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DATA NETWORKS AND OPEN SYSTEM COMMUNICATIONS

OPEN SYSTEMS INTERCONNECTION – PICS PROFORMAS

INFORMATION TECHNOLOGY – OPEN SYSTEMS INTERCONNECTION – RELIABLE TRANSFER: PROTOCOL IMPLEMENTATION CONFORMANCE STATEMENT (PICS) PROFORMA

ITU-T Recommendation X.248

(Previously “CCITT Recommendation”)

FOREWORD

ITU (International Telecommunication Union) is the United Nations Specialized Agency in the field of telecommunications. The ITU Telecommunication Standardization Sector (ITU-T) is a permanent organ of the ITU. Some 179 member countries, 84 telecom operating entities, 145 scientific and industrial organizations and 38 international organizations participate in ITU-T which is the body which sets world telecommunications standards (Recommendations).

The approval of Recommendations by the Members of ITU-T is covered by the procedure laid down in WTSC Resolution No. 1 (Helsinki, 1993). In addition, the World Telecommunication Standardization Conference (WTSC), which meets every four years, approves Recommendations submitted to it and establishes the study programme for the following period.

In some areas of information technology which fall within ITU-T's purview, the necessary standards are prepared on a collaborative basis with ISO and IEC. The text of ITU-T Recommendation X.248 was approved on 21st of November 1995. The identical text is also published as ISO/IEC International Standard 9066-3.

NOTE

In this Recommendation, the expression "Administration" is used for conciseness to indicate both a telecommunication administration and a recognized operating agency.

ITU-T X-SERIES RECOMMENDATIONS

DATA NETWORKS AND OPEN SYSTEM COMMUNICATIONS

(February 1994)

ORGANIZATION OF X-SERIES RECOMMENDATIONS

Subject area	Recommendation Series
PUBLIC DATA NETWORKS	
Services and Facilities	X.1-X.19
Interfaces	X.20-X.49
Transmission, Signalling and Switching	X.50-X.89
Network Aspects	X.90-X.149
Maintenance	X.150-X.179
Administrative Arrangements	X.180-X.199
OPEN SYSTEMS INTERCONNECTION	
Model and Notation	X.200-X.209
Service Definitions	X.210-X.219
Connection-mode Protocol Specifications	X.220-X.229
Connectionless-mode Protocol Specifications	X.230-X.239
PICS Proformas	X.240-X.259
Protocol Identification	X.260-X.269
Security Protocols	X.270-X.279
Layer Managed Objects	X.280-X.289
Conformance Testing	X.290-X.299
INTERWORKING BETWEEN NETWORKS	
General	X.300-X.349
Mobile Data Transmission Systems	X.350-X.369
Management	X.370-X.399
MESSAGE HANDLING SYSTEMS	X.400-X.499
DIRECTORY	X.500-X.599
OSI NETWORKING AND SYSTEM ASPECTS	
Networking	X.600-X.649
Naming, Addressing and Registration	X.650-X.679
Abstract Syntax Notation One (ASN.1)	X.680-X.699
OSI MANAGEMENT	X.700-X.799
SECURITY	X.800-X.849
OSI APPLICATIONS	
Commitment, Concurrency and Recovery	X.850-X.859
Transaction Processing	X.860-X.879
Remote Operations	X.880-X.899
OPEN DISTRIBUTED PROCESSING	X.900-X.999

CONTENTS

Summary

This Recommendation | International Standard provides the Protocol Implementation Conformance Statement (PICS) proforma for the Reliable Transger protocol specified in Recommendation X.228 (1988). The PICS proforma presents in tabular form the mandatory and optional elements of the Reliable Transfer protocol.

Introduction

This Recommendation | International Standard is one of a set of Recommendations | International Standards produced to facilitate the interconnection of information processing systems. It is related to other Recommendations and International Standards in the set as defined by the Reference Model for Open Systems Interconnection (see 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 goal of Open Systems Interconnection is to allow, with a minimum of technical agreement outside the interconnection standards, the interconnection of information processing systems:

- from different manufacturers;
- under different managements;
- of different levels of complexity; and
- of different technologies.

