
British Standard for
**Open Systems Interconnection:
connection-oriented presentation protocol
specification**

[ISO title: Information processing systems–Open Systems Interconnection–Connection oriented presentation protocol specification]

Interconnexion de systèmes ouverts: Spécification du protocole de présentation

Kommunikation Offener Systeme: Festlegung der verbindungsorientierten Protokolls der Darstellungsschicht

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National foreword

This British Standard has been prepared under the direction of the Information Systems Technology Standards Policy Committee. It is identical with ISO 8823 : 1988 'Information processing systems—Open Systems Interconnection—Connection oriented presentation protocol specification'. The international standard was prepared and published by the International Organization for Standardization (ISO) with the active participation and approval of the UK. It is a revision of DD 102 : 1986 which is withdrawn.

Addenda to the international standard are planned to cover the following areas:

- (a) the presentation Protocol Implementation Conformance Statement (PICS) proforma;
- (b) presentation symmetric synchronization service;
- (c) use of session unlimited user data;
- (d) security features.

These addenda are expected to be incorporated in BS 7094 when they have been published by ISO.

This standard is closely related to the companion protocol standard BS 7093 'Open Systems Interconnection: connection-oriented presentation service definition'. A British Standard to cover the connectionless-mode presentation protocol is under consideration.

Up-to-date information on existing and projected British Standards publications for Open Systems Interconnection is included in the 'Basic List', published as part of the BSI Information Technology Services (BITS) initiative. For details contact: Marketing Department, BSI, Linford Wood, Milton Keynes, MK14 6LE.

Terminology and conventions. The text of the international standard has been approved as suitable for publication as a British Standard without deviation. Some terminology and certain conventions are not identical with those used in British Standards; attention is drawn especially to the following.

Wherever the words 'International Standard' or 'ISO 8823' appear, referring to this standard, they should be read as 'British Standard' or 'BS 7094' respectively.

Cross-references

International standard	Corresponding British Standard
ISO 7498 : 1984	BS 6568 Reference model of open systems interconnection Part 1 : 1988 Basic reference model (incorporating connectionless-mode transmission) (Identical)
ISO 8326 : 1987	BS 6960 : 1988 Open Systems Interconnection: basic connection-oriented session service definition (Identical)
ISO/TR 8509 : 1987	DD 108 : 1988 Open Systems Interconnection: service conventions (Identical)
ISO 8822 : 1988	BS 7093 : 1989 Open Systems Interconnection: connection-oriented presentation service definition (Identical)
ISO 8824 : 1987	BS 6962 : 1988 Open Systems Interconnection: specification for Abstract Syntax Notation One (ASN.1) (Identical)
ISO 8825 : 1987	BS 6963 : 1988 Open Systems Interconnection: specification for basic encoding rules for Abstract Syntax Notation One (ASN.1) (Identical)

The Technical Committee has reviewed the provisions of ISO 7498-3 and CCITT Recommendation X.410*, to which reference is made in the text, and has decided that they are acceptable for use in conjunction with this standard.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

* Available from Sales Department, BSI, Linford Wood, Milton Keynes, MK14 6LE.

Implementation of Amendment 5
Additional session synchronization functionality to the
presentation service user
published and effective from 15 July 1993
to BS 7094 : 1989 (ISO 8823 : 1988)

Open Systems Interconnection: connection-oriented
presentation protocol specification

National foreword

In line 3, after 'specification' insert, 'including Amendment 5'.

AMD 7772/July 1993

ISO text

Insert the attached as appropriate.

AMD 7772/July 1993

INTERNATIONAL STANDARD

ISO
8823

First edition
1988-08-15

AMENDMENT 5
1992-12-15

Information processing systems – Open Systems Interconnection – Connection oriented presentation protocol specification

**AMENDMENT 5: Additional session
synchronization functionality to the presentation
service user**

*Systèmes de traitement de l'information – Interconnexion de systèmes
ouverts – Spécification du protocole de présentation en mode connexion*

*AMENDEMENT 5: Fourniture de la fonction de synchronisation de
session supplémentaire à l'utilisateur du service de présentation*



Reference number
ISO 8823:1988/Amd. 5:1992 (E)

AVA Documents
Document Sharing Hub

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.

Amendment 5 to International Standard ISO 8823:1988 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*.

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Information processing systems – Open Systems Interconnection – Connection oriented presentation protocol specification

AMENDMENT 5: Additional session synchronization functionality to the presentation service user

Introduction to this Amendment

This Amendment extends the Presentation Protocol to support the additional session functional unit for data separation. It makes no change to any other part of the Presentation Protocol.

