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**Information technology — Open Systems  
Interconnection — Connection-oriented  
presentation protocol: Protocol  
specification**

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**AMENDMENT 1: Efficiency enhancements**

ISO/IEC 8823-1:1994/Amd.1:1998  
*Technologies de l'information — Interconnexion de systèmes ouverts  
(OSI) — Protocole de présentation en mode connexion: Spécification du  
protocole*

AMENDEMENT 1: Améliorations d'efficacité



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## Foreword

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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 1 to ISO/IEC 8823-1:1994 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 33, *Distributed application services*, in collaboration with ITU-T. The identical text is published as ITU-T Rec. X.226/Amd.1.

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## INTERNATIONAL STANDARD

## ITU-T RECOMMENDATION

**INFORMATION TECHNOLOGY – OPEN SYSTEMS INTERCONNECTION –  
CONNECTION-ORIENTED PRESENTATION PROTOCOL:  
PROTOCOL SPECIFICATION**

**AMENDMENT 1  
Efficiency enhancements**

**1) Subclause 2.1**

Add the following references by numerical order:

- ITU-T Recommendation X.691 (1995) | ISO/IEC 8825-2:1995, *Information technology – ASN.1 encoding rules: Specification of Packed Encoding Rules (PER)*.
- ITU-T Recommendation X.217 (1995)/Amd.1 (1996) | ISO/IEC 8649:1996/Amd.1:1997, *Information technology – Open Systems Interconnection – Service definition for the Association Control Service Element – Amendment 1: Support of authentication mechanisms for the connectionless mode*.
- ITU-T Recommendation X.227 (1995)/Amd.1 (1996) | ISO/IEC 8650-1:1996/Amd.1:1997, *Information technology – Open Systems Interconnection – Connection-oriented protocol for the Association Control Service Element: Protocol specification – Amendment 1: Incorporation of extensibility markers*.
- ITU-T Recommendation X.216 (1994)/Amd.1 (1997) | ISO/IEC 8822:1994/Amd.1:1998, *Information technology – Open Systems Interconnection – Presentation service definition – Amendment 1: Efficiency enhancements*.

**2) Subclause 2.3**

Add the following references by numerical order:

- ITU-T Recommendation X.216 (1994)/Addendum 1 (1995), *Service definition for Presentation layer efficiency enhancements*.
- ITU-T Recommendation X.225 (1995)/Addendum 1 (1995), *Protocol specification for Session layer efficiency enhancements*.

**3) Subclause 3.4**

Add the following new item at the end of the list:

- l) Upper-layer context specification.

Consequently, item k) should have, at the end, a semi-colon instead of a period.

#### 4) Subclause 3.5

*Insert the following definition by numerical order:*

**3.5.3 bis nominated context:** A member of the Defined Context Set can be nominated by either PPM as its nominated context. There are independent nominated contexts for each direction of communication. There are no nominated contexts unless the nominated context protocol option is selected on the connection. If all the presentation data values in the User-data of PPDU are in the nominated context of the sender, alternative presentation PCI may be used to convey the User-data.

*Add the following definitions after 3.5.14:*

**3.5.15 nominated context protocol option:** An option of the presentation protocol that uses an efficient identification of the presentation context of user data when a single presentation data value is present in the user data of a primitive.

**3.5.16 short-encoding protocol option:** An option of the presentation protocol that uses efficient encoding of a PPDU containing a single presentation data value.

**3.5.17 packed encoding protocol option:** An option of the presentation protocol under which the Presentation PDUs are encoded using the ASN.1 Packed Encoding Rules.

**3.5.18 null-encoding protocol option:** An option of the presentation protocol, negotiated during connection establishment, that permits a data transfer phase with zero presentation protocol control information.

**3.5.19 short-connect protocol option:** An option of the presentation protocol that permits an efficient negotiation, during connection establishment, of the null-encoding protocol option.

#### 5) Subclause 4.2

*Add the following PDUs at the end of the list:*

SHORT-CP PDU	Short Connect PDU
SHORT-CPA PDU	Short Connect Accept PDU
SHORT-CPR PDU	Short Connect Reject PDU

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#### 6) Subclause 4.3

*Insert the following abbreviations by alphabetical order:*

BER	Basic Encoding Rules
PER	Packed Encoding Rules

#### 7) Subclause 5.4

*Insert the following new subclauses after 5.4:*

##### **5.4 bis Protocol options**

Protocol options are elements of procedure defined in the Protocol Specification. Some have no effect on the support of the Presentation Service; others imply restrictions on the support of Presentation Service or can only be used with other options that restrict the service.