The Reliable Transfer Service Element (RTSE) is an application-service-element commonly used by a number of applications. RTSE provides for the reliable transfer of Application Protocol Data Units (APDUs) between open systems. It provides an application-independent mechanism to recover from communication and end-system failure minimizing the amount of retransmission.

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

This Recommendation | International Standard includes the PICS proforma for the reliable transfer protocol as defined in CCITT Rec. X.228 (1988) | ISO/IEC 9066-2:1989.

INTERNATIONAL STANDARD

ITU-T RECOMMENDATION

INFORMATION TECHNOLOGY – OPEN SYSTEMS INTERCONNECTION – RELIABLE TRANSFER: PROTOCOL IMPLEMENTATION CONFORMANCE STATEMENT (PICS) PROFORMA

1 Scope

This Recommendation | International Standard provides the Protocol Implementation Conformance Statement (PICS) proforma for the Reliable Transfer protocol specified in CCITT Rec. X.228 (1988) | ISO/IEC 9066-2:1989. This PICS proforma is in compliance with the relevant requirements, and in accordance with the relevant guidance given in ITU-T Rec. X.296 | ISO/IEC 9646-7. Detail of the use of this proforma is provided in this Recommendation | International Standard.

The supplier of an implementation which is claimed to conform to CCITT Rec. X.228 | ISO/IEC 9066-2 is required to complete a copy of the PICS proforma provided in Annex A, and is required to provide the information necessary to identify both the supplier and the implementation.

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 the parties to agreements based on this Recommendation | International Standard are encouraged to investigate the possibility of applying the most recent edition of the Recommendations and Standards listed below. Members of IEC and ISO maintain registers of currently valid International Standards. The Telecommunication Standardization Bureau of the ITU maintains a list of currently valid ITU-T Recommendations.

2.1 Identical Recommendations | International Standards

– ITU-T Recommendation X.200 (1994) | ISO/IEC 7498-1:1994, *Information technology – Open Systems Interconnection – Basic Reference Model: The Basic Model.*

2.2 Paired Recommendations | International Standards equivalent in technical content

– ITU-T Recommendation X.218 (1993), *Reliable transfer: Model and service definition.*

ISO/IEC 9066-1:1989, *Information processing systems – Text communication – Reliable Transfer – Part 1: Model and service definition.*

– CCITT Recommendation X.228 (1988), *Reliable transfer: Protocol specification.*

ISO/IEC 9066-2:1989, *Information processing systems – Text communication – Reliable Transfer – Part 2: Protocol specification.*

– ITU-T Recommendation X.290 (1995), *OSI conformance testing methodology and framework for protocol Recommendations for ITU-T applications – General concepts.*

ISO/IEC 9646-1:1994, *Information technology – Open Systems Interconnection – Conformance testing methodology and framework – Part 1: General concepts.*

– ITU-T Recommendation X.296 (1995), *OSI conformance testing methodology and framework for protocol Recommendations for ITU-T applications – Implementation conformance statements.*

ISO/IEC 9646-7:1995, *Information technology – Open Systems Interconnection – Conformance testing methodology and framework – Part 7: Implementation Conformance Statements.*

– CCITT Recommendation X.419 (1992), *Message handling systems – Protocol specifications.*

ISO/IEC 10021-6:1990, *Information technology – Text communication – Message-Oriented Text Interchange Systems (MOTIS) – Part 6: Protocol specifications.*

2.3 Additional references

– CCITT Recommendation X.482 (1996), *Messaging handling systems – P1 Protocol PICS proforma.*

– CCITT Recommendation X.483 (1996), *Messaging handling systems – P3 Protocol PICS proforma.*

– CCITT Recommendation X.484 (1996), *Messaging handling systems – P7 Protocol PICS proforma.*

3 Definitions

This Recommendation | International Standard makes use of the following terms defined in ITU-T Rec. X.290 | ISO/IEC 9646-1:

a) Implementation Conformance Statement;

b) Implementation Conformance Statement proforma;

c) Protocol Implementation Conformation Statement (PICS); and

d) PICS proforma.