Page 2

Clause 2 References

Add the following reference to this clause

“ISO 8326/Amd. 4: Information processing systems – Open Systems Interconnection – Basic connection-oriented session service definition – Amendment 4: Additional synchronization functionality”

Page 31

Subclause 8.2 Structure of SS-user data parameter values

Add new functional unit “data separation” to the “User-session-requirements” protocol parameter. Replace the “User-session-requirements” protocol parameter with the following:

“User-session-requirements ::=	BIT STRING {	
	half-duplex	(0),
	duplex	(1),
	expedited-data	(2),
	minor-synchronize	(3),
	major-synchronize	(4),
	resynchronize	(5),
	activity-management	(6),
	negotiated-release	(7),
	capability-data	(8),
	exceptions	(9),
	typed-data	(10),
	data-separation	(12) }

Page 37

Annex A

Add new subclause A.5.3.4 as follows:

"A.5.3.4 rs

rs is a boolean variable having the following values:

rs = true : resynchronization procedure is in progress.

rs = false : no resynchronization procedure is in progress.

rs is set as follows:

- a) rs is set false during the presentation-connection establishment phase or when a P-RESYNCHRONIZE response or confirm service primitive is issued;
- b) rs is set true when a P-RESYNCHRONIZE request or indication service primitive is issued."

Page 40

Annex A, Table 19

Replace action [02] as follows:

[02]	Set cr, rl and rs to FALSE
------	----------------------------

Page 41

Annex A, Table 19

Add two new actions as follows:

[23]	Set rs to TRUE
[24]	Set rs to FALSE

Page 43

Annex A, Table 20

Add a new predicate to the end of table 20 as follows:

p30	The value of rs is TRUE
-----	-------------------------

*Page 46***Annex A, Table 24**

Amend the intersection of AC PPDU and STAt0 as follows:

State	STAt0
Event	
AC	p05&p11&^p30 [01][09] P-ALTERind STAac1 p30 P-ALTERind STAt0

*Page 46***Annex A, Table 24**

Amend the intersection of ACA PPDU and STAt0 as follows:

State	STAt0
Event	
ACA	p30 P-ALTERcnf STAt0

*Page 53***Annex A, Table 29**

Add action [23] to all action lists in the P-RSYNreq and RS rows.

*Page 54***Annex A, Table 29**

Add action [24] to all action lists in the P-RSYNrsp and RSA rows.

British Standard for

Open Systems Interconnection: connection-oriented presentation protocol specification

0 Introduction

This International Standard is one of a set of International Standards produced to facilitate the interconnection of information processing systems. It is related to other International Standards in the set as defined by the Reference Model for Open Systems Interconnection (ISO 7498). The Reference Model subdivides the area of standardization for interconnection into a series of layers of specification, each of manageable size.

This International Standard specifies a common encoding and a number of functional units of presentation protocol procedures to be used to meet the needs of presentation-service-users. It is intended that the presentation protocol should be simple but general enough to cater for the total range of presentation-service-user needs without restricting future extensions.

The primary aim of this International Standard is to provide a set of rules for communication expressed in terms of the procedures to be carried out by peer entities at the time of communication. These rules for communication are intended to provide a sound basis for development in order to serve a variety of purposes:

- a) as a guide for implementors and designers;
- b) for use in the testing and procurement of equipment;
- c) as part of an agreement for the admittance of systems into the open systems environment;
- d) as a refinement of the understanding of OSI.

It is expected that the initial users of this International Standard will be designers and implementors of equipment and therefore it contains, in notes or in annexes, guidance on the implementation of its procedures.

It has not been possible as yet to prepare a product standard containing a set of objective tests for conformance to this International Standard but it does contain a section on conformance of equipment claiming to implement the procedures it specifies. Attention is drawn to the fact that this International Standard does not contain any tests to demonstrate this conformance and cannot, therefore, be considered as a complete product standard. The variations and options available within this International Standard are es-

sential to enable a presentation-service to be provided for a wide variety of applications. Thus, a minimally conforming implementation will not be suitable for use in all possible circumstances. It is necessary, therefore, to qualify all references to this International Standard with statements of the options provided or required, or with statements of the intended purpose of provision or use.

1 Scope and field of application¹⁾

1.1 This International Standard specifies

- a) procedures for the transfer of data and control information from one presentation-entity to a peer presentation-entity;
- b) the means of selecting, by means of functional units, the procedures to be used by the presentation-entities;
- c) the structure and encoding of the presentation-protocol-data-units used for the transfer of data and control information.

The procedures are defined in terms of

- d) the interactions between peer presentation-entities through the exchange of presentation-protocol-data-units;
- e) the interactions between a presentation-entity and the presentation-service-user in the same system through the exchange of presentation-service primitives;
- f) the interactions between a presentation-entity and the session-service-provider through the exchange of session-service primitives.

1.2 These procedures are defined in the main text of this International Standard supplemented by state tables in annex A.

1.3 These procedures are applicable to instances of communication between systems which support the Presentation Layer of the OSI Reference Model and which wish to interconnect in an OSI environment.

