distributed Transaction Processing - Part 4: Protocol Implementation Conformance Statement (PICS) Proforma.*

ISO/IEC ISP 11188-1:1995, *Information technology - International Standardized Profile - Common upper layer requirements - Part 1: Basic connection oriented requirements.*

3 Definitions and abbreviations

The definitions and abbreviations listed in ISO/IEC 12061-1 apply.

4 Notation

The notation introduced in ISO/IEC ISP 12061-1 applies.

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5 Support of OSI TP protocol

The support of the OSI TP protocol is as described in annex A.
The structure of Annex A is based on the structure of annex A of ISO/IEC 10026-4, in particular in the numbering of the clauses.
When a clause of annex A of ISO/IEC 10026-4 is not relevant to the profiles, this is stated.

6 Conformance

To conform to the OSI TP Protocol used in any of the profiles in this Part of ISO/IEC ISP 12061, an implementation shall implement, according to the specifications given in ISO/IEC 10026-3:

- All mandatory features identified in annex A.
- All selected optional features, as identified in the completed TP PICS.

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Annex A
(normative)

TP PDU support

A.1 Identification

No restriction is applied to clause A.1 of ISO/IEC 10026-4 by this part of ISO/IEC ISP 12061.

A.2 Claimed conformance to standards

A.2.1 ISO/IEC 10026-3

A.2.1.1 Version number(s)

Answer shall be "NONE".

A.2.1.2 Global conformance claim

Answer shall be "YES".

A.2.2 ISO/IEC 10026 amendments

Both answers shall be "NONE".

A.2.3 ISO/IEC 10026 technical corrigenda

Both answers shall be "NONE".

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Table 1 - CONFORMANCE CLASSES SUPPORTED

ITEM #	CONFORMANCE CLASSES	ISO/IEC 10026-4	PROFILES						
			11	21	31	12	22	32	NOTES
1	Application Transaction Branches	O.n	M	NA	NA	M	NA	NA	1
2	Chained Provider Supported Transaction Branches	O.n	NA	NA	M	NA	NA	M	1
3	Unchained Provider Supported Transaction Branches	O.n	NA	M	NA	NA	M	NA	1

NOTES

1. Conformance to more than one profile may be claimed for an implementation. For example, an implementation that conforms to profile 21 will often be capable of conforming to the corresponding Profile 11.

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A.3 Functional units, limits and protocol mechanisms

A.3.1 Support of functional units

Table 2 - SUPPORT OF FUNCTIONAL UNITS

ITEM #	FUNCTIONAL UNITS	ISO/IEC 10026-4			PROFILES						
					11	21	31	12	22	32	NOTES
		AS	CP	UP							
1	Dialogue	M	M	M	M	M	M	M	M	M	
2	Shared Control	O.n	O.n	O.n	NA	NA	NA	M	M	M	
3	Polarized Control	O.n	O.n	O.n	M	M	M	NA	NA	NA	
4	Handshake	O	O	O	M	M	M	O	O	O	
5	Commit	NA	M	M	NA	M	M	NA	M	M	
6	Chained Transactions	NA	M	NA	NA	NA	M	NA	NA	M	
7	Unchained Transactions	NA	NA	M	NA	M	NA	NA	M	NA	
8	Recovery	NA	M	M	NA	M	M	NA	M	M	

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A.3.2 Protocol mechanisms implemented

A.3.2.1 Concatenation/separation

Table 3 - SUPPORT FOR CONCATENATION/SEPARATION

ITEM #	ROLE	ISO/IEC 10026-4	PROFILES						
			11	21	31	12	22	32	NOTES
1	Concatenation	O	O	O	O	O	O	O	1
2	Separation	M	M	M	M	M	M	M	

NOTES

1. Concatenated TP APDUs shall consist of :

   A. a sequence of PDV-list, where each PDV contains a single-ASN.1-Type, when the concatenated TP APDUs are embedded in a Presentation PDU such as P-DATA, or

   B. a sequence of EXTERNAL, where each encoding consist of a Single-ASN.1-Type, when the concatenated TP APDUs are embedded in a CCR APDU such as C-COMMIT-RC.