This Recommendation | International Standard makes use of the following terms defined in CCITT Rec. X.419 | ISO/IEC 10021-6:

a) mts-transfer;

b) mts-transfer-protocol;

c) mts-transfer-protocol-1984;

d) mts-reliable-access;

e) mts-forced-reliable-access; and

f) ms-reliable-access.

4 Abbreviations

For the purposes of this Recommendation | International Standard, the following abbreviations apply:

ICS Implementation Conformance Statement

PICS Protocol Implementation Conformance Statement

5 Conformance

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

A PICS which conforms to this Recommendation | International Standard shall:

a) describe an implementation which conforms to CCITT Rec. X.228 | ISO/IEC 9066-2;

b) be a confirming PICS proforma, which has been completed in accordance with the instruction for completion given in A.2;

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

Annex A

PICS proforma for the reliable transfer protocol[1)]

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

A.1 Identification of PICS proforma corrigenda

The supplier of the PICS proforma shall identify any corrigenda (i.e. Technical Corrigenda or equivalent) to the published proforma that have been applied. Suppliers of the proforma should modify the proforma, or attach relevant additional pages in order to apply the corrigenda, and then record the application of the corrigenda in the table below.

Item	ITU-T Rec. X.248 (1995) | ISO/IEC 9066-3:1996
1	Corr.:
2	Corr.:
3	Corr.:
4	Implementors' Guide version:

A.2 Instructions

A.2.1 Purpose and structure of the proforma

The purpose of this PICS proforma is to provide suppliers of implementations of CCITT Rec. X.228 | ISO/IEC 9066-2 with a consistent means of stating which capabilities have been implemented.

The proforma is in the form of a questionnaire and consists of a set of items. An item is provided for each capability for which an implementation choice is allowed. Items are also provided for major mandatory capabilities for which no implementation choice is allowed. Each item includes an item number, an item description, a status value specifying the support requirement, and room for a support answer to be provided by the supplier.

This subclause provides general information and instructions for completion of the proforma.

Subclause A.3 is for identification of the implementation.

Subclause A.4 contains the means of specifying, at a high level, the protocol and corrigenda that have been implemented.

Subclause A.5 contains the global statement of conformance.

Subclauses A.6 onwards contain tables in which the supplier specifies details of the implementation options chosen.

A.2.2 Symbols, terms and abbreviations

A.2.2.1 Introduction

Notations have been introduced in order to reduce the size of tables in the PICS proforma. These have allowed the use of multi-column layout where the columns are headed 'Status', and 'Support'. The definition of each are given below.

Additionally, the following definitions apply:

A.2.2.1.1 (PICS) item: A row in a PICS proforma table.

A.2.2.1.2 (PICS) question: The question to be answered in the intersection of a PICS item and either a support column (i.e. "Is this item supported in the context applying to this table and column") or supported values column (i.e. "What values are supported for this item in the context applying to this table and column") in a PICS proforma table.

[1)] Copyright release for PICS proforma: Users of this Recommendation | International Standard may freely reproduce the PICS proforma in this annex so that it can be used for its intended purpose and may further publish the completed PICS.

A.2.2.1.3 status (value): An allowed entry in the status column for an item in a PICS proforma table.

A.2.2.1.4 (support) answer: An allowed entry in the support or supported values columns for an item in a PICS, in answer to a PICS question.

A.2.2.2 Prerequisite notation

If a predicate applies to a whole PICS proforma table, a prerequisite line may be specified in front of the table to which it applies. A prerequisite line takes the form:

Prerequisite: <predicate>

The meaning of such a line is that if <predicate> is True, then the table applies, else it is not-applicable.