1.4 This International Standard also specifies conformance criteria for systems implementing these procedures. It does

¹⁾ The implementation and use of this International Standard for Open Systems Interconnection requires the public assignment of values of ASN.1 type OBJECT IDENTIFIER to specifications of abstract syntaxes and transfer syntaxes. Public specification and naming of abstract syntaxes and transfer syntaxes can occur in ISO standards or CCITT Recommendations, or under the mechanisms identified in the Registration Authority procedures. A Registration Authority procedures specification is under development.

not contain tests which can be used to demonstrate this conformance.

2 References

ISO 7498, *Information processing systems - Open Systems Interconnection - Basic Reference Model*.

ISO 7498-3, *Information processing systems - Open Systems Interconnection - Basic Reference Model - Part 3: Naming and Addressing*.¹

ISO/TR 8509, *Information processing systems - Open Systems Interconnection - Service conventions*.

ISO 8326, *Information processing systems - Open Systems Interconnection - Basic connection oriented session service definition*.

ISO 8824, *Information processing systems - Open Systems Interconnection - Specification of Abstract Syntax Notation One (ASN.1)*.

ISO 8825, *Information processing systems - Open Systems Interconnection - Specification of Basic Encoding Rules for Abstract Syntax Notation One (ASN.1)*.

ISO 8822, *Information processing systems - Open Systems Interconnection - Connection oriented presentation service definition*.

CCITT Recommendation X.410, *Message Handling Systems: Remote Operations and Reliable Transfer Server (1984)*.

¹ At present at the stage of draft, publication anticipated in due course.

Section One: General

3 Definitions

3.1 Reference Model definitions

This International Standard is based on the concepts developed in ISO 7498 and makes use of the following terms derived from it:

- a) presentation-connection;
- b) Presentation Layer;
- c) presentation-protocol-data-unit;
- d) presentation-service;
- e) presentation-service-access-point;
- f) presentation-service-data-unit;
- g) presentation-protocol-control-information;
- h) session-connection;
- i) Session Layer;
- j) session-service-access-point;
- k) session-service-data-unit;
- l) session-service-provider;
- m) transfer syntax.

3.2 Service conventions definitions

This International Standard makes use of the following terms defined in ISO/TR 8509 as they apply in the Presentation Layer:

- a) service-user;
- b) service-provider;
- c) service primitive;
- d) request;
- e) indication;
- f) response;
- g) confirm;
- h) non-confirmed-service;
- i) confirmed-service;

- j) provider-initiated-service.

3.3 Naming and Addressing definitions

This International Standard makes use of the following terms defined in ISO 7498-3:

- a) session-address;
- b) presentation-address;
- c) presentation-selector.

3.4 Presentation Service definitions

This International Standard is also based on concepts developed in ISO 8822 and makes use of the following terms defined in that International Standard:

- a) abstract syntax;
- b) abstract syntax name;
- c) transfer syntax name;
- d) presentation data value;
- e) presentation context;
- f) defined context set;
- g) inter-activity defined context set;
- h) default context;
- i) functional unit;
- j) X.410-1984 mode;
- k) normal mode.

3.5 Presentation protocol definitions

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

3.5.1 local matter: A decision made by a system concerning its behaviour in the Presentation Layer that is not subject to the requirements of this International Standard.

3.5.2 valid presentation-protocol-data-unit: A presentation-protocol-data-unit which complies with the requirements of this International Standard for structure and encoding.

3.5.3 invalid presentation-protocol-data-unit: A presentation-protocol-data-unit which does not comply with the re-

quirements of this International Standard for structure and encoding.

3.5.4 protocol error: A situation occurring when a presentation-protocol-data-unit is used in a way which does not comply with the procedures defined in this International Standard.

3.5.5 original activity identifier: An attribute of an activity in progress. If the activity was started by use of the P-ACTIVITY-START service, the Activity identifier parameter value of the request and indication service primitives; if the activity was resumed by use of the P-ACTIVITY-RESUME service the Old activity identifier parameter value of the request and indication service primitives.

3.5.6 self-delimiting: An attribute of a transfer syntax which indicates that the end of each value in that syntax can be determined by means provided by the syntax.

3.5.7 presentation context identifier: An identifier for a specific presentation context. The identifier is unique within a presentation-connection and known to both presentation protocol machines. The default context does not have a presentation context identifier associated with it.

3.5.8 syncpoint identifier: A synchronization point serial number if the session activity management functional unit has not been selected; or a pair of synchronization point serial number and original activity identifier of the activity in progress if the session activity management functional unit has been selected. The order of syncpoint identifiers is defined as the order of their synchronization point serial number components.

3.5.9 initiator: The presentation protocol machine that initiates the presentation-connection establishment.

3.5.10 responder: The presentation protocol machine that responds to a presentation-connection establishment proposal.

3.5.11 requestor: The presentation protocol machine that initiates a particular action.

3.5.12 acceptor: The presentation protocol machine that accepts a particular action.