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A.3.2.2 Association establishment

Table 4 - ASSOCIATION ESTABLISHMENT

ITEM #	ROLE	ISO/IEC 10026-4	PROFILES						
			11	21	31	12	22	32	NOTES
1	Initiator	C	O	M	M	O	M	M	1,2,4
2	Acceptor	C	O	M	M	O	M	M	1,3,4
3	Rejector	O	M	M	M	M	M	M	5,6

NOTES

1 When the commitment is supported, then the implementation must be able to support both the association initiator and acceptor role in order to be able to perform recovery adequately.

2 The initiator role here implies being capable of issuing an A-ASSOCIATE request and being capable of receiving an A-ASSOCIATE confirm.

3 The Acceptor role here implies being capable of receiving an A-ASSOCIATE indication and being capable of issuing an A-ASSOCIATE response with a positive answer.

4. For Profiles 11 and 12, at a minimum, the association establishment initiator role or the association establishment acceptor role shall be supported.

5. The Rejector role here implies being capable of receiving an A-ASSOCIATE indication and being capable of issuing an A-ASSOCIATE response with a negative answer.

6. Although it is mandatory to be able to reject an association, note that in some particular environments it could occur that the reject is always performed by some lower protocol machine (e.g. ACSE).

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A.3.2.3 Support for mandatory and optional bidding

Table 5 - SUPPORT FOR MANDATORY AND OPTIONAL BIDDING

ITEM #	ROLE	ISO/IEC 10026-4	PROFILES						
			11	21	31	12	22	32	NOTES
1	Initiator with Bid mandatory	C	C100	M	M	C100	M	M	
2	Initiator with Bid optional	C	C101	O	O	C101	O	O	
3	Responder with Bid mandatory	C	C102	M	M	C102	M	M	
4	Responder with Bid optional	C	C103	M	M	C103	M	M	

100 If association establishment initiator role is supported(A.3.2.2/1) then O else NA.

101 If association establishment initiator role is supported (A.3.2.2/1) then M else NA.

102 If association establishment acceptor role is supported(A.3.2.2/2) then O else NA.

103 If association establishment acceptor role is supported(A.3.2.2/2) then M else NA.

A.3.2.4 Contention

Table 6 - SUPPORT FOR CONTENTION MANAGEMENT

ITEM #	ROLE	ISO/IEC 10026-4	PROFILES						
			11	21	31	12	22	32	NOTES
1	Contention Winner	O.n	O	M	M	O	M	M	1,2
2	Contention Loser	O.n	O	M	M	O	M	M	1,2

NOTES

1. When the commitment is supported, in order to enable channel establishment (initiator or acceptor) to be accepted, it is required to be able to support both the contention winner and contention loser roles.

2. For profiles 11 and 12, at least one of the contention winner and contention loser roles shall be supported.

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A.3.2.5 Bid mechanism

Table 7 - SUPPORT FOR THE BID MECHANISM

ITEM #	ROLE	ISO/IEC 10026-4	PROFILES						
			11	21	31	12	22	32	NOTES
1	Initiator	C	C105	M	M	C105	M	M	1,3
2	Responder	C	C106	M	M	C106	M	M	2,3

NOTES

1. The initiator role here implies being capable of sending a TP-BID-RI APDU and being capable of receiving a TP-BID-RC APDU.

2. The responder role here implies being capable of receiving a TP-BID-RI APDU and being capable of sending a TP-BID-RC APDU with a positive answer.

3. When the commitment is supported, in order to enable channel establishment (initiator and acceptor) to be accepted, it is required to be able to support both the bid initiator and bid responder roles.

105 If the Contention Loser role is supported (A.3.2.4/2) then
If Associations with Bid Mandatory are supported (A.3.2.3/1 or A.3.2.3/3)
then M else O
else NA

106 If the Contention Winner role is supported (A.3.2.4/1) then M else NA

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A.3.2.6 Dialogue establishment

Table 8 - TP DIALOGUE ESTABLISHMENT

ITEM #	ROLE	ISO/IEC 10026-4	PROFILES						
			11	21	31	12	22	32	NOTES
1	Initiator	O.n	O	O	O	O	O	O	1,3
2	Acceptor	O.n	O	O	O	O	O	O	2,3
3	Rejector	M	M	M	M	M	M	M	

NOTES

1. The initiator role here implies being capable of sending a TP-BEGIN-DIALOGUE-RI APDU and being capable of receiving a TP-BEGIN-DIALOGUE-RC APDU.