A.2.2.3 Item numbering

Each line within the PICS proforma which requires implementation detail to be entered is given an item number in the first column. The item number column provides a means of uniquely referencing each possible answer within the PICS proforma. Such referencing is necessary for specifying predicates, conditional expressions, test suite parameters, and test suite selection expressions.

The means of referencing individual answers is to specify the following sequence:

a) If, and only if, the reference is being made from another Specification, then start with an unambiguous identifier for the relevant ICS proforma specification, enclosed in parentheses – this identifier is stated in the PICS proforma specification and is updated whenever the PICS proforma is updated – it is recommended that this identifier should be the relevant Specification number and year of publication, as is used in a Normative References clause, and this is the default for such identifiers.

b) The number of the relevant table or, if the tables are not numbered, of the smallest subclause enclosing the relevant table.

c) A solidus character, "/".

d) The item number of mnemonic reference to the item, to identify the row in which the answer appears.

e) If, and only if, more than one question occurs in the row identified by the item number or mnemonic reference, then each possible answer is implicitly labelled a, b, c, etc. from left to right, and this letter is appended to the sequence, prefixed by a solidus character ("/") if a mnemonic reference is used.

If mnemonic references are specified and each uniquely identify an item in the PICS proforma, then entries b) and c) in the above sequence may be omitted.

A.2.2.4 Status column

The 'Status' column indicates the level of support required for conformance to CCITT Rec. X.228 | ISO/IEC 9066-2. The values are as follows:

'm' The item is mandatory. The capability is required to be implemented.

'o' The item is optional. The capability may be implemented.

'o.n' The item is a mutually exclusive or selectable option among a set (where n is the number which identifies the group of optional items). The requirement for each numbered group is specified as part of the relevant tables.

'c' The item is conditional. The requirement on the capability depends on the selections of other optional or conditional items. The status (mandatory, optional, prohibited, or non-applicable) depends on the evaluation of a predicate or a conditional expression which is specified as part of the relevant tables.

'cn' The item is conditional (where n is the number which identifies the applicable condition). The definitions for conditional statements are given as part of the relevant tables.

'd' The default value. When absent in the PDU, both originator and receiver shall interpret it as having the default value specified in CCITT Rec. X.228 | ISO/IEC 9066-2.

‘x’ The item is prohibited or excluded. There is a requirement not to use this capability in the given context.

‘n/a’ The item is not applicable. The capability is not applicable in the given context.

A.2.2.5 Support column

The ‘Support’ column shall be completed by the supplier or implementor to indicate the level of implementation of each capability. The proforma has been designed such that the only entries required in the ‘Support’ column are:

‘Y’ Yes, the capability is implemented in conformance to CCITT Rec. X.228 | ISO/IEC 9066-2.

‘N’ No, the capability is not implemented.

‘–’ No answer required – it is unnecessary to answer this question with a yes or a no because the question has a status value of non-applicable.

A.2.2.6 Definition of support

A capability is said to be supported for origination if the implementation is able:

– to generate the corresponding service parameters (either automatically or because the end-user explicitly requires that capability), and receive the corresponding service parameters sent in response from the peer system; and

– to interpret, handle and when required make available to the end user the corresponding service parameters.

A capability is said to be supported for reception if the implementation is able:

– to receive the corresponding service parameters from the peer system requesting that capability, and respond to the requested capability; and

– to interpret, handle and when required make available to the end user the corresponding service parameters.

A protocol element is said to be supported for origination if the implementation is able to generate it under some circumstances (either automatically or because the end-user explicitly requires a related service).

A protocol element is said to be supported for reception if it is correctly interpreted and handled and also, when required, made available to the end user.

Since the requirements for support may be different for origination and reception of the capabilities and protocol elements, the tables have been divided in the corresponding columns, or two entry lines are provided for the corresponding declarations.

