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REDES DE COMUNICACIÓN DE DATOS

**ELEMENTO DE SERVICIO DE
TRANSFERENCIA FIABLE – FORMULARIO
DE ENUNCIADO DE CONFORMIDAD
DE REALIZACIÓN DE PROTOCOLO**



Recomendación X.248

PREFACIO

El CCITT (Comité Consultivo Internacional Telegráfico y Telefónico) es un órgano permanente de la Unión Internacional de Telecomunicaciones (UIT). Este órgano estudia los aspectos técnicos, de explotación y tarifarios y publica Recomendaciones sobre los mismos, con miras a la normalización de las telecomunicaciones en el plano mundial.

La Asamblea Plenaria del CCITT, que se celebra cada cuatro años, establece los temas que han de estudiarse y aprueba las Recomendaciones preparadas por sus Comisiones de Estudio. La aprobación de Recomendaciones por los miembros del CCITT entre las Asambleas Plenarias de éste es el objeto del procedimiento establecido en la Resolución N.º 2 del CCITT (Melbourne, 1988).

La Recomendación X.248 ha sido preparada por la Comisión de Estudio VII y fue aprobada por el procedimiento de la Resolución N.º 2 el 10 de septiembre de 1992.

NOTAS DEL CCITT

- 1) En esta Recomendación, la expresión «Administración» se utiliza para designar, en forma abreviada, tanto una Administración de telecomunicaciones como una empresa privada de explotación reconocida de telecomunicaciones.
- 2) En el anexo B, figura la lista de abreviaturas utilizadas en la presente Recomendación.

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ÍNDICE

	<i>Página</i>
Introducción.....	1
1 Alcance.....	1
2 Referencias normativas	1
3 Definiciones	1
4 Abreviaturas	2
5 Convenciones	2
6 Conformidad	2
Anexo A – Elemento de servicio de transferencia fiable – Formulario de enunciado de conformidad de realización de protocolo	2
Anexo B – Lista por orden alfabético de las abreviaturas ccontenidas en esta Recomendación	15

**ELEMENTO DE SERVICIO DE TRANSFERENCIA FIABLE –
FORMULARIO DE ENUNCIADO DE CONFORMIDAD DE REALIZACIÓN DE PROTOCOLO**

(1992)

Introducción

En la presente Recomendación se especifica el formulario PICS para los servicios proporcionados por un elemento de servicio de aplicación – el elemento de servicio de transferencia fiable (RTSE, *reliable transfer service element*) – con miras a la transferencia fiable de unidades de datos de protocolo de aplicación (APDU, *application protocol data units*) entre sistemas abiertos. Esta Recomendación forma parte de un conjunto de Recomendaciones que especifican formularios PICS para los conjuntos de elementos de servicio de aplicación comúnmente utilizados en cierto número de aplicaciones.

La transferencia fiable constituye un mecanismo independiente de la aplicación para la recuperación de fallos en la comunicación y en los sistemas extremos, minimizando así el volumen de retransmisiones.

Para evaluar la conformidad de una realización es necesario disponer de un enunciado respecto de las capacidades y opciones utilizadas para un determinado protocolo OSI. Dicho enunciado se denomina enunciado de conformidad de realización de protocolo (PICS, *protocol implementation conformance statement*).

Esta Recomendación contiene el formulario PICS para el protocolo RTSE, según se define en la Recomendación X.228.

1 Alcance

La presente Recomendación define el formulario PICS para el protocolo RTSE especificado en la Recomendación X.228. Este formulario PICS se ajusta a los requisitos pertinentes y a las directrices aplicables a un formulario PICS, según se indica en ISO/CEI 9646-2. En el anexo A se dan detalles sobre la manera de utilizar esta proforma.

2 Referencias normativas

- Rec. X.218 (1988), *Transferencia fiable: Modelo y definición del servicio*. (Véase asimismo ISO/CEI 9066-1.)
- Rec. X.228 (1988), *Transferencia fiable: Especificación del protocolo*. (Véase asimismo ISO/CEI 9066-2.)
- Rec. X.419 (1988), *Sistemas de tratamiento de mensajes: Especificaciones de protocolo*. (Véase asimismo ISO/CEI 10021-6.)

ISO/CEI 9646-1 (1991), *Information technology – Open Systems Interconnection – Conformance testing methodology and framework – Part 1: General concepts*. [Véase asimismo la Recomendación X.290 (1991) del CCITT.]