2. The Acceptor role here implies being capable of receiving a TP-BEGIN-DIALOGUE-RI APDU and being capable of sending a TP-BEGIN-DIALOGUE-RC APDU with a positive answer.

3. For each of the profiles,at least one of the Acceptor or initiator roles shall be implemented.

A.3.2.7 Transaction branch establishment

Table 9 - TRANSACTION BRANCH ESTABLISHMENT

ITEM #	ROLE	ISO/IEC 10026-4	PROFILES						
			11	21	31	12	22	32	NOTES
1	Initiator	C	NA	C107	C107	NA	C107	C107	
2	Acceptorr	C	NA	C108	C108	NA	C108	C108	

107 If the implementation is capable of initiating a dialogue (A.3.2.6/1) then M else NA.

108 If the implementaion is capable of accepting a dialogue (A.3.2.6/2) then M else NA.

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A.3.2.8 Roles in a transaction tree supported

Table 10 - ROLES IN A TRANSACTION TREE SUPPORTED

ITEM #	ROLE	ISO/IEC 10026-4	PROFILES						
			11	21	31	12	22	32	NOTES
1	Root Node	C	NA	O	O	NA	O	O	1
2	Intermediate Node	C	NA	O	O	NA	O	O	1
3	Leaf Node	C	NA	C109	C109	NA	C109	C109	1

NOTES

1. An implementation must be capable of acting as either a root, an intermediate or a leaf node.

109 If capable of acting as an intermediate node then M else O.

A.3.2.9 Support for recovery

This clause does not apply to profiles 11 and 12.

Table 11 - SUPPORT FOR RECOVERY

ITEM #	ROLE	ISO/IEC 10026-4	PROFILES						
			11	21	31	12	22	32	NOTES
1	One-Way recovery	M	NA	M	M	NA	M	M	
2	Two-Way Recovery	O	NA	O	O	NA	O	O	

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A.4 TP protocol - general

The clause A.4 in ISO/IEC 10026-4 is not relevant.

A.5 TP Protocol - support of the dialogue functional unit

This clause applies to all profiles.

A.5.1 Dialogue functional unit apdus

Table 12 - TP APDUS FOR THE DIALOGUE FU

ITEM #	PROTOCOL DATA UNIT	ISO/IEC 10026-4	PROFILES						
			11	21	31	12	22	32	NOTES
1	TP-BEGIN-DIALOGUE-RI	C	C107/ M	C107/ M	C107/ M	C107/ M	C107/ M	C107/ M	1
2	TP-BEGIN-DIALOGUE-RC	C	M/ C107	M/ C107	M/ C107	M/ C107	M/ C107	M/ C107	2
3	TP-END-DIALOGUE-RI	C	M	M	NA	M	M	NA	
4	TP-END-DIALOGUE-RC	C	M	M	NA	M	M	NA	
5	TP-U-ERROR-RI	M	M	M	M	M	M	M	
6	TP-ABORT-RI	M	M	M	M	M	M	M	
7	TP-BID-RI	C	C111/ C110	M	M	C111/ C110	M	M	
8	TP-BID-RC	C	C110/ C111	M	M	C110/ C111	M	M	
9	TP-INITIALIZE-RI	C	C112/ M	M	M	C112/ M	M	M	3
10	TP-INITIALIZE-RC	C	M/ C112	M	M	M/ C112	M	M	4

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Table 12 - continued

NOTES

1. It is mandatory for every implementation to receive and recognize the TP-BEGIN-DIALOGUE-RI APDU (ref ISO/IEC 10026-3 13.1.2.1.c and 13.1.2.1.f).

2. It is mandatory for every implementation to be capable of rejecting a TP-BEGIN-DIALOGUE-RI (ref ISO/IEC 10026-3 13.1.2.1f)

3. It is mandatory for every implementation to receive and recognize the TP-INITIALIZE-RI APDU (ref ISO/IEC 10026-3 13.1.2.1.a).