The options that do not affect support of the Presentation Service can be negotiated at presentation-connection establishment by the Presentation protocol itself. These include the nominated context, short-encoding and packed encoding options.

The null-encoding option supports a restricted subset of the Presentation Service. It can be negotiated at presentation connection establishment.

The short-connect option can only be used to establish a connection that will use the null-encoding option.

All options apart from short-connect may be negotiated using the fast-associate mechanism (see 6.2.6.9). The short-connect option and the fast-associate mechanism are mutually exclusive. All options may be the subject of *a priori* agreement.

NOTE 1 – The short-encoding and short-connect protocol options are completely separate. Short-encoding applies to the user-data of any PPDU on an established connection. Short-connect applies to the establishment of a connection that will use the null-encoding option.

NOTE 2 – The fast associate mechanism (see 6.2.6.9) is not considered a Presentation protocol option as it is implemented in the Session layer. It can be used to establish a presentation connection that uses any combination of the options, except short-connect.

#### 5.4 bis.1 Nominated context protocol option

This protocol option allows each of the protocol machines to choose one of the presentation contexts of the DCS as its nominated context. The nominated context affects the presentation protocol control information that conveys the User-data, in circumstances defined in 8.4. There are independent nominated contexts for each direction – the initiator's nominated context applies to User-data sent by the connection-initiator, the responder's nominated context applies to User-data sent by the connection-responder. Even when the protocol option has been selected, there need not be a nominated context for either or both PPMs.

The nominated context protocol option does not affect the Presentation Service. It has no implications for which session functional units are used.

#### 5.4 bis.2 Short encoding protocol option

This protocol option allows use of the Short-encoding form of User-data for any PPDU for which it is defined if the User-data contains only one presentation data value.

This protocol option does not affect the Presentation service. It requires support of the Special User-data parameter of the Session primitive whose User-data is the PPDU.

#### 5.4 bis.3 Packed encoding rules protocol option

When this protocol option is selected, the PPDUs that are specified in ASN.1 in 8.2 are encoded using the Packed Encoding Rules. When the protocol option is not selected, these PPDUs are encoded using the Basic Encoding Rules. The negotiation of the Packed Encoding Rules protocol option is described in 6.2.6.8.

#### 5.4 bis.4 Null-encoding protocol option

When this protocol option is selected, no presentation protocol control information is conveyed over the established presentation connection. In particular, no PPDUs associated with the normal and abnormal release of the connection are conveyed.

The null-encoding protocol option is used on an established connection. The use of the option restricts support of the Presentation service and is only available if one of the following conditions is applicable:

- a) the presentation context definition list contains precisely one item in which the abstract syntax name is known to the responding PPM by bilateral agreement;
- b) the presentation context definition list is empty and the default context is known by bilateral agreement;
- c) the presentation context definition list is empty and the abstract syntax of the default context is specified in ASN.1 and is known to the responding PPM by bilateral agreement.

The null-encoding does not require particular Session functional units.

NOTE – It is expected that Presentation null-encoding will typically be used with the Session no-orderly-release functional unit, and with the Session null-encoding option, although this is not required.

### 5.4 bis.5 Short-connect protocol option

The short-connect protocol option is used only in connection establishment to establish a connection on which the null-encoding option will be used, and thus one of the conditions in 5.4 bis.4 applies. In addition, it can only be used if both of the following conditions apply:

- a) the calling and called presentation selectors are null;
- b) the presentation-requirements parameter in the P-CONNECT service includes only the kernel functional unit.

The short-connect protocol option does not require particular Session functional units.

NOTE – It is expected that the Presentation short-connect protocol option will typically be used with the Session short connect mechanism with no upper-layer context identifier present.

## 8) Subclause 6.2.1

*Modify, using the following text, the second paragraph:*

The procedure uses the following PPDU:

If the **short-connect** option is not selected, the connection establishment procedure uses:

- a) CP PDU;
- b) CPA PDU;
- c) CPR PDU.

If the **short-connect** option is selected, the connection establishment procedure uses:

- d) SHORT-CP PDU;
- e) SHORT-CPA PDU;
- f) SHORT-CPR PDU.

