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Information processing systems — Open Systems Interconnection — Service definition for the Association Control Service Element

iTeh STANDARD PREVIEW

Systèmes de traitement de l'information — Interconnexion de systèmes ouverts — Définition du service pour l'élément de service de contrôle d'association

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 8649 was prepared by Technical Committee ISO/TC 97, *Information processing systems.*

Users should note that all International Standards undergo revision from time to time and that any reference made herein to any other International Standard implies its latest edition, unless otherwise stated.

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Information processing systems — Open Systems Interconnection — Service definition for the Association Control Service Element

0 Introduction

0.1 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.

0.2 The goal of Open Systems Interconnection is to allow, with a minimum of technical agreement outside the interconnection standards, the interconnection of information processing systems:

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

0.3 This International Standard recognizes that application-processes may wish to communicate with each other for a wide variety of reasons. However, any communication will require the performance of certain services independent of the reasons for communication. The application-service-element defined herein provides such services.

0.4 This International Standard defines services provided by the application service element for application-association control: the Association Control Service Element (ACSE). The ACSE provides basic facilities for the control of an application-association between two application-entities that communicate by means of a presentation-connection.

0.5 The use of services defined in this International Standard is also governed by the use of the presentation-service (ISO 8822) and the session-service (ISO 8326).

0.6 It is recognized that, with respect to ACSE Quality of Services (QOS), described in clause 9, work is still in progress to provide an integrated treatment of QOS across all layers of the OSI Reference Model, and to ensure that the individual treatments in each layer service satisfy overall QOS objectives in a consistent manner. As a consequence,
an addendum may be added to this International Standard at a later time which reflects further QOS developments and integration.

1 Scope and field of application

This International Standard defines ACSE services for application-association control in an open systems interconnection environment. The ACSE services are provided by the use of the ACSE protocol (ISO 8650) in conjunction with the presentation-service (ISO 8822). The ACSE services assume as a minimum the use of the presentation-service Kernel functional unit.

This International Standard does not specify individual implementations or products, nor does it constrain the implementation of entities and interfaces within a computer system.

No requirement is made for conformance to this International Standard.

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

ISO 8327, *Information processing systems - Open Systems Interconnection - Basic connection oriented session protocol specification.*

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

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

ISO 8650, *Information processing systems - Open Systems Interconnection - Protocol specification for the Association Control Service Element.*

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

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

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 defined in it:

a) Application Layer;

b) application-process;

c) application-entity;

d) application-service-element;

e) application-protocol-data-unit;

f) application-protocol-control-information;

g) presentation-service;

h) presentation-connection;

i) session-service;

j) session-protocol; and

k) session-connection.

3.2 Naming and addressing definitions

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

a) application-process title;

b) application-entity qualifier;

c) application-entity title;[1]

d) application-process invocation-identifier;

e) application-entity invocation-identifier; and

f) presentation address.

3.3 Service conventions definitions

This International Standard makes use of the following terms defined in ISO/TR 8509:

a) service-provider;

b) service-user;

c) confirmed service;

d) non-confirmed service;

e) provider-initiated service;

f) primitive;

g) request (primitive);

h) indication (primitive);

i) response (primitive); and

j) confirm (primitive).

3.4 Presentation service definitions

This International Standard makes use of the following terms defined in ISO 8822:

a) abstract syntax;

b) abstract syntax name;

c) default context;

d) defined context set;

e) functional unit [presentation];

f) normal mode [presentation];

g) presentation context;

h) presentation data value; and

i) X.410-1984 mode [presentation].

3.5 ACSE service definitions

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

3.5.1 application-association; association: A cooperative relationship between two application-entities, formed by

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1   As defined in ISO 7498-3, an application-entity title is composed of an application-process title and an application-entity qualifier. The ACSE service provides for the transfer of an application-entity title value by the transfer of its component values.

their exchange of application-protocol-control-information through their use of presentation-services.

3.5.2 application context: An explicitly identified set of application-service-elements, related options and any other necessary information for the interworking of application-entities on an application-association.

NOTE — This definition is subject to refinement as a result of ongoing work in the area of the Application Layer structure.

3.5.3 Association Control Service Element: The particular application-service-element defined in this International Standard.

3.5.4 ACSE service-user: The part of the application-entity that makes use of ACSE services.

3.5.5 ACSE service-provider: An abstraction of the totality of those entities which provide ACSE services to peer ACSE service-users.

3.5.6 requestor: The ACSE service-user that issues the request primitive for a particular ACSE service. For a confirmed service, it also receives the confirm primitive.