ISO/CEI 9646-2 (1991), *Information technology – Open Systems Interconnection – Conformance testing methodology and framework – Part 2: Abstract test suite specification*. [Véase también la Recomendación X.291 (1991) del CCITT.]

3 Definiciones

En la presente Recomendación se utilizan los términos definidos en las Recomendaciones X.218 y X.228.

Se utilizan también los siguientes términos definidos en la Recomendación X.419:

- a) transferencia-mts;
- b) protocolo-transferencia-mts;
- c) protocolo-transferencia-mts, 1984;

- d) acceso-fiable-mts;
- e) acceso-fiable-forzado-mts; y
- f) acceso-fiable-ms.

En esta Recomendación se utilizan los siguientes términos definidos en ISO/CEI 9646-1:

- 1) proforma PICS;
- 2) enunciado de conformidad de realización de protocolo (PICS); y
- 3) realización sometida a prueba (IUT, *implementation under test*).

4 Abreviaturas

En esta Recomendación se utilizan las abreviaturas definidas en las Recomendaciones X.218 y X.228 del CCITT.

5 Convenciones

El formulario PICS se designa en el anexo A a la presente Recomendación.

6 Conformidad

El suministrador de una realización de protocolo que pretende ser conforme a la Recomendación X.228 debe rellenar una copia del formulario PICS contenida en el anexo A y proporcionar la información necesaria para identificar tanto al suministrador como la realización.

ANEXO A

(a la Recomendación X.248)

(Este anexo es parte integrante de esta Recomendación)

Elemento de servicio de transferencia fiable Formulario de enunciado de conformidad de realización de protocolo

A.1 *Identification of the implementation*

A.1.1 *Identification of PICS*

Table A-1/X.248 shall be used to identify the actual PICS and its relation with the System Conformance Statement for the system in which the IUT resides.

TABLE A-1/X.248

Identification of PICS

Ref. No.	Question	Response
1	Date of statement (DD/MM/YY)	
2	PICS No.	
3	System Conformance Statement Cross Reference	

Comunicado sobre derechos de autor del formulario de PICS:

Los usuarios de esta Recomendación pueden reproducir libremente el Formulario de PICS a fin de que pueda ser utilizado para los fines previstos, y pueden además publicar el PICS cumplimentado.

A.1.2 *Identification of the IUT*

Table A-2/X.248 shall be used to identify the implementation and the system in which it resides.

TABLE A-2/X.248

Identification of IUT

Ref. No.	Question	Response
1	Implementation	
2	Version	
3	Machine Name	
4	Machine version	
5	Operating System Name	
6	Operating System Version	
7	Special Configuration	
8	Other information	

A.1.3 *Supplier identification*

Table A-3/X.248 shall be used to identify the supplier of the system and/or the client of the test laboratory that is to test the implementation, and the person to contact if there are any queries concerning the content of the PICS.

TABLE A-3/X.248

Supplier Identification

Ref. No.	Question	Response
1	Organization	
2	Contact Name(s)	
3	Address	
4	Telephone	
5	Telex	
6	Fax	
7	E-mail	
8	Other information	

A.2 Identification of protocol

Table A-4/X.248 shall be used to identify the Recommendation to which the PICS applies.

TABLE A-4/X.248
Identification of Protocol

Ref. No.	Question	Response
1	Reference No. and title	Rec. X.228 – Reliable transfer: Protocol specification
2	Protocol version	
3	Implemented Defect Reports (Implementors Guide, Version No.)	

A.3 Global statement of conformance

TABLE A-5/X.248
Global Statement of Conformance

Ref. No.	Question	Response
1	Are all mandatory capabilities implemented?	

Note – Answering “No” to this question indicates non-conformance to the protocol specification. Non-supported mandatory capabilities are to identified in the PICS, with an explanation of why the implementation is non-conformant. Such information shall be provided in § A.6.8, Other information.

