INTERNATIONAL STANDARD

ISO/IEC 9545

Information technology — Open Systems Interconnection — Application Layer structure

Systèmes de traitement de l'information — Interconnexion de systèmes ouverts — Structure de la couche application

Contents

Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) together form a system for worldwide standardization as a whole. 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 approval before their acceptance as International Standards. They are approved in accordance with procedures requiring at least 75 % approval by the national bodies voting.

International Standard ISO/IEC 9545 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology.*

Annex A of this International Standard is for information only.

Introduction

This International Standard is a refinement of the description of the OSI Application Layer contained in ISO 7498.

The purpose of this International Standard is to provide a basis for co-ordinating the development of Application Layer standards and to enable existing International Standards to be placed in perspective within the OSI reference model. It defines the internal structure of the Application Layer, providing a framework for the development of Application Layer standards. It also describes the general principles underlying the operation of application-protocols.

The following subjects are covered by this International Standard:

a) the relationship between distributed information processing and OSI communication services;

b) the structure of application-entities;

c) the OSI service and protocol structure in the Application Layer; and

d) application-context.

This International Standard only considers those aspects of distributed information processing for an application which are relevant for the derivation of generic requirements for the structuring of Application Layer communications.

The architectural framework specified in this International Standard embodies concepts that may not be fully supported by existing Application Layer International Standards. However, these concepts have been specified so as to provide a basis for the development of future Application Layer International Standards which, it is anticipated, will require their use.

NOTE — This framework may be extended to support more generalized application-entity structures including recursive use of structures defined in this International Standard.

This International Standard may be subject to future expansion, particularly with regard to connectionless mode communication, multi-peer communication, multi-party communication, security, application-context management, Application Layer relationships, recovery, and Open Distributed Processing.

Information technology — Open Systems Interconnection — Application Layer structure

1 Scope

This International Standard refines the Basic Reference Model for OSI to provide a framework for co-ordinating the development of existing and future Application Layer standards. It is provided for reference by Application Layer standards.

In particular this International Standard:

a) defines the nature of standards in the Application Layer and the relationships among them;

b) defines the architectural framework in which individual OSI Application Layer protocols shall be developed.

c) defines the categories of identifiable objects which are necessary for the specification and operation of protocols;

d) relates distributed information processing activities to the standards in the Application Layer.

This International Standard does not specify services and protocols for OSI. It is neither an implementation specification for systems, nor a basis for appraising the conformance of implementations. Further, it addresses neither the requirements for, nor the form of, documentation of such services and protocols.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards listed below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 7498 : 1984, *Information processing systems - Open Systems Interconnection - Basic Reference Model.*

ISO 7498-3: 1989, *Information processing systems - Open Systems Interconnection - Part 3: Naming and Addressing.*

ISO 8649: 1988, *Information processing systems - Open Systems Interconnection - Service Definition for the Association Control Service Element.*

ISO 8822: 1988, *Information processing systems - Open Systems Interconnection - Connection - oriented presentation service definition.*

ISO/TR 9007: 1987, *Information processing systems - Concepts and terminologies for the conceptual schema and the information base.*

1

3 Definitions

3.1 For the purposes of this International Standard, the following terms as defined in ISO 7498 apply:

    a) application-process;

    b) application-entity;

    c) (N)-function;

    d) (N)-layer;

    e) (N)-protocol;

    f) (N)-protocol-control-information;

    g) (N)-protocol-data-unit;

    h) real open system; and

    i) transfer syntax.

3.2 For the purposes of this International Standard, the following terms as defined in ISO 7498-3 apply:

    a) (N)-association;

    b) (N)-directory-function;

    c) (N)-protocol-addressing-information; and

    d) (N)-service-access-point-address.

3.3 For the purposes of this International Standard, the following terms as defined in ISO/TR 9007 apply:

    a) Conceptual Schema;

    b) Information Base; and

    c) Universe of Discourse.

3.4 For the purposes of this International Standard, the following terms as defined in ISO 8822 apply:

    a) abstract syntax; and

    b) presentation context.

3.5 For the purposes of this International Standard, the following definitions apply.

3.5.1 application-association, association: A co-operative relationship between two application-entity-invocations for the purpose of communication of information and co-ordination of their joint operation. This relationship is formed by the exchange of application-protocol-control-information using the Presentation Service.

3.5.2 application-context: A set of rules shared in common by two application-entity-invocations in order to enable their co-operative operation (see 5.7).