A.2.2.7 Constraints for supported values

For each line for which there is a constraint, the constraint is defined in the ‘Status’ column.

In the ‘Support’ columns the supported values shall be entered for origination and reception.

For example, a range can be described as “0-4, 7” and defines the values from zero to four and the value seven.

A.2.2.8 Mode or Note column

The ‘Mode or Note’ column shall be read as follows:

‘Normal’ The requirements stated in this line applies when the implementation operates in the Normal Mode. The declarations shall be made for this mode of operation.

‘X.410’ The requirements stated in this line applies when the implementation operates in the X.410-1984 Mode. The declarations shall be made for this mode of operation.

‘n’ Refers to Note n.

A.2.2.9 Clause reference column

The column ‘Clause Reference (X.228)’ gives the clause reference in CCITT Rec. X.228 | ISO/IEC 9066-2 for the requirement.

A.2.2.10 Abbreviations

A.2.2.10.1 Types of application-protocol-data-units

RTAB	RT-P-ABORT and RT-U-ABORT application-protocol-data-units
RTOAC	RT-OPEN-ACCEPT application-protocol-data-unit
RTORQ	RT-OPEN-REQUEST application-protocol-data-unit
RTORJ	RT-OPEN-REJECT application-protocol-data-unit
RTTP	RT-TOKEN-PLEASE application-protocol-data-unit
RTTR	RT-TRANSFER application-protocol-data-unit

A.2.2.10.2 Other Abbreviations

ACSE	Association Control Service Element
APDU	Application Protocol Data Unit
ORG	Origination
PDU	Protocol Data Unit
REC	Reception
RTPM	Reliable Transfer Protocol Machine
RTSE	Reliable Transfer Service Element
STA	Status
SUP	Support
TWA	Two Way Alternate
X.228	CCITT Recommendation X.228 and ISO/IEC 9066-2

A.2.3 Instructions for completion

The supplier shall complete all entries in the column marked ‘Support’. In certain clauses of the PICS proforma further guidance for completion may be necessary. Such guidance shall supplement the guidance given in this subclause and shall have a scope restricted to the clause in which it appears. In addition, other specifically identified information shall be provided by the implementor where requested. No changes shall be made to the proforma except the completion as required. Recognizing that the level of detail required may, in some instances, exceed the space available for responses, a number of responses specifically allow for the addition of appendices to the PICS.

A.3 Identification of the implementation

A.3.1 Date of statement

1	Date of statement? (yy-mm-dd)

A.3.2 Identification of the implementation and/or system

Item	Question	Response
1	Implementation Name	
2	Version Number	
3	Machine Name	
4	Machine Version Number	
5	Operating System Name	
6	Operating System Version	
7	Special Configuration	
8	Other Information	

A.3.3 Identification of the system supplier and/or test laboratory client

Item	Question	Response
1	Organization Name	
2	Contact Name(s)	
3	Address	
4	Telephone Number	
5	Fax Number	
6	Telex Number	
7	E-mail Address	
8	Other Information	

A.4 Protocol identification

A.4.1 CCITT Rec. X.228 | ISO/IEC 9066-2 protocol specification and amendments implemented

Item	Identification of Protocol Specification and Amendments	Support
–	CCITT Rec. X.228 (1988) | ISO/IEC 9066-2:1989	
1	Amd:	
2	Amd:	
3	Amd:	
4	Amd:	
5	Amd:	

A.4.2 CCITT Rec. X.228 | ISO/IEC 9066-2 technical corrigenda implemented

Item	CCITT Rec. X.228 (1988) | ISO/IEC 9066-2:1989	Support
1	Corr.:	
2	Corr.:	
3	Corr.:	
4	Corr.:	
5	Corr.:	
6	Implementors' Guide Version:	

A.5 Global statement of conformance

1	Are all mandatory features implemented? (yes or no)

NOTE – If a positive response is not given to this box, then the implementation does not conform to CCITT Rec. X.228 | ISO/IEC 9066-2.