4 Abbreviations

4.1 Data Units

PPDU	presentation-protocol-data-unit
PSDU	presentation-service-data-unit
SSDU	session-service-data-unit

4.2 Types of presentation-protocol-data-units

AC PPDU	Alter Context PPDU
ACA PPDU	Alter Context Acknowledge PPDU

ARP PPDU	Abnormal Release Provider PPDU
ARU PPDU	Abnormal Release User PPDU
CP PPDU	Connect Presentation PPDU
CPA PPDU	Connect Presentation Accept PPDU
CPR PPDU	Connect Presentation Reject PPDU
RS PPDU	Resynchronize PPDU
RSA PPDU	Resynchronize Acknowledge PPDU
TC PPDU	Capability Data PPDU
TCC PPDU	Capability Data Acknowledge PPDU
TD PPDU	Presentation Data PPDU
TE PPDU	Expedited Data PPDU
TTD PPDU	Presentation Typed Data PPDU

4.3 Other abbreviations

ASN.1	Abstract Syntax Notation One (see ISO 8824)
DCS	defined context set
PPCI	presentation-protocol-control-information
PPM	presentation protocol machine
PS	presentation-service
PSAP	presentation-service-access-point
PS-user	presentation-service-user
SS	session-service
SSAP	session-service-access-point

5 Overview of the presentation protocol

5.1 Service provided by the Presentation Layer

The protocol specified in this International Standard supports the presentation-service defined in ISO 8822.

5.2 Service assumed from the Session Layer

The protocol specified in this International Standard assumes the use of the session-service defined in ISO 8326.

5.3 Functions of the Presentation Layer

The functions of the Presentation Layer are described in the Reference Model, ISO 7498, and are further expanded in the Presentation Service Definition, ISO 8822.

5.4 Presentation functional units

Functional units are logical groupings of elements of procedure defined by this International Standard for the purpose of

- a) negotiation during presentation-connection establishment for subsequent use on the presentation-connection;
- b) specification of conformance requirements.

The selection of the presentation functional units does not constrain the selection of session functional units to be available to the PS-user. Selection of a particular session functional unit to be available to the PS-user implies the rules of interaction of that session functional unit with whatever presentation functional units are selected, as specified by this International Standard.

5.4.1 Kernel functional unit

This functional unit, which is always available, supports the basic protocol elements of procedure required to establish a presentation-connection, transfer data, and release the presentation-connection.

NOTE - This is the presentation kernel functional unit; it supports data transfer on whatever session functional units are selected for those presentation-service primitives which allow User data parameters.

5.4.2 Context management functional unit

This functional unit supports the context addition and deletion services. This functional unit is optional, and its use is negotiable.

5.4.3 Context restoration functional unit

This functional unit adds further Presentation Layer functions when the session activity management functional unit is selected or when both the session synchronization (major or minor) and the session resynchronization functional units are selected. The context restoration functional unit is optional, and its use is negotiable; it is available only when the context management functional is selected.

5.5 Model of the Presentation Layer

The presentation protocol machine (PPM), see the note, within the presentation-entity communicates with the PS-user through a PSAP by means of presentation-service primitives as defined by the Presentation Service Definition (ISO 8822). Presentation-service primitives will cause or be the result of presentation-protocol-data-unit (PPDU) exchanges between the peer PPMs using a session-connection. These protocol exchanges are effected using the services of the Session Layer as defined by the Session Service Definition (ISO 8326). In some cases, presentation-service primitives will directly cause or be the result of session-service primitives.

Presentation-connection-endpoints are identified in end systems by an internal, implementation dependent, mechanism so that the PS-user and the presentation-entity can refer to each presentation-connection.

The reception of a service primitive and the generation of dependent actions are considered to be an indivisible action. The reception of a PPDU and the generation of dependent actions are considered to be an indivisible action. The model of the Presentation Layer for a single presentation-connection is illustrated in figure 1.

NOTE - A presentation-entity is comprised of one or more PPMs.