4. It is mandatory for every implementation to be capable of rejecting a TP-INITIALIZE-RI APDU

110 If the implementation is capable of receiving a Bid (A.3.2.5/2) then M else NA

111 If the implementation is capable of initiating a Bid (A.3.2.5/1) then M else NA

112 If the implementation is capable of initiating an association (A.3.2.2/1) then M else NA

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A.5.2 TP-begin-dialogue-ri apdu

A.5.2.1 Detail of the dialogue field of tp-begin-dialogue-ri apdu

Table 13 - TP-BEGIN-DIALOGUE-RI for Dialogue

ITEM #	ISO/IEC 10026-4		PROFILE			
	PARAMETER	STATUS	PROFILE ID	STATUS	T/L/V ALLOWED	NOTES
1	Initiating-TPSU-Title	O/M		M	See Table 14	
2	Recipient-TPSU-Title	O/M		M	See Table 14	
3	Functional-Units	D	11	M	{0,4}	
			12	M	{1} OR {1,4}	
			21	M	{0,3,4}	
			22	M	{1,3} or {1,3,4}	
			31	M	{0,2,4}	
			32	M	{1,2} or {1,2,4}	
4	Begin-Transaction	C	11,12,31,32	NA		
			21,22	M		
5	Confirmation	D		M		
6	Correlator	M		M	0..2**31-1	
7	Last-Partner-Identifier	O/M		M	0..2**31-1	1
8	User-Data	O/M		M	0..10K octets+	2

NOTES

1. The Last-Partner-Identifier is marked M because an implementation shall be able to support more than one dialogue or channel on an association.

2. The receiver shall be capable of receiving at least 10K octets of user-data.

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A.5.2.1.1 Detail of tpsu-title fields for the dialogue field of tp-begin-dialogue-ri apdu

Table 14 - Detail of TPSU-TITLE fields for the dialogue field of TP-BEGIN-DIALOGUE-RI APDU

ITEM #	ISO/IEC 10026-4		PROFILE			
	TYPE	STATUS	PROFILE ID	STATUS	T/L/V ALLOWED	NOTES
1	T61String	O.n/M		C113/M	1..64 octets	1
2	PrintableString	O.n/M		C113/M	1..64 octets	1
3	INTEGER	O.n/M		C113/M	0..2**31-1	1

NOTES

1. At least one of the three types shall be supported for the INITIATING-TPSU-TITLE.

113 If the TPSU-TITLE is used to carry a RECIPIENT-TPSU-TITLE value then M else O

A.5.3 TP-begin-dialogue-rc apdu

A.5.3.1 Detail of the dialogue field of tp-begin-dialogue-rc apdu

Table 15 - TP-BEGIN-DIALOGUE-RC for Dialogue

ITEM #	ISO/IEC 10026-4		PROFILE			
	PARAMETER	STATUS	PROFILE ID	STATUS	T/L/V ALLOWED	NOTES
1	Functional-Units	O/M		M		
2	Result	D		M		
3	Diagnostic	M		M		
4	Correlator	M		M	0..2**31-1	
5	User-Data	O/M		M	0..10K octets+	1

NOTES

1. The receiver shall be capable of receiving at least 10K octets of user-data

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A.5.4 TP-end-dialogue-ri apdu

This APDU does not apply to profiles 31 and 32.

Table 16 - TP-END-DIALOGUE-RI for Dialogue

ITEM #	ISO/IEC 10026-4		PROFILE			
	PARAMETER	STATUS	PROFILE ID	STATUS	T/L/V ALLOWED	NOTES
1	Confirmation	D	11,12,21,22	M		

A.5.5 TP-abort-ri-apdu

A.5.5.1 Detail of the user field of tp-abort-ri apdu

Table 17 - TP-ABORT-RI, for user

ITEM #	ISO/IEC 10026-4		PROFILE			
	PARAMETER	STATUS	PROFILE ID	STATUS	T/L/V ALLOWED	NOTES
1	User-Data	O/M		M	0..10K octets +	1