NOTE 1 — An application-context is a shared conceptual schema for the universe of discourse for communication.

3.5.3 application-context-definition: The description of an application-context.

3.5.4 application context name: A name that unambiguously identifies an application-context-definition.

3.5.5 application-entity-invocation: A specific utilization of part or all of the capabilities of a given application-entity in support of the communications requirements of an application-process-invocation.

3.5.6 application-entity-type: A description of a class of application-entities in terms of a set of capabilities defined for the Application Layer.

3.5.7 application-process-invocation: A specific utilization of part or all of the capabilities of a given application-process in support of a specific occasion of information processing.

3.5.8 application-process-type: A description of a class of application-processes in terms of a set of interworking capabilities.

3.5.9   application-service-element: A   set   of application-functions that provides a capability for the interworking of application-entity-invocations for a specific purpose.

NOTE 2 — This definition refines the original definition of application-service-elements in ISO 7498.

3.5.10 association control service element: An application-service-element that provides the exclusive means for establishing and terminating all application-associations.

NOTE 3 — The functionality of this application-service-element is defined in ISO 8649.

3.5.11 multiple association control function: A component of the application-entity-invocation that co-ordinates the interactions among multiple associations within an application-entity-invocation in order to provide a co-ordinated service.

3.5.12 single association control function: The component of a single association object that represents the use of those rules in the application-context concerning interactions among application-service-elements within a single association object.

3.5.13 single association object: The collection of things in an application-entity-invocation related to a single application-association.

4 Abbreviations

ACSE	Application Control Service Element
AE	application-entity
AP	application-process
APDU	application-protocol-data-unit
APCI	application-protocol-control-information
ASE	application-service-element
MACF	multiple association control function
OSI	Open Systems Interconnection
SACF	single association control function
SAO	single association object

5 Application Layer Concepts

5.1 Introduction

5.1.1 International Standards for OSI are intended to support the communication requirements of applications (i.e., information processing tasks) requiring co-ordinated processing activities in two or more real open systems. In particular, standards for the OSI Application Layer define procedures for the support of distributed information processing.

5.1.2 The Application Layer is supported by the lower layers in OSI. In particular, the Presentation Layer contains facilities for representing information exchanged between application-entities (AEs), and the Session Layer contains mechanisms that may be used for controlling interactions between AEs.

5.1.3 The Application Layer differs from the other layers of OSI in several important respects. Entities in the Application Layer are made up of a collection of application-service-elements (ASEs), each of which is defined by a set of service and protocol standards. These ASEs are combined in various ways to form various types of AEs. The Application Layer, as the highest layer of OSI, does not provide connections within the Application Layer. As a result, relationships formed by the transfer of information between AE-invocations in the Application Layer have particular significance.

5.2 Fundamental concepts

5.2.1 In ISO 7498, the co-operative operation of real open systems is modelled in terms of the interactions between application-processes (APs) in these systems. An AP is an abstract representation of those elements of a real open system which perform information processing for a particular application. Depending upon the nature of an application, an AP may only need to communicate with other APs intermittently; moreover, the set of APs involved in distributed processing for an application may change with time.

5.2.2 Co-operative operation between APs requires that they share sufficient information to interact and carry out processing activities in a compatible manner.

NOTE — This shared information is referred to as a universe of discourse in the terminology of ISO/TR 9007. The description of a universe of discourse is a conceptual schema.

5.2.3 The information determining the nature of the interactions between AP-invocations is of three kinds:

a) Information describing the set of objects (using this term in its most general sense) which

3

are the subject of distributed information processing activities.

b) Information describing the procedures to be used to effect communication between the AP-invocations for the control and co-ordination of distributed information processing.

c) Information representing the net effect (i.e., state) of past interactions between the AP-invocations.

NOTE — This is a portion of the shared information base in the terminology of ISO/TR 9007.

The purpose of OSI Application Layer standards is to provide definitions of procedures for interworking which are related to these three kinds of information.

5.2.4 The structuring of the Application Layer into components described in this International Standard does not prescribe whether the information contained in any one of these components is, or is not, accessible to any other component that may be present in the AE-invocation of which it is a part.

5.3 Application-Processes

5.3.1 An AP represents a set of resources, including processing resources, within a real open system that may be used to perform a particular information processing activity (the AP concept is defined in ISO 7498). An AP may organise its interactions with other APs in whatever way is necessary to achieve a particular information processing goal: no constraints are imposed by this International Standard either on the form of these interactions or on the possible relationships that may exist between them.