3.5.7 acceptor: The ACSE service-user that receives the indication primitive for a particular ACSE service. For a confirmed service, it also issues the response primitive.

3.5.8 association-initiator: The ACSE service-user that initiates a particular association, i.e., the requestor of the A-ASSOCIATE service that establishes the association.

3.5.9 association-responder: The ACSE service-user that is not the initiator of a particular association, i.e., the acceptor of the A-ASSOCIATE service that establishes the association.

3.5.10 normal mode: The mode of ACSE operation that results in the transfer of ACSE semantics, using the presentation-service.

3.5.11 X.410-1984 mode: The mode of ACSE operation that allows ACSE service-users to interwork using the protocol specified in CCITT Recommendation X.410-1984. The use of this mode results in no transfer of ACSE semantics.

3.5.12 disrupt: A service procedure is disrupted by another service procedure if the second service results in service primitives not being used as specified for the procedure of the first service.

4 Abbreviations

The following abbreviations are used in this International Standard.

ACSE	Association Control Service Element
AE	application-entity
ASE	application-service-element
OSI	Open Systems Interconnection
QOS	Quality of Service

5 Conventions

5.1 This International Standard defines services for the ACSE following the descriptive conventions defined in ISO/TR 8509. In clause 9, the definition of each ACSE service includes a table that lists the parameters of its primitives. For a given primitive, the presence of each parameter is described by one of the following values.

blank	not applicable
C	conditional
M	mandatory
P	subject to conditions defined in ISO 8822
U	user option

5.2 In addition, the notation (=) indicates that a parameter value is semantically equal to the value to its left in the table.

6 Basic concepts

6.1 The reference model (ISO 7498) represents communication between a pair of application-processes (APs) in terms of communication between their application-entities (AEs) using the presentation-service. The functionality of an AE is factored into a number of application-service-elements (ASEs). The interaction between AEs is described in terms of the use of their ASEs' services.

6.2 This International Standard introduces the additional modeling concepts of application-association and application context.

6.3 An application-association is a cooperative relationship between two AEs. It provides the necessary frame of reference between the AEs in order that they may interwork effectively. This relationship is formed by the exchange of application-protocol-control-information between the application-entities through their use of presentation-services.

6.4 An application context is an explicitly identified set of application-service-elements, related options and any other necessary information for the interworking of application-entities on an application association.

7 Service overview

7.1 This International Standard defines the following services for the control of a single association:

a) A-ASSOCIATE;

b) A-RELEASE;

c) A-ABORT; and

d) A-P-ABORT.

7.2 The A-ASSOCIATE service causes the start of use of an association by those ASE procedures identified by the value of Application Context Name parameter.

NOTE — The use of an association by several ASEs is the subject of ongoing work.

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7.3 The A-RELEASE service, if successful, causes the completion of the use of an association by those ASE procedures identified by the application context that is in effect without loss of information in transit. However, the success of the A-RELEASE service may be negotiated.

7.4 The A-ABORT service causes the abnormal release of the association with the possible loss of information in transit.

7.5 The A-P-ABORT service indicates the abnormal release of the association as a result of action by the underlying presentation-service with the possible loss of information in transit.

7.6 For a particular association, the ACSE services operate in one of the following modes:

a) normal mode; or

b) X.410-1984 mode.

7.7 The normal mode of operation allows the ACSE service-user to take full advantage of the functionality provided by both ACSE and the presentation-service (ISO 8822). In this mode the ACSE service-provider transfers its semantics using the normal mode of the presentation-service.

7.8 The X.410-1984 mode of operation allows the ACSE service-user to interwork with a peer using the protocol specified by the CCITT Recommendation X.410-1984. In this mode, the ACSE service-provider does not transfer any semantics of its own and uses the X.410-1984 mode of the presentation-service.

8 Relationship with other ASEs and lower layer services

8.1 Other application-service-elements

8.1.1 The ACSE is intended to be used with other ASEs in order to support a specific information processing task. Therefore, it is expected that the ACSE will be included in all application context specifications.

8.1.2 The collection of the ACSE and other ASE(s) included in an application context are required to use the facilities of the presentation-service in a coordinated manner.

8.2 Presentation-service

8.2.1 A one-to-one correspondence exists between an application-association and a presentation-connection.

8.2.2 The ACSE services require access to the P-CONNECT, P-RELEASE, P-U-ABORT and P-P-ABORT services. The ACSE services neither use nor constrain the use of any other presentation service.

8.2.3 The requestor and acceptor of the A-ASSOCIATE service determine the mode, the default presentation context, and the initial defined context set of the underlying presentation-connection using the following A-ASSOCIATE parameters:

——Mode;
——Presentation Requirements;
——Presentation Context Definition List;
——Presentation Context Definition Result List;
——Default Presentation Context Name; and
——Default Presentation Context Result.