NOTE

1. The receiver shall be capable of receiving at least 10K octets of user-data

A.5.5.2 Detail of the provider field of tp-abort-ri apdu

Table 18 - TP-ABORT-RI, for provider

ITEM #	ISO/IEC 10026-4		PROFILE			
	PARAMETER	STATUS	PROFILE ID	STATUS	T/L/V ALLOWED	NOTES
1	Provider-diagnostic	M		M		

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A.5.5.3 TP-bid-ri-apdu

Table 19 - TP-BID-RI

ITEM #	ISO/IEC 10026-4		PROFILE			
	PARAMETER	STATUS	PROFILE ID	STATUS	T/L/V ALLOWED	NOTES
1	CCR-Token-Requested	D	11,12	M	False	
			21,22,31,32	M		
2	Last-Partner-Identifier	O/M		M	0..2**31-1	

A.5.6 TP-bid-rc apdu

Table 20 - TP-BID-RC

ITEM #	ISO/IEC 10026-4		PROFILE			
	PARAMETER	STATUS	PROFILE ID	STATUS	T/L/V ALLOWED	NOTES
1	Result	D		M		

A.5.7 TP-initialize-ri apdu

Table 21 - TP-INITIALIZE-RI

ITEM #	ISO/IEC 10026-4		PROFILE			
	PARAMETER	STATUS	PROFILE ID	STATUS	T/L/V ALLOWED	NOTES
1	Protocol-Version	D		M	{version 1}	
2	Contention-Winner-Assignment	D		M		
3	Bid-Mandatory	D		M		
4	Recovery-Context-Handle	C	11,12	I		
			21,22,31,32	O/M	1..64 octets	1

NOTES

1 It is optional to send a RECOVERY-CONTEXT-HANDLE (RCH) as the sender may have no use for it. It is mandatory to receive an RCH and be able to send it on the TP-RECOVER-RI APDU.

A.5.8 TP-initialize-rc apdu

Table 22 - TP-INITIALIZE-RC

ITEM #	ISO/IEC 10026-4		PROFILE			
	PARAMETER	STATUS	PROFILE ID	STATUS	T/L/V ALLOWED	NOTES
1	Protocol-Version	D		M	{version 1}	
2	Recovery-Context-Handle	O/M	11,12	I		
			21,22,31,32	O/M	1..64 octets	1
3	Diagnostic	O/M		M		

NOTES

1 It is optional to send a Recovery-Context-Handle (RCH) as the sender may have no use for it. It is mandatory to receive an RCH and be able to send it on the TP-RECOVER-RI APDU.

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A.6 Support of the shared control functional unit

This clause does not apply to profiles 11, 21 and 31.

A.6.1 Shared control functional unit apdus

Table 23 - TP APDUs for the SHARED Control FU

ITEM #	PROTOCOL DATA UNITS	ISO/IEC 10026-4	PROFILES						
			11	21	31	12	22	32	NOTES
1	TP-U-ERROR-RC	M	NA	NA	NA	M	M	M	

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A.7 Support of the polarized control functional unit

This clause does not apply to profiles 12, 22 and 32.

A.7.1 Polarized control functional unit apdus

Table 24 - TP APDUs for the Polarized Control FU

ITEM #	PROTOCOL DATA UNITS	ISO/IEC 10026-4	PROFILES						
			11	21	31	12	22	32	NOTES
1	TP-GRANT-CONTROL-RI	M	M	M	M	NA	NA	NA	
2	TP-REQUEST-CONTROL-RI	M	M	M	M	NA	NA	NA	

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A.8 Support of the handshake functional unit

This clause applies to all profiles.

A.8.1 Handshake functional unit apdus

Table 25 - TP APDUs for the Handshake FU

ITEM #	PROTOCOL DATA UNITS	ISO/IEC 10026-4	PROFILES						
			11	21	31	12	22	32	NOTES
1	TP-HANDSHAKE-RI	M	M	M	M	C114	C114	C114	
2	TP-HANDSHAKE-RC	M	M	M	M	C114	C114	C114	
3	TP-HANDSHAKE-AND-GRANT-CONTROL-RI	C	M	M	M	NA	NA	NA	
4	TP-HANDSHAKE-AND-GRANT-CONTROL-RC	C	M	M	M	NA	NA	NA	

114 If the Handshake FU is implemented (A.3.1/4) then M else NA

A.8.2 TP-handshake-ri apdu

This APDU is not applicable for profiles 12, 22 and 32 when the handshake FU is not implemented.