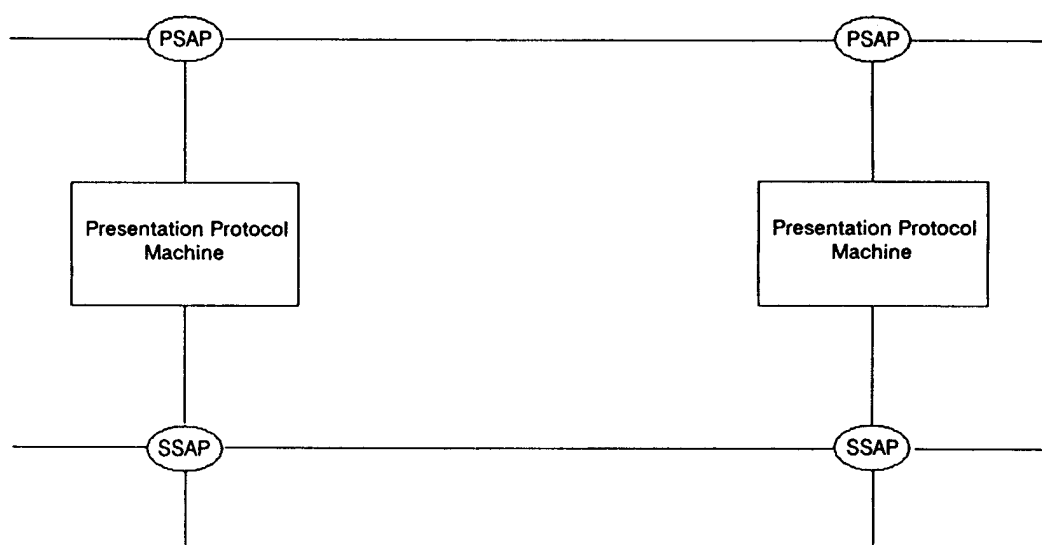


Figure 1 — Model of the presentation layer

Section Two : Presentation Protocol Specification

6 Elements of Procedure

For the purpose of description, this specification of elements of procedure employs an integrated treatment of PPDU parameters and session-service primitive parameters. This clause does not identify a parameter as either a PPDU parameter or a session-service primitive parameter. Such a distinction is specified in clause 7. For further information on the use of parameters, refer to the Presentation Service Definition (ISO 8822).

6.1 User data parameters

Most of the PPDUs used in the procedures of the presentation protocol carry User data parameters containing one or more presentation data values. The remainder of this clause gives the rules for determining the presentation contexts from which these presentation data values (including any embedded presentation data values) shall be taken.

NOTE - If the underlying session-service-provider imposes a restriction on the length of certain SS-user data parameters, the PPM shall reject any presentation-service request or response primitive (with the exception of a P-U-ABORT request primitive, see clause 6.4.2.2) carrying a User data parameter which does not fit into the SS-user data parameter of the corresponding session-service primitive. The way in which the PPM is made aware of this is a local matter.

6.1.1 The presentation data values (including any embedded presentation data values) which may be transferred in the User data parameter of the TE PPDU shall always be from the default context.

6.1.2 The presentation data values (including any embedded presentation data values) in User data parameters except for the TE PPDU shall be from presentation contexts determined by the following rules:

- a) If the DCS is empty and (d) does not apply, then each presentation data value (including any embedded presentation data values) shall be from the default context.
- b) If the DCS is not empty and no procedure is in progress which can amend the contents of the DCS, then each presentation data value (including any embedded presentation data values) shall be from a presentation context of the DCS.
- c) If the element of procedure itself amends the DCS, then each presentation data value (including any embedded presentation data values) shall be from a presentation context of the DCS which results from this amendment, or from the default context if this amendment leaves the DCS empty.
- d) If a PPM is awaiting a PPDU which will confirm a proposed amendment to the DCS then each presentation data value (including any embedded presentation data values) shall be from a presentation context of the

DCS which was not proposed for deletion from the DCS. If this leaves no presentation contexts available, then the User data parameter shall not be present.

6.2 Connection establishment

6.2.1 Purpose

The connection establishment procedure is used to establish a presentation-connection between two presentation-entities. It is used by a PPM which has received a P-CONNECT request service primitive.

The procedure uses the following PPDUs:

- a) CP PPDU
- b) CPA PPDU
- c) CPR PPDU

6.2.2 CP PPDU associated parameters

6.2.2.1 Mode selector

This shall be the Mode parameter from the P-CONNECT request service primitive and shall identify the mode of operation of the PPM for this presentation-connection. It shall appear as the Mode parameter of the P-CONNECT indication service primitive, if issued.

6.2.2.2 Protocol version

This shall identify each version of the presentation protocol that the initiating PPM supports. The version of the protocol defined in this International Standard shall be version-1.

See also clause 6.2.6.4.

6.2.2.3 Calling-presentation-selector

This shall be the presentation-selector part of the Calling-presentation-address parameter from the P-CONNECT request service primitive and shall appear as the calling-presentation-selector part of the Calling-presentation-address parameter of the P-CONNECT indication service primitive, if issued.

6.2.2.4 Calling-session-address

This shall be the session-address part of the Calling-presentation-address parameter from the P-CONNECT request service primitive and shall appear as the session-address part of the Calling-presentation-address parameter of the P-CONNECT indication service primitive, if issued.

6.2.2.5 Called-presentation-selector

This shall be the presentation-selector part of the Called-presentation-address parameter from the P-CONNECT request service primitive and shall appear as the called-presentation-selector part of the Called-presentation-address parameter of the P-CONNECT indication service primitive, if issued.