A.6 Capabilities and options

A.6.1 Initiator/Responder capability

The table below is used to specify whether the implementation is able to initiate communication, respond to communication by another system, or both.

Item	Capability	Clause Reference (X.228)	Mode or Note	Status	Support
1	Initiator	–		o.1	
2	Responder	–		o.1	
o.1 At least one of these capabilities must be supported.					

A.6.2 Major capabilities

A.6.2.1 Supported Modes of Operation

The table below is used to specify whether the implementation supports Normal Mode or X.410-1984 Mode, or both.

Item	Capability	Clause Reference (X.228)	Mode or Note	Status	Support
1	Normal Mode	–		o.2	
2	X.410 – 1984 Mode	–		o.2	
o.2 At least one of these Modes of Operation must be supported.					

A.6.2.2 Supported Dialogue Mode

The table below is used to specify whether the implementation supports Two Way Alternate (TWA) Dialogue Mode.

Item	Capability	Clause Reference (X.228)	Mode or Note	ORIGINATE		RECEIPT	
				Status	Support	Status	Support
1.1 1.2	Two Way Alternate Dialogue Mode	7.1	Normal X.410	o o		o o	

A.6.2.3 Elements of procedure

Item	Capability	Clause Reference (X.228)	Mode or Note	ORIGINATE		RECEIPT	
				Status	Support	Status	Support
1	Association Establishment	7.1		c1		c2	
2	Association Release	7.2		c2		c2	
3	Transfer	7.3		m		m	
4.1 4.2	Turn-please	7.4	Normal X.410	m c3		m c3	
5.1 5.2	Turn-give	7.5	Normal X.410	m c3		m c3	
6	User-exception-report	7.6.1		m		m	
7	Provider-exception-report	7.6.2		n/a	–	m	
8	Transfer-interrupt	7.7.1		m		m	
9	Transfer-discard	7.7.2		m		m	
10	Association-abort	7.7.3		m		m	
11	Association-provider-abort	7.7.4		n/a	–	m	
12	Transfer-resumption	7.8.1		m		m	
13	Transfer-retry	7.8.2		m		m	
14	Association-recovery	7.8.3		m		m	
15	Transfer-abort	7.9.1		m		m	
16.1 16.2	Provider-abort	7.9.2	Normal X.410	m x		m n/a	–
17.1 17.2	User-abort	7.9.3	Normal X.410	m x		m n/a	–

c1: m if Initiator capability is supported (see A.6.1/1) else o.

c2: m if Responder capability is supported (see A.6.1/2) else o.

c3: m if Two Way Alternate Dialogue Mode is supported (see A.6.2.2/1.1) else o.

A.6.3 Timers and protocol parameters

A.6.3.1 Timers

Item	Capability	Clause Reference (X.228)	Mode or Note	Status	Support
1	Transfer Timer	A.4.4		m	
2	Recovery Timer	A.4.5		m	
3	Time Recover Timer	7.8.3.3.3		m	

A.6.3.2 Protocol parameters

Not applicable.

A.6.4 Supported RSTE PDUs

Item	RTSE PDU Name	Clause Reference (X.228)	Mode or Note	ORIGINATE		RECEIPT	
				Status	Support	Status	Support
1	RTORQapdu	7.1.2.1		c1		c2	
2	RTOACapdu	7.1.2.2		c2		c1	
3	RTORJapdu	7.1.2.3		m		m	
4.1 4.2	RTTPapdu	7.4.2	Normal X.410	m c3		m m	
5	RTTRapdu	7.3.2		m		m	
6	RTABapdu	7.7.3.2		m		m	

c1: m if Initiator capability is supported (see: A.6.1/1) else o.

c2: m if Responder capability is supported (see A.6.1/2) else o.

c3: m if Two Way Alternate Dialogue Mode is supported (see: A.6.2.2/1.2) else o.