A.4 Instructions for completing the PICS proforma

A.4.1 Definition of support

A capability is said to be supported for origination (ORIGINATE) if the Implementation Under Test (IUT) 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 (RECEIPT) if the IUT 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 (ORG) if the IUT 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 (REC) 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.4.2 *D column*

This column indicates the level of support required for conformance to the CCITT Recommendation. The values are as follows:

- m Mandatory support is required.
- o Optional support is permitted for conformance to the Recommendation. If implemented it must conform to the specifications and restrictions contained in the Recommendation. These restrictions may affect the optionality of other items.
- o.<n> Options mutually exclusive or selectable among a set (where <n> is a number reference for identification). The criteria is defined at the bottom of the relevant table.
- c<n> The item is conditional (where <n> is the number which identifies the condition which is applicable). The definition of conditional statements used, are given at the bottom of the relevant table.
- d Default value defined in the Recommendation. When absent in the PDU, both Originator and Receiver shall interpret it as having the default value specified in the Recommendation.
- x The item is prohibited, and shall not be supported, or shall be capable of being debarred in this mode of operation.
- The item is not applicable.

A.4.3 *I column*

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

- Y Yes, the feature has been implemented.
- N No, the feature has not been implemented.
- The item is not applicable.

In the PICS proforma tables, every leading feature marked 'm' should be supported by the IUT. Sub-features marked 'm' should be supported if the corresponding leading feature is supported by the IUT.

All entries within the PICS proforma shall be made in ink. Alterations to such entries shall be made by crossing out, not erasing nor making the original entry illegible, and writing the new alongside. All such alterations to records shall be initialled by the staff making them.

Recognising that the level of details required may, in some instances, exceed the space available for responses, addition of appendices to the PICS is allowed under these circumstances, when properly referenced.

A.4.4 *Constraints for maximum length*

For each line for which there is a constraint on maximum length, the constraint is defined in the 'STD.' column.

In the 'IMP.' columns the minimum and maximum length shall be entered for origination, and the maximum length shall be entered for reception.

A.4.5 *Constraints for supported values*

For each line for which there is a constraint for supported values, the constraint is defined in the 'STD.' column.

In the 'IMP.' columns the supported values shall be entered for origination and reception.

A.4.6 *Note or Mode column*

The 'Note or Mode' column shall be read as follows:

- NM – The requirements stated in this line applies when the IUT operates in Normal Mode. The declarations shall be made for this mode of operation.
- XM – The requirements stated in this line applies when the IUT operates in X.410-1984 Mode. The declarations shall be made for this mode of operation.
- Nxx – Refers to Note xx.

A.4.7 *Section reference column*

The column 'Section Reference' gives reference to the relevant CCITT Recommendation, and the corresponding section for the requirement of support.

A.4.8 *Item reference numbers*

Each line within the PICS proforma which requires implementation details to be entered is numbered at the left hand edge of the line. This numbering is included as a means of uniquely identifying all possible implementation details within the PICS proforma. This referencing is used both inside the PICS proforma, and for references from other Test Specification documents.

The means of referencing individual responses is done by the following sequence:

- 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 is implicitly labelled a, b, c, etc. from left to right, and this letter is appended to the sequence.

An example of the use of this notation would be A.6.2.3/5.1b, which refers to the support for the receipt of Turn-give in Normal Mode.

A.5 *Abbreviations*

Abbreviations used in Recommendations X.218 and X.228 are used in this PICS proforma.

In addition the abbreviations defined in § A.4 of this PICS proforma are used.

A.6 *Capabilities and options*

A.6.1 *Initiator/Responder capability*

Table A-6/X.248 is used to specify whether the implementation is able to initiate communication, respond to communication by another system, or both.

TABLE A-6/X.248

Initiator/Responder Capability

Item reference No.	Capability	Section reference (Rec. X.228)	Note or mode	D	I
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 Protocol mechanisms

Table A-7/X.248 is used to specify whether the implementation supports Normal Mode or X.410-1984 Mode, or both.

TABLE A-7/X.248

Supported Modes of Operation

Item reference No.	Capability	Section reference (Rec. X.228)	Note or mode	D	I
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 Two way alternate dialogue mode

Table A-8/X.248 is used to specify whether the implementation supports Two Way Alternate (TWA) Dialogue Mode.

TABLE A-8/X.248

Supported Dialogue Mode

Item reference No.	Capability	Section reference (Rec. X.228)	Note or mode	ORIGINATE		RECEIPT	
				D	I	D	I
1.1 1.2	Two Way Alternate Dialogue Mode	7.1	NM XM	m o	[] []	m o	[] []

A.6.2.3 Elements of procedure

Table A-9/X.248 is used to specify the Elements of Procedure supported by the IUT.