6.2.2.6 Called-session-address

This shall be the session-address part of the Called-presentation address parameter from the P-CONNECT request service primitive and shall appear as the session-address part of the Called-presentation-address parameter of the P-CONNECT indication service primitive, if issued.

6.2.2.7 Presentation context definition list

This shall be a list containing one or more items. Each item represents one item of the Presentation context definition list parameter from the P-CONNECT request service primitive and shall appear as one item of the Presentation context definition list parameter of the P-CONNECT indication service primitive, if issued. Each item contains three components: a presentation context identifier, an abstract syntax name and a transfer syntax list.

The transfer syntax list contains the names of those transfer syntaxes (or the names of specifications producing such transfer syntaxes) that the initiating PPM is capable of supporting for the named abstract syntax on the presentation-connection (at least one transfer syntax name for each proposed presentation context).

All presentation context identifiers contained in this parameter shall be different and shall be odd integers.

NOTE - The presentation context identifiers are specified here to be odd integers so that they are chosen from a separate number space from those identifiers allocated by the responding PPM (see also clause 6.5).

See also clause 6.2.6.1.

6.2.2.8 Default context name

This shall be the Default context name parameter from the P-CONNECT request service primitive and shall appear as the Default context name parameter of the P-CONNECT indication service primitive, if issued. It contains two components: an abstract syntax name and a transfer syntax name (or the name of a specification producing such a transfer syntax). The transfer syntax name component identifies the transfer syntax required by the initiating PPM for the default context to be used on the presentation-connection. See also clause 6.2.6.2.

6.2.2.9 Quality of service

This shall be the Quality of service parameter from the P-CONNECT request service primitive and shall appear as the Quality of service parameter of the P-CONNECT indication service primitive, if issued.

6.2.2.10 Presentation requirements

This shall be the Presentation requirements parameter from the P-CONNECT request service primitive and shall identify the presentation functional units proposed by the initiating PS-user in the P-CONNECT request service primitive. It shall appear as the Presentation requirements parameter of the P-CONNECT indication service primitive, if issued, unless the responding PPM does not support all of them, in which case only those functional units supported by the responding PPM shall appear. See also clause 6.2.6.3.

6.2.2.11 User session requirements

This shall be the Session requirements parameter from the P-CONNECT request service primitive and shall identify the requirements to the underlying session-service proposed by the PS-user. It shall appear as the Session requirements parameter of the P-CONNECT indication service primitive, if issued.

6.2.2.12 Revised session requirements

This shall be the Session requirements parameter from the P-CONNECT request service primitive, supplemented by such additional requirements as are needed to support the presentation protocol.

6.2.2.13 Initial synchronization point serial number

This shall be the Initial synchronization point serial number parameter from the P-CONNECT request service primitive, and shall appear as the Initial synchronization point serial number parameter of the P-CONNECT indication service primitive, if issued.

6.2.2.14 Initial assignment of tokens

This shall be the Initial assignment of tokens parameter from the P-CONNECT request service primitive, and shall appear as the Initial assignment of tokens parameter of the P-CONNECT indication service primitive, if issued.

6.2.2.15 Session connection identifier

This shall be the Session connection identifier parameter from the P-CONNECT request service primitive, and shall appear as the Session connection identifier parameter of the P-CONNECT indication service primitive, if issued.

6.2.2.16 User data

This shall represent the User data parameter from the P-CONNECT request service primitive, and shall appear as the User data parameter of the P-CONNECT indication service primitive, if issued. If the Presentation context definition list parameter is not present, then it shall be a list of presentation data values (including any embedded presentation data values) from the default context. Otherwise it shall be a list of presentation data values (including any embedded presentation data values) from presentation con-

texts proposed in the Presentation context definition list parameter.

6.2.3 CPA PPDU associated parameters

An instance of a CPA PPDU need not contain values for all possible parameters; in addition to the Responding-presentation-selector and Responding-session-address parameters, it should only contain values for equivalent parameter values present in the CP PPDU for which it is a reply.

6.2.3.1 Mode selector

This shall be the Mode selector parameter from the CP PPDU.

6.2.3.2 Protocol version

This shall identify the version of the presentation protocol selected for use on this presentation-connection. The version of the protocol defined in this International Standard shall be version-1.

6.2.3.3 Responding-presentation-selector

This shall be the presentation-selector part of the Responding-presentation-address parameter from the P-CONNECT response service primitive and shall appear as the responding-presentation-selector part of the Responding-presentation-address parameter of the P-CONNECT confirm service primitive.

6.2.3.4 Responding-session-address

This shall be the session-address part of the Responding-presentation-address parameter from the P-CONNECT response service primitive and shall appear as the session-address part of the Responding-presentation-address parameter of the P-CONNECT confirm service primitive.

See also clause 6.2.6.4.