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## 9) Subclause 6.2.2 <https://standards.iteh.ai/catalog/standards/sist/dde73424-5943-4130-bfc4-b6643472348e/iso-iec-8823-1-1994-amd-1-1998>

*Add the following subclause after 6.2.2.8:*

### 6.2.2.8 bis Initiator's nominated context

This shall identify the presentation context from the presentation context definition list that is proposed as the nominated context for the initiating PPM. This parameter shall consist of the presentation context identifier from the appropriate item of the presentation context definition list.

This parameter shall only be present if the nominated context protocol option has been proposed and the presentation context definition list is present.

See also 6.2.6.6.

*Add the following subclause after 6.2.2.12:*

### 6.2.2.12 bis Protocol options

This shall identify the options of the Presentation protocol selected for use on this connection.

Only options which were proposed in the Protocol options parameter of the CP PDU shall be selected.

See also 6.2.6.5.



**10) Subclause 6.2.3**

Add the following subclause after 6.2.3.8:

**6.2.3.8 bis Responder's nominated context**

This shall identify the presentation context from the DCS that shall be the nominated context for the responding PPM. This parameter shall consist of the presentation context identifier for the presentation context being nominated.

This parameter shall only be present if the nominated context protocol option has been selected and the DCS is not empty.

See also 6.2.6.6.

**11) Subclause 6.2.2**

Add the following subclause after 6.2.2.15:

**6.2.2.15 bis Protocol options**

This shall identify each of the options of the Presentation protocol that the initiating PPM supports and proposes for use on this connection.

The protocol options defined are:

- a) nominated context;
- b) short-encoding;
- c) Packed Encoding Rules;
- d) null-encoding.

NOTE – The short-connect protocol option is not represented in this parameter, as the CP PPDU is not used with the short-connect protocol option.

If the parameter is absent, no options are proposed.

See also 6.2.6.5.

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**12) Subclause 6.2.2.16**

Add at the end of the first sentence:

unless the fast-associate mechanism is used, in which case, if the User-data parameter does not appear on the P-CONNECT indication service primitive, the semantic content of the User-data shall be conveyed in the User-Summary parameter.

Consequently, replace the period after the word issued by a comma.

Add, after 6.2.2.16, the following subclause:

**6.2.2.17 User Summary**

This shall be the User Summary parameter from the P-CONNECT request service primitive. If the fast-associate mechanism is used and the User data parameter does not appear on the P-CONNECT indication service primitive, the User Summary parameter shall appear.

**13) Subclause 6.2.3.13**

Add at the end of the first sentence:

unless the fast-associate mechanism is used, in which case, if the User data parameter does not appear on the P-CONNECT indication service primitive, the semantic content of the User data shall be conveyed in the User Summary parameter.

Consequently, replace the period after the word service by a comma.

Add, after 6.2.3.13, the following subclause:

#### 6.2.3.14 User Summary

This shall be the User Summary parameter from the P-CONNECT request service primitive. If the fast-associate mechanism is used and the User data parameter does not appear on the P-CONNECT indication service primitive, the User Summary parameter shall appear.

### 14) Subclause 6.2.5

Add, immediately following the subclause heading, the following text:

If the null-encoding option is not selected, the connection establishment procedure is described in 6.2.6 through 6.2.7.

### 15) Subclause 6.2.6

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NOTE – The earlier editions of this Specification did not define any of the protocol options, or the Protocol options parameter. The rules of extensibility in 8.5 ensure that a responding PPM receiving a CP PPDU proposing options that are not recognized will ignore, and thus negotiate out, option proposals or the entire Protocol options parameter.

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#### 6.2.6.6 Nominated context [https://standards.iteh.ai/catalog/standards/sist/dde73424-5943-4130-bfc4-](https://standards.iteh.ai/catalog/standards/sist/dde73424-5943-4130-bfc4-b6643472348e/iso-iec-8823-1-1994-amd-1-1998)

Each PPM determines which one (if any) of the presentation contexts of DCS shall be its nominated context (which will affect the encoding of User-data in the PPDUs it will send on the presentation connection). The PPM is not required to propose a nominated context, even if the nominated context protocol option is proposed and selected on the connection. If the PPM does not propose a nominated context, it has no nominated context.