Table 26 - TP-HANDSHAKE-RI

ITEM #	ISO/IEC 10026-4		PROFILE			
	PARAMETER	STATUS	PROFILE ID	STATUS	T/L/V ALLOWED	NOTES
1	Confirmation-Urgency	C	11,21,31	NA		
			12,22,32	M		

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A.8.3 TP-handshake-and-grant-control-ri apdu

This APDU does not apply to profiles 12, 22 and 32.

Table 27 - TP-HANDSHAKE-AND-GRANT-CONTROL-RI

ITEM #	ISO/IEC 10026-4		PROFILE			
	PARAMETER	STATUS	PROFILE ID	STATUS	T/L/V ALLOWED	NOTES
1	Confirmation-Urgency	D	11,21,31	M		

A.9 TP protocol - support of the commit functional unit

This clause applies only to profiles 21, 22, 31 and 32.

A.9.1 Commit functional unit apdus

Table 28 - TP APDUs for Commit FU

ITEM #	PROTOCOL DATA UNITS	ISO/IEC 10026-4	PROFILES						
			11	21	31	12	22	32	NOTES
1	TP-PREPARE-RI	C	NA	C115 /C116	C115 /C116	NA	C115 /C116	C115 /C116	
2	TP-DEFER-RI	C	NA	C115 /C116	C115 /C116	NA	C115 /C116	C115 /C116	
3	TP-HEURISTIC-REPORT-RI	C	NA	C116 /C115	C116 /C115	NA	C116 /C115	C116 /C115	
4	TP-TOKEN-GIVE-RI	M	NA	M	M	NA	M	M	

115 If the implementation is capable of initiating a dialogue (A.3.2.6/1) then M else NA

116 If the implementation is capable of accepting a dialogue (A.3.2.6/2) then M else NA

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A.9.1.1 TP-prepare-ri-apdu

This APDU does not apply to profiles 11 and 12.

Table 29 - TP-PREPARE-RI

ITEM #	ISO/IEC 10026-4		PROFILE			
	PARAMETER	STATUS	PROFILE ID	STATUS	T/L/V ALLOWED	NOTES
1	Data-Permitted	C	21,31	M		
			22,32	NA		

A.9.2 TP-defer-ri apdu

This APDU does not apply to profiles 11 and 12.

Table 30 - TP-DEFER-RI

ITEM #	ISO/IEC 10026-4		PROFILE			
	PARAMETER	STATUS	PROFILE ID	STATUS	T/L/V ALLOWED	NOTES
1	Type	D	22,32	M	End-Dialogue	
			21,31	M		

A.9.3 TP-heuristic-report-ri apdu

This APDU does not apply to profiles 11 and 12.

Table 31 - TP-HEURISTIC-REPORT-RI

ITEM #	ISO/IEC 10026-4		PROFILE			
	PARAMETER	STATUS	PROFILE ID	STATUS	T/L/V ALLOWED	NOTES
1	Heuristic-Report	D		M		

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A.9.4 TP-token-give-ri apdu

This APDU does not apply to profiles 11 and 12.

Table 32 - TP-TOKEN-GIVE-RI

ITEM #	ISO/IEC 10026-4		PROFILE			
	PARAMETER	STATUS	PROFILE ID	STATUS	T/L/V ALLOWED	NOTES
1	Reason	D		M	Regular, Keep	
2	Correlator	M		M		

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A.10 TP protocol - support of the recovery functional unit

This clause applies only to profiles 21, 22, 31 and 32.