A.6.5 Supported RTSE PDU parameters

A.6.5.1 RTORQapdu parameters

RTSE PDU: RTORQapdu										
Item	Parameter name	Clause Reference (X.228)	Mode or Note	ORG or REC	STA	SUP	Maximum octets length		Value	
							STA	SUP	STA	SUP
1.1 1.2	checkpointSize	7.1.4.1		ORG REC	d m					
2.1 2.2	windowSize	7.1.4.2		ORG REC	d m					
3.1 3.2 3.3 3.4	dialogueMode	7.1.4.3	Normal X.410	ORG REC ORG REC	m m d m				1 1 0, 1 0, 1	
4.1 4.2	connectionDataRQ	–		ORG REC	m m					
4.1.1 4.2.1	open	7.1.4.4	1	ORG REC	m m					
4.1.2 4.2.2	recover	7.8.3.4.5	2	ORG REC	m m					
4.1.2.1 4.2.2.1	CallingSSuser-Reference	–		ORG REC	m m		64 64			
4.1.2.2 4.2.2.2	CommonReference	–		ORG REC	m m		17 17			
4.1.2.3 4.2.2.3	AdditionalReferenceInformation	–		ORG REC	o m		4 4			
5.1 5.2 5.3 5.4	applicationProtocol	7.1.4.6	Normal X.410	ORG REC ORG REC	x n/a m m	– 			 1, 12 1, 12	

NOTES

1 Not used in Association – Recovery procedure (See 7.8.3.4.4/X.228).

2 Not used in Association – Establishment procedure (See 7.1.4.5/X.228).

A.6.5.2 RTOACapdu parameters

RTSE PDU: RTOACapdu										
Item	Parameter name	Clause Reference (X.228)	Mode or Note	ORG or REC	STA	SUP	Maximum octets length		Value	
							STA	SUP	STA	SUP
1.1 1.2	checkpointSize	7.1.5.1		ORG REC	d m					
2.1 2.2	windowSize	7.1.5.2		ORG REC	d m					
3.1 3.2	connectionDataAC	–		ORG REC	m m					
3.1.1 3.2.1	open	7.1.5.3	1	ORG REC	m m					
3.1.2 3.2.2	recover	7.8.3.5.4	2	ORG REC	m m					
3.1.2.1 3.2.2.1	CalledSSuser-Reference	–		ORG REC	m m		64 64			
3.1.2.2 3.2.2.2	CommonReference	–		ORG REC	m m		17 17			
3.1.2.3 3.2.2.3	AdditionalReferenceInformation	–		ORG REC	o m		4 4			

NOTES

1 Not used in Association – Recovery procedure (See 7.8.3.5.3/X.228).

2 Not used in Association – Establishment procedure (See 7.1.5.4/X.228).

A.6.5.3 RTORJapdu parameters

RTSE PDU: RTORJapdu										
Item	Parameter name	Clause Reference (X.228)	Mode or Note	ORG or REC	STA	SUP	Maximum octets length		Value	
							STA	SUP	STA	SUP
1.1 1.2 1.3 1.4	refuseReason	7.1.6.1	Normal X.410, 1	ORG REC ORG REC	x n/a o m	–			 0-3 0-3	
2.1 2.2 2.3 2.4	userDataRJ	7.1.6.2	Normal, 2 X.410	ORG REC ORG REC	o o x n/a	–				

NOTES

1 In the Association – Recovery procedure, the “refuseReason” can only have the values “1” (rtsBusy) and “2” (cannotRecover) (See 7.8.3.6.1/X.228).