6.2.3.5 Presentation context definition result list

This shall represent the Presentation context definition result list parameter of the P-CONNECT response service primitive and shall appear as the Presentation context definition result list parameter of the P-CONNECT confirm service primitive. It consists of a list containing the same number of items as the Presentation context definition list parameter of the CP PPDU. Each item shall be a reply to the corresponding item in the CP PPDU and contains one or two components, a presentation context definition result and an optional component which is either a transfer syntax name (or the name of a specification producing such a transfer syntax) or a provider reason.

The presentation context definition result shall take one of the values:

- "acceptance";
- "user-rejection";

- "provider-rejection".

The transfer syntax name shall be present if the presentation context definition result takes the value "acceptance". It shall be one of the names proposed by the initiating PPM as possible transfer syntaxes for the identified presentation context, and shall determine the transfer syntax which the responding PPM has selected.

The provider reason shall be present if the presentation context definition result component takes the value "provider-rejection". It specifies the reason for rejection of the presentation context definition by the responding PPM and shall take one of the values

- reason not specified;
- abstract syntax requirements not supported;
- proposed transfer syntaxes not supported;
- local limit on DCS exceeded.

See also clause 6.2.6.1.

6.2.3.6 Quality of service

This shall be the Quality of service parameter from the P-CONNECT response service primitive and shall appear as the Quality of service parameter of the P-CONNECT confirm service primitive.

6.2.3.7 Presentation requirements

This shall be the Presentation requirements parameter from the P-CONNECT response service primitive. It shall appear as the Presentation requirements parameter of the P-CONNECT confirm service primitive. See also clause 6.2.6.3.

6.2.3.8 User session requirements

This shall be the Session requirements parameter from the P-CONNECT response service primitive and shall appear as the Session requirements parameter of the P-CONNECT confirm service primitive.

6.2.3.9 Revised session requirements

This shall be the Session requirements parameter from the P-CONNECT response service primitive, supplemented by such additional requirements as are needed to support the presentation protocol.

6.2.3.10 Initial synchronization point serial number

This shall be the Initial synchronization point serial number parameter from the P-CONNECT response service primitive, and shall appear as the Initial synchronization point serial number parameter of the P-CONNECT confirm service primitive.

6.2.3.11 Initial assignment of Tokens

This shall be the Initial assignment of tokens parameter from the P-CONNECT response service primitive, and shall appear as the Initial assignment of tokens parameter of the P-CONNECT confirm service primitive.

6.2.3.12 Session Connection Identifier

This shall be the Session connection identifier parameter from the P-CONNECT response service primitive, and shall appear as the Session connection identifier parameter of the P-CONNECT confirm service primitive.

6.2.3.13 User data

This shall be the User data parameter from the P-CONNECT response service primitive, and shall appear as the User data parameter of the P-CONNECT confirm service primitive. The rules of clause 6.1.2 shall apply.

6.2.4 CPR PDU associated parameters

An instance of a CPR PDU need not contain values for all possible parameters; in addition to presentation-selector parameters it should only contain values for corresponding parameter values present in the CP PDU for which it is a reply.

6.2.4.1 Protocol version

This shall identify each version of the presentation protocol that the responding PPM supports. The version of the protocol defined in this International Standard shall be version-1.

See also clause 6.2.6.4.

6.2.4.2 Responding-presentation-selector

This shall be the presentation-selector part of the Responding-presentation-address parameter from the P-CONNECT response service primitive and shall appear as the responding-presentation-selector part of the Responding-presentation-address parameter of the P-CONNECT confirm service primitive.

6.2.4.3 Responding-session-address

This shall be the session-address part of the Responding-presentation-address parameter from the P-CONNECT response service primitive and shall appear as the session-address part of the Responding-presentation-address parameter of the P-CONNECT confirm service primitive.

6.2.4.4 Presentation context definition result list

This shall be the Presentation context definition result list parameter of the P-CONNECT response service primitive and shall appear as the Presentation context definition result list parameter of the P-CONNECT confirm service primitive. It consists of a list containing the same number of items as the Presentation context definition list par-

ameter of the CP PDU. Each item shall be a reply to the corresponding item in the CP PDU and contains one or two components, a presentation context definition result and an optional component which is either a transfer syntax name (or the name of a specification producing such a transfer syntax) or a provider reason. See also clause 6.2.6.1.

The presentation context definition result shall take one of the values:

- "acceptance";
- "user-rejection";
- "provider-rejection".

The transfer syntax name shall be present if the presentation context definition result takes the value "acceptance". It shall be one of the names proposed by the initiating PPM as possible transfer syntaxes for the identified presentation context, and shall determine the transfer syntax which the responding PPM has selected.

The provider reason shall be present if the presentation context definition result takes the value "provider-rejection". It specifies the reason for rejection of the presentation context definition by the responding PPM and shall take one of the values

- reason not specified;
- abstract syntax requirements not supported;
- proposed transfer syntaxes not supported;
- local limit on DCS exceeded.