TABLE A-9/X.248

Elements of Procedure

Item reference No.	Capability	Section reference (Rec. X.228)	Note or mode	ORIGINATE		RECEIPT	
				D	I	D	I
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	NM XM	m c3	[] []	m c3	[] []
5.1 5.2	Turn-give	7.5	NM XM	m c3	[] []	m c3	[] []
6	User-exception-report	7.6.1		m	[]	m	[]
7	Provider-exception-report	7.6.2		–	–	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		–	–	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	NM XM	m x	[] []	m –	[] –
17.1 17.2	User-abort	7.9.3	NM XM	m x	[] []	m –	[] –

c1 m if Initiator capability is supported (see § A.6.1 and Table A-6/X.248, item 1).

c2 m if Responder capability is supported (see § A.6.1 and Table A-6/X.248, item 2).

c3 m if Two Way Alternate Dialogue Mode is supported (see § A.6.2.2 and Table A-8/X.248, item 1.1).

A.6.3 Timers and protocol parameters

A.6.3.1 Timers

Table A-10/X.248 is used to specify the support by the IUT of Timers and Protocol parameters used by the Reliable Transfer Protocol Machine.

TABLE A-10/X.248

Timers

Item reference No.	Timer name	Section reference (Rec. X.228)	Note or mode	D	I
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 PDUs

Table A-11/X.248 is used to declare the support of the RTSE PDUs for the IUT.

TABLE A-11/X.248

Supported PDUs

Item reference No.	RTSE PDU name	Section reference (Rec. X.228)	Note or mode	ORIGINATE		RECEIPT	
				D	I	D	I
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	NM XM	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 and Table A-6/X.248, item 1).

c2 m if Responder capability is supported (see § A.6.1 and Table A-6/X.248, item 2).

c3 m if Two Way Alternate Dialogue Mode is supported (see § A.6.2.2 and Table A-8/X.248, item 1.2).

A.6.5 Supported PDU parameters

Tables A-12/X.248 to A-17/X.248 are used to specify the support by the IUT of the parameters of the RTSE APDUs.

A.6.5.1 RTORQapdu

TABLE A-12/X.248
RTORQapdu parameters

RTSE PDU: RTORQapdu										
Item reference No.	Parameter name	Section reference (Rec. X.228)	Note or mode	ORG or REC	D	I	Maximum octets length		Value	
							STD.	IMP.	STD.	IMP.
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	NM XM	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	N1	ORG REC	m m	[] []				
4.1.2 4.2.2	recover	7.8.3.4.5	N2	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	NM XM	ORG REC ORG REC	x – m m	[] – [] []			1, 12 1, 12	

Note 1 – Not used in Association – recovery procedure (See Rec. X.228, § 7.8.3.4.4).

Note 2 – Not used in Association – establishment procedure (See Rec. X.228, § 7.1.4.5).

TABLE A-13/X.248

RTOACapdu parameters

RTSE PDU: RTOACapdu										
Item reference No.	Parameter name	Section reference (Rec. X.228)	Note or mode	ORG or REC	D	I	Maximum octets length		Value	
							STD.	IMP.	STD.	IMP.
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	N1	ORG REC	m m	[] []				
3.1.2 3.2.2	recover	7.8.3.5.4	N2	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			

Note 1 – Not used in Association – recovery procedure (See Rec. X.228, § 7.8.3.5.3).

Note 2 – Not used used in Association – establishment procedure (See Rec. X.228, § 7.1.5.4).

A.6.5.3 RTORJapdu

TABLE A-14/X.248
RTORJapdu parameters

RTSE PDU: RTORJapdu										
Item reference No.	Parameter name	Section reference (Rec. X.228)	Note or mode	ORG or REC	D	I	Maximum octets length		Value	
							STD.	IMP.	STD.	IMP.
1.1 1.2 1.3 1.4	refuseReason	7.1.6.1	NM XM, N3	ORG REC ORG REC	x – o m	[] – [] []			0:3 0:3	
2.1 2.2 2.3 2.4	userDataRJ	7.1.6.2	NM, N1 XM	ORG REC ORG REC	o o x –	[] [] [] –				

Note 1 – Not used in Association – recovery procedure (See Rec. X.228, § 7.8.3.6.4).