2 Not used in Association – Recovery procedure (See 7.8.3.6.4/X.228).

A.6.5.4 RTTPapdu parameters

RTSE PDU: RTTPapdu										
Item	Parameter name	Clause Reference (X.228)	Mode or Note	ORG or REC	STA	SUP	Maximum octets length		Value	
							STA	SUP	STA	SUP
1.1 1.2	Priority	7.4.4.1		ORG REC	m m				0-3 0-3	

A.6.5.5 RTTRapdu parameters

RTSE PDU: RTTRapdu										
Item	Parameter name	Clause Reference (X.228)	Mode or Note	ORG or REC	STA	SUP	Maximum octets length		Value	
							STA	SUP	STA	SUP
1.1 1.2	User Data Part	7.3.2		ORG REC	m m					

A.6.5.6 RTTBapdu parameters

RTSE PDU: RTTBapdu										
Item	Parameter name	Clause Reference (X.228)	Mode or Note	ORG or REC	STA	SUP	Maximum octets length		Value	
							STA	SUP	STA	SUP
1.1 1.2 1.3 1.4	abortReason	7.7.3.4.1	Normal, 1 X.410	ORG REC ORG REC	o m o m				0-7 0-7 0-4, 7 0-4, 7	
2.1 2.2	reflectedParameter	7.7.3.4.2	2	ORG REC	o o		1 1			
3.1 3.2 3.3 3.4	userdataAB	7.9.3.4.3	Normal, 3 X.410	ORG REC ORG REC	o o x n/a	––				

NOTES

1 The “abortReason” can only have the value “5” (permanentProblem) in the Provider Abort procedure, and the value “6” (userError) in the User abort procedure (See 7.9.2.4.1/X.228 and 7.9.3.4.1/X.228).

2 Only used in the Association Abort procedure, and only when “abortReason” has the value “1” (invalidParameter) (See 7.7.3.4.1/X.228, 7.9.2.4.2/X.228 and 7.9.3.4.2/X.228).

3 Only used in the User Abort procedure (See 7.7.4.3/X.228 and 7.9.2.4.3/X.228).

A.6.6 Negotiation capabilities

For negotiations of checkpointsize and windowsize, refer to the declarations of implemented values for corresponding parameters of the RTORQapdu (see A.6.5.1) and the RTOACapdu (see A.6.5.2).

A.6.7 Protocol error handling

Protocol error handling						
Item	Error Type	Clause Reference (X.228)	Mode or Note	Action	STA	SUP
1	Undefined PDU parameter	7.10		Ignore parameter	m	
2	Undefined incoming event from RTSE-user or internal to RTPM	A.3.1.a)		(Local matter)	o	
3.1 3.2	Undefined incoming event from APDU, PS-provider or ACSE-provider	A.3.1.b)		Appropriate internal event, or Issue RT-PAind and RTAB outgoing event	o.3 o.3	
o.3 One of these Protocol Error Handling procedures shall be supported.						

A.6.8 Other information

The table below can be used to provide any other relevant information.

Item	Other information

A.7 Multi-layer dependencies

A.7.1 Upper layers

The Application Context in which the RTSE Implementation is used imposes some additional requirements to some of the elements of this PICS proforma. The following table gives the reference to the appropriate PICS, which imposes some additional requirements for each Application Context, where RTSE can be used.

Item	Application Context	PICS Reference	Support
1	mts-transfer-protocol-1984	X.482	
2	mts-transfer-protocol	X.482	
3	mts-transfer	X.482	
4	mts-reliable-access (UA)	X.483	
5	mts-reliable-access (MTA)	X.483	
6	mts-forced-reliable-access (UA)	X.483	
7	mts-forced-reliable-access (MTA)	X.483	
8	ms-reliable-access (UA)	X.484	
9	ms-reliable-access (MS)	X.484	

A.7.2 Lower layers

The RTSE imposes the following modifications on the lower layers.

A.7.2.1 ACSE

The modifications imposed on the ACSE implementation are imposed by the Application Context.

A.7.2.2 Presentation

The modifications imposed on the Presentation implementation are imposed by the Application Context.

A.7.2.3 Session

The requirements RTSE implies on the Session implementation are given in the table below.

Item	Session Functional unit	Status	Support
1	Half-duplex	m	
2	Exceptions	m	
3	Minor Synchronize	m	
4	Activity Management	m	