6.2.4.5 Default context result

This shall be the Default context result parameter of the P-CONNECT response service primitive and shall appear as the Default context result parameter of the P-CONNECT confirm service primitive. It may take the value "acceptance", "provider-rejection" or "user-rejection". See also clause 6.2.6.2.

6.2.4.6 Quality of service

This shall be the Quality of service parameter from the P-CONNECT response service primitive, or if the CPR PDU is initiated by the responding PPM on receipt of a CP PDU it shall be supplied by the responding PPM. In either case it shall appear as the Quality of service parameter of the P-CONNECT confirm service primitive. It shall identify a quality of service required by the responding PS-user or presentation-service-provider.

6.2.4.7 Session requirements

This shall be the Session requirements parameter from the P-CONNECT response service primitive, or if the CPR PDU is initiated by the responding PPM on receipt of a CP PDU it shall be supplied by the responding PPM. In either case it shall appear as the Session requirements par-

ameter of the P-CONNECT confirm service primitive. It shall identify those session functional units required by the responding PS-user or presentation-service-provider.

NOTE - If the presentation-connection establishment proposal is rejected by the PS-user, this parameter shall represent the session requirements of the PS-user as indicated in the response primitive; there is no Revised session requirements parameter in this PPDU.

6.2.4.8 Session connection identifier

This shall be the Session connection identifier parameter from the P-CONNECT response service primitive, and shall appear as the Session connection identifier parameter of the P-CONNECT confirm service primitive.

6.2.4.9 Provider reason

If present, this shall indicate that the rejection is by the responding presentation-service-provider; if absent, this shall indicate that the rejection is by the responding PS-user. This parameter shall indicate the reason for the rejection of the presentation-connection establishment proposal and shall appear as the Provider reason parameter of the P-CONNECT confirm service primitive. It shall take one of the following values

- reason not specified (transient);
- temporary congestion (transient);
- local limit exceeded (permanent);
- called-presentation-address unknown (permanent);
- protocol version not supported (permanent);
- default context not supported (permanent);
- user data not readable (permanent);
- no PSAP available from the set of PSAPs identified by the called-presentation-address (transient).

6.2.4.10 User data

This shall be the User data parameter from the P-CONNECT response service primitive, and shall appear as the User data parameter of the P-CONNECT confirm service primitive. This parameter shall contain encodings of presentation data values (including any embedded presentation data values) from transfer syntaxes contained in the Presentation context definition result list parameter of this CPR PPDU, if present, or otherwise according to the default context. It is not present if the presentation-connection establishment proposal is rejected by the presentation-service-provider.

6.2.5 Procedure

6.2.5.1 When a P-CONNECT request service primitive is received by a PPM (the initiator), it shall initiate the establishment of a presentation-connection by sending a CP PPDU containing the presentation data values and pro-

posed parameters necessary for the operation of the presentation-connection (see clause 6.2.2).

6.2.5.2 As an initiator's option, the presentation data values contained in a CP PPDU may be encoded more than once to allow the transfer of the same presentation data values using a number of different transfer syntaxes.

6.2.5.3 The responding PPM is not required to examine more than one encoding for each presentation data value received. If, for any presentation data value received, all its examined encodings are expressed according to transfer syntaxes not supported by the responding PPM, then the responding PPM shall refuse the proposed presentation-connection by sending a CPR PPDU with a Provider reason parameter value of "user data not readable".

6.2.5.4 If the initiating PPM is unable to establish a presentation-connection due to an inability to establish a session-connection, it shall issue a P-CONNECT confirm service primitive with a Result parameter value of "provider-rejection" and the presentation-connection shall not be established.

6.2.5.5 The responding PPM may refuse the proposed presentation-connection (if for example, the parameter values of the CP PPDU are unacceptable; see also clause 6.2.6), in which case it shall send a CPR PPDU with a Provider reason parameter included (see clause 6.2.4). Alternatively, if not refusing, it shall issue a P-CONNECT indication service primitive.

6.2.5.6 If the responding PPM then receives a P-CONNECT response service primitive with a Result parameter value of "user-rejection", it shall send a CPR PPDU (see clause 6.2.4), but if it receives a P-CONNECT response service primitive with a Result parameter value of "acceptance", it shall send a CPA PPDU (see clause 6.2.3).

6.2.5.7 If the initiating PPM receives a CPR PPDU refusing the presentation-connection, then it shall issue a P-CONNECT confirm service primitive with a Result parameter value of "user-rejection" (if the Provider reason parameter is not present) or "provider-rejection" (if the Provider reason parameter is present), and the presentation-connection shall not be established.

6.2.5.8 If the initiating PPM receives a CPA PPDU accepting the presentation-connection, then it shall issue a P-CONNECT confirm service primitive with a Result parameter value of "acceptance", and the presentation-connection shall be established.

6.2.5.9 If the presentation-connection is established, the DCS of each PPM is set according to the parameters of the CPA PPDU.