A.10.1 Recovery functional unit apdus

Table 33 - TP APDUs for Recovery FU

ITEM #	PROTOCOL DATA UNITS	ISO/IEC 10026-4	ATP11	ATP21	ATP31	ATP12	ATP22	ATP32	NOTES
1	TP-BEGIN-DIALOGUE-RI	M	NA	M	M	NA	M	M	1
2	TP-BEGIN-DIALOGUE-RC	M	NA	M	M	NA	M	M	1
3	TP-BID-RI	C	NA	M	M	NA	M	M	1
4	TP-BID-RC	C	NA	M	M	NA	M	M	1,3
5	TP-RECOVER-RI	M/C	NA	M /C117	M /C117	NA	M /C117	M /C117	
6	TP-END-DIALOGUE-RI	M	NA	M	M	NA	M	M	
7	TP-TOKEN-PLEASE-RI	C	NA	C118	C118	NA	C118	C118	3
8	TP-INITIALIZE-RI	M	NA	M	M	NA	M	M	3
9	TP-INITIALIZE-RC	M	NA	M	M	NA	M	M	3
10	TP-TOKEN-GIVE-RI		NA	O	O	NA	O	O	2

NOTES

1 When the commitment is supported, in order to enable channel establishment (initiator or acceptor) to be accepted, it is required to be able to support both the bid initiator and the bid responder roles.

2 This PDU is not in the Recovery FU in ISO/IEC 10026-4. However it has been added to this ISP as required for support of Two-Way recovery.

3 This APDU is specified in clause A.5.

117 If the recovery-context-handle field (A.5.7/4, A.5.8/2) is supported in the TP-INITIALIZE-RC and TP-INITIALIZE-RI APDUs then M else NA

118 If Two-Way recovery (A.3.2.9) is supported then M, else NA

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A.10.2 TP-begin-dialogue-ri apdu

A.10.2.1 Detail of the channel field of tp-begin-dialogue-ri apdu

This table does not apply to profiles 11 and 12.

Table 34 - TP-BEGIN-DIALOGUE-RI (Recovery FU)

ITEM #	ISO/IEC 10026-4		PROFILE			
	PARAMETER	STATUS	PROFILE ID	STATUS	T/L/V ALLOWED	NOTES
1	Functional-Units	D		M	{5}	
2	Correlator	M		M	0..2**31-1	
3	Channel-Utilization	D		M	one-way-recovery	
				O	two-way-recovery	
4	Last-Partner-Identifier	O/M		M		

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A.10.3 TP-begin-dialogue-rc apdu

A.10.3.1 Detail of the channel field of tp-begin-dialogue-rc apdu

This table does not apply to profiles 11 and 12.

Table 35 - TP-BEGIN-DIALOGUE-RC (Recovery FU)

ITEM #	ISO/IEC 10026-4		PROFILE			
	PARAMETER	STATUS	PROFILE ID	STATUS	T/L/V ALLOWED	NOTES
1	Result	D		M		
2	Diagnostic	M		M		
3	Correlator	M		M	0..2**31-1	

A.10.4 TP-end-dialogue-ri apdu

This table does not apply to profiles 11 and 12.

Table 36 - TP-END-DIALOGUE-RI (Recovery FU)

ITEM #	ISO/IEC 10026-4		PROFILE			
	PARAMETER	STATUS	PROFILE ID	STATUS	T/L/V ALLOWED	NOTES
1	Confirmation	D		M	False	

A.10.5 TP-bid-ri apdu

This table does not apply to profiles 11 and 12.

Table 37 - TP-BID-RI (Recovery FU)

ITEM #	ISO/IEC 10026-4		PROFILE			
	PARAMETER	STATUS	PROFILE ID	STATUS	T/L/V ALLOWED	NOTES
1	CCR-Tokens-Requested	M		M		
2	Last-Partner-Identifier	O/M		M	0..2**31-1	

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A.10.6 TP-recover-ri apdu

This APDU does not apply to profiles 11 and 12.

Table 38 - TP-RECOVER-RI APDU

ITEM #	ISO/IEC 10026-4		PROFILE			
	PARAMETER	STATUS	PROFILE ID	STATUS	T/L/V ALLOWED	NOTES
1	Recovery-Context-Handle	M		M	1..64 octets	

A.10.7 TP-token-give-ri apdu

Table 39 - TP-TOKEN-GIVE-RI

ITEM #	ISO/IEC 10026-4		PROFILE			
	PARAMETER	STATUS	PROFILE ID	STATUS	T/L/V ALLOWED	NOTES
1	Reason	D		M	Two-Way-recovery	
2	Correlator	C		M		

NOTES

This table is not in ISO/IEC 10026-4. However it has been added to this ISP as required for support of Two-Way recovery.

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