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

A.6.5.4 RTTPapdu

TABLE A-15/X.248
RTTPapdu parameters

RTSE PDU: RTTPapdu										
Item reference No.	Parameter name	Section reference (Rec. X.228)	Note or mode	ORG or REC	D	I	Maximum octets length		Value	
							STD.	IMP.	STD.	IMP.
1.1 1.2	Priority	7.4.4.1		ORG REC	m m	[] []			0:3 0:3	

A.6.5.5 RTTRapdu

TABLE A-16/X.248
RTTRapdu parameters

RTSE PDU: RTTRapdu										
Item reference No.	Parameter name	Section reference (Rec. X.228)	Note or mode	ORG or REC	D	I	Maximum octets length		Value	
							STD.	IMP.	STD.	IMP.
1.1 1.2	User Data Part	7.3.2		ORG REC	m m	[] []				

A.6.5.6 RTABapdu

TABLE A-17/X.248
RTABapdu parameters

RTSE PDU: RTABapdu										
Item reference No.	Parameter name	Section reference (Rec. X.228)	Note or mode	ORG or REC	D	I	Maximum octets length		Value	
							STD.	IMP.	STD.	IMP.
1.1 1.2 1.3 1.4	abortReason	7.7.3.4.1	NM, N4 XM	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	N5	ORG REC	o o	[] []	1 1			
3.1 3.2 3.3 3.4	userdataAB	7.9.3.4.3	NM, N6 XM	ORG REC ORG REC	o o x –	[] [] [] –				

Note 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 Rec. X.228, §§ 7.9.2.4.1 and 7.9.3.4.1).

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

Note 3 – Only used in the User Abort procedure (See Rec. X.228, §§ 7.7.4.3 and 7.9.2.4.3).

A.6.6 Negotiation capabilities

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

A.6.7 Protocol error handling

Table A-18/X.248 is used to specify the actions performed by the IUT in the case of protocol error.

TABLE A-18/X.248
Protocol Error Handling

Protocol error handling						
Item reference No.	Error type	Section reference (Rec. X.228)	Note or mode	Action	D	I
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 must be supported.

A.6.8 *Other information*

Table A-19/X.248 can be used to provide any other relevant information.

TABLE A-19/X.248

Other Information

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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.

Table A-20/X.248 shall be filled in with the Application Context in which the IUT operates.

TABLE A-20/X.248

Application Context

Item reference No.	Application context	PICs reference	I
1	mts-transfer-protocol-1984	X.482: A.7.2.1	[]
2	mts-transfer-protocol	X.482: A.7.2.1	[]
3	mts-transfer	X.482: A.7.2.1	[]
4	mts-reliable-access (UA)	X.483: A.7.2.2	[]
5	mts-reliable-access (MTA)	X.483: A.7.2.2	[]
6	mts-forced-reliable-access (UA)	X.483: A.7.2.2	[]
7	mts-forced-reliable-access (MTA)	X.483: A.7.2.2	[]
8	ms-reliable-access (UA)	X.484: A.7.2.2	[]
9	ms-reliable-access (MS)	X.484: A.7.2.2	[]

A.7.2 Lower layers

The RTSE imposes the following modifications on the lower layers:

A.7.2.1 ACSE (ISO/IEC DIS 8650-2)

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

A.7.2.2 Presentation (ISO/IEC DIS 8823-2)

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

A.7.2.3 Session

Table A-21/X.248 shows the requirements RTSE implies on the Session implementation.

TABLE A-21/X.248
Requirements to Session

Functional unit	D	I
Half-duplex	m	[]
Exceptions	m	[]
Minor Synchronize	m	[]
Activity Management	m	[]

ANEXO B (a la Recomendación X.248)

Lista por orden alfabético de las abreviaturas contenidas en esta Recomendación

ACSE	Elemento de servicio de control de asociación (<i>association control service element</i>)
APDU	Unidad de datos de protocolo de aplicación (<i>application protocol data unit</i>)
IMP	Realizado (<i>implemented</i>)
IUT	Realización sometida a prueba (<i>implementation under test</i>)
NM	Modo normal (<i>normal mode</i>)
ORG	Originación (<i>origination</i>)
PDU	Unidad de datos de protocolo (<i>protocol data unit</i>)
PICS	Enunciado de conformidad de realización de protocolo (<i>protocol implementation conformance statement</i>)
REC	Recepción (<i>reception</i>)
RTPM	Máquina de protocolo de transferencia fiable (<i>reliable transfer protocol machine</i>)
RTSE	Elemento de servicio de transferencia fiable (<i>reliable transfer service element</i>)
STD	Estándar; norma (<i>standard</i>)
TWA	Bidireccional alternado (<i>two way alternate</i>)
XM	Modo Rec. X.410; modo X.410 (<i>X.410 mode</i>)