The initiating PPM proposes the nominated context that will apply to PPDUs it will send (other than the CP and CPC-type PPDUs) by identifying one of the items in the presentation context definition list. If this presentation context is accepted by the responder in the presentation context result list, and the nominated context protocol option is selected on the connection, the context becomes the initiating PPM's nominated context when the CPA PPDU is received by the initiator. If the presentation context is rejected by the responding PPM or the responding Presentation user, but the connection is accepted, there is no nominated context for the initiating PPM. If the nominated context protocol option is not selected, there is no nominated context for either PPM.

The responding PPM identifies one element of the DCS as its nominated context. This immediately becomes the nominated context for the responding PPM. The nomination of the context applies to the encoding User-data of the CPA PPDU.

#### 6.2.6.7 Short-encoding protocol option

The use of the short-encoding is negotiated between the two PPMs. The protocol option is selected only if both PPMs propose it.

Add, after 6.2.6.4, the following subclauses:

#### 6.2.6.5 Protocol option negotiation 6 ITU-T Rec. X.226 (1994)/Amd.1 (1997 E)

Presentation protocol options are negotiated between the two PPMs.

If the initiating PPM wishes to propose any of the protocol options, it identifies these in the Protocol options parameter of the

### 6.2.6.8 Packed encoding rules protocol option

Since use of the Packed encoding rules protocol option can include the encoding of the CP PPDU, negotiation of this protocol option is not always possible. The following mechanisms are available:

- a) The use of the Packed encoding rules can be negotiated using the fast-associate mechanism. In this case, the semantics of the CP PPDU are then conveyed by the SS-user summary parameter of S-CONNECT.
- b) The CP PPDU can be encoded using BER, but including a protocol options field that offers the PER protocol option. If the responder accepts the option, the CPA and all subsequent PPDUs are encoded using PER. If the responder does not accept the option, all PPDUs are encoded using BER.

NOTE 1 – The encoding rules used for the CPA PPDU can be determined from the high-order three bits of the first octet of the encoded CPA PPDU. For BER, these will be “001” (from the UNIVERSAL tag for SET and the constructed flag). For PER, these bits will be “011” (from the bit map for optional elements and the choice of mode).

- c) The CP PPDU is encoded using PER. If the responder does not support the protocol option, the PER-encoded CP will appear to be a protocol error.

NOTE 2 – As the use of the CP PPDU is not negotiated in c), this mechanism is only suitable if it is known *a priori* that the PER protocol option is supported by the responder.

If the responding PPM sends a CPR PPDU (as specified in 6.2.5.5 or 6.2.5.6) the CPR PPDU shall use the same encoding rules as the received CP-type PPDU.

### 6.2.6.9 Fast-associate mechanism

If the fast associate mechanism is used during connection establishment, the initiating PPM as well as forming a CP PPDU to be passed to the Session service-provider in the User Data parameter of an S-CONNECT request, also passes the semantic content of the CP PPDU in the User Summary parameter of the S-CONNECT request. The User Summary parameter references an Upper-Layer Context specification and is a purely abstract parameter. If the P-CONNECT request User Information parameter was present, the semantic content of this will have been supplied to the PPM in the User Summary parameter of the P-CONNECT request, and is conceptually included in the User Summary parameter of the S-CONNECT request.

If Session provider (via the Session protocol) makes use of the fast associate mechanism, the responding PPM will receive only the User Summary parameter on the S-CONNECT indication, and not the User Data. The responding implementation will reconstruct the semantic content of the CP PPDU that would have been present in the S-CONNECT User-data, and issue a P-CONNECT indication with a User Summary parameter in place of its User data.

Similarly, the responding PPM will form a User Summary parameter on the S-CONNECT response from the CPA PPDU, including the semantic content of the User Summary parameter of the P-CONNECT response (if present) by reference to the same Upper-Layer Context specification. The initiating PPM reconstructs the CPA PPDU.

NOTE – The passing of the User Summary parameters and reconstruction of the PPDUs from the Session User Summary parameters is abstract. There is no requirement for a real implementation to perform these actions.

## 16) Subclause 6.2.7.2

Amend the first paragraph of 6.2.7.2 as follows:

If the initiating PPM receives an S-P-ABORT indication service primitive or an ARP PPDU, or an S-U-ABORT indication service primitive with no SS-user-data parameter, it shall issue a P-P-ABORT indication service primitive and the presentation-connection shall not be established.