8.2.4 If the requestor specifies the value "normal" for the Mode parameter, the last five parameters above determine the presentation context facility for the association according to the rules for the normal mode of the presentation-service (ISO 8822). At the conclusion of the A-ASSOCIATE procedure, the requestor and acceptor must have obtained a presentation context that supports the abstract syntax specified in ISO 8650 for the ACSE application-protocol-data-units.

NOTE — The ACSE service-provider is aware of the presentation context that contains its abstract syntax by a local mechanism.

8.2.5 If the requestor specifies the value "X.410-1984" for the Mode parameter, the ACSE service-provider does not transfer ACSE semantics and therefore does not require a presentation context for its abstract syntax. However, the user information that the ACSE service-provider does transfer uses the unnamed default presentation context for the X.410-1984 mode of the presentation-service (ISO 8822).

NOTE — Table 2 indicates the A-ASSOCIATE service parameters that are not used in the X.410-1984 mode. None of the presentation context related parameters are used.

8.3 Session-service

8.3.1 Using the Session Requirements parameter, the A-ASSOCIATE service requestor and acceptor determine the functional units for the underlying session-service (ISO 8326).

8.3.2 The rules and the parameter value length restrictions of the underlying session-service affect ACSE services. The ACSE service-user must be aware of these constraints.

NOTE — Some examples of these constraints are:

a) Version 1 of the session-protocol (ISO 8650) imposes user data length restrictions which affect ACSE primitive parameters. Some special considerations apply to the A-ABORT service (see 9.3).

b) The choice of session functional units for a particular association affects the rules for the use of ACSE services. For example, the selection of session tokens controls the possibilities of negotiated release and release collisions.

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9 Service definition

The ACSE services are listed in table 1.

Table 1 - ACSE-services

SERVICE	TYPE
A-ASSOCIATE	Confirmed
A-RELEASE	Confirmed
A-ABORT	Non-confirmed
A-P-ABORT	Provider-initiated

9.1 A-ASSOCIATE service

The A-ASSOCIATE service is used to cause the beginning of the use of an association; it is a confirmed service.

9.1.1 A-ASSOCIATE parameters

Table 2 lists the A-ASSOCIATE service parameters. In addition, groups of parameters are defined for reference by other ASEs as follows:

a) Calling AE Title is the composite of the Calling AP Title and the Calling AE Qualifier parameters;

b) Called AE Title is the composite of the Called AP Title and the Called AE Qualifier parameters; and

c) Responding AE Title is the composite of the Responding AP Title and the Responding AE Qualifier parameters.

The two components of the AE title (AP title and AE qualifier) are defined in ISO 7498-3.

9.1.1.1 Mode

This parameter specifies the mode in which the ACSE services will operate for this association. It takes one of the following symbolic values:

—normal; or
—X.410-1984.

If this parameter is not included on the request primitive, the default value of "normal" is used by the ACSE service-provider. This parameter is always present on the indication primitive.

Table 2 - A-ASSOCIATE parameters

Parameter Name	Req	Ind	Rsp	Cnf
Mode	U	M(=)		
* Application Context Name	M	M(=)	M	M(=)
* Calling AP Title	U	C(=)		
* Calling AE Qualifier	U	C(=)		
* Calling AP Invocation-identifier	U	C(=)		
* Calling AE Invocation-identifier	U	C(=)		
* Called AP Title	U	C(=)		
* Called AE Qualifier	U	C(=)		
* Called AP Invocation-identifier	U	C(=)		
* Called AE Invocation-identifier	U	C(=)		
* Responding AP Title			U	C(=)
* Responding AE Qualifier			U	C(=)
* Responding AP Invocation-identifier			U	C(=)
* Responding AE Invocation-identifier			U	C(=)
User Information	U	C(=)	U	C(=)
Result			M	M(=)
Result Source				M
* Diagnostic			U	C(=)
Calling Presentation Address	P	P		
Called Presentation Address	P	P		
Responding Presentation Address			P	P
* Presentation Context Definition List	P	P		
* Presentation Context Definition Result List		P	P	P
* Default Presentation Context Name	P	P		
* Default Presentation Context Result			P	P
Quality of Service	P	P	P	P
* Presentation Requirements	P	P	P	P
Session Requirements	P	P	P	P
Initial Synchronization Point Serial Number	P	P	P	P
Initial Assignment of Tokens	P	P	P	P
Session-connection Identifier	P	P	P	P

* - not used in X.410-1984 mode

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