NOTE—For instance, an AP could schedule its interactions with other APs to take place either sequentially or concurrently.

5.3.2 The activity of a given AP is represented by one or more AP-invocations. Co-operation between APs takes place via relationships established among AP-invocations. At a particular time, an AP may be represented by none, one or more AP-invocations. An AP-invocation is responsible for co-ordinating its interactions with other AP-invocations. Such co-

ordination is outside the scope of this International Standard.

5.4 Application-Entities

5.4.1 The aspects of an AP which need to be taken into account for the purpose of OSI are represented by one or more AEs. An AE represents a set of OSI communication capabilities of a particular AP.

5.4.2 An AE represents one, and only one, AP in the OSI environment. Different APs may be represented by AEs of the same AE-type. An AP may be represented by a set of AEs: each AE in this set is of a different AE-type.

5.4.3 An AE-invocation represents a specific use of the capabilities of an AE. It represents specific communication activities of an AP-invocation and is an integral part of that AP-invocation. The aspects of an AP-invocation that need to be taken into account for the purposes of open systems interconnection are represented by one or more AE-invocations.

5.4.4 An AE-invocation models the communication functions together with the associated state information for particular communication activities of an AP-invocation. Such activities are progressed through communication between AE-invocations related by application-associations.

5.4.5 An AE-invocation may be a partner in a number of application-associations either consecutively or concurrently. The number of these application-associations may change with time. In particular, there may be periods of time when an AE-invocation is not a party to any application-associations. The lifetime of an AE-invocation is not determined by the duration of the application-associations in which it is a participant.

5.4.6 The state information modelled by an AE-invocation reflects the net effect of its communications with other AE-invocations. The existence of this state information provides a basis for modelling the co-ordinated consecutive or concurrent use of multiple application-associations. It also provides a basis for modelling a relationship, between a pair of AE-invocations, whose duration is not bound to the lifetime of a particular application-association. For example, this provides one possible

method for modelling the continuation of an activity following the loss of an application-association.

5.4.7 The lifetime of an AE-invocation is controlled by the AP-invocation which it represents in the OSI environment. An AP-invocation may have a longer lifetime than any or all of its AE-invocations. There may be zero or more AE-invocations representing an AP-invocation at any particular time.

5.5 Application-Service-Elements

5.5.1 An ASE is a set of functions that provides OSI communication capabilities for the interworking of AE-invocations for a specific purpose.

NOTE — Different functions can be grouped into one single ASE or split into several ASEs. In order to avoid unnecessary proliferation of different ASEs, the following should be considered:

a) grouping of functions into an ASE must contain at least all the functions and the corresponding APDUs which are required for a protocol machine which is logically complete and consistent in itself;

b) the grouping of functions into different ASEs has to occur in such a way that the ASEs can be specified independently of each other.

5.5.2 The capabilities of an ASE shall be defined by the specification of a set of application-protocol-data-units (APDU) and the procedures governing their use. This constitutes the application-protocol between two ASEs of the same kind.

5.5.3 An AE may be composed of one or more ASEs of different kinds in order to realize a specific composite communication capability for a particular purpose.

5.6 Application-Associations

5.6.1 An application-association is a co-operative relationship between two AE-invocations for the purpose of communication of information and co-ordination of their joint operation. This relationship is formed by the exchange of application-protocol-control-information (APCI) using the Presentation Service. The properties of this relationship are characterised by a set of rules and state information

governing the mutual communication behaviour of the particular pair of AE-invocations.

NOTE _ The pair of AE-invocations in an application-association may have different roles; as a consequence they may exhibit complementary rather than similar communication behaviours.

5.6.2 When communication is required between two AEs to meet the needs of an application, one or more application-associations are established between AE-invocations of the two AEs. An AE-invocation may support a number of application-associations simultaneously, sequentially or both, with one or more other AE-invocations.

5.6.3 An application-association-identifier may be associated with an application-association. This application-association-identifier is unique within the scope of the pair of associated AE-invocations. It provides the means to identify the related state information in each AE-invocation.

5.7 Application-Context

5.7.1 A pair of AE-invocations must have shared knowledge, and follow a common set of rules that governs their communication. Such a set of rules is called an application-context.

NOTE — An application-context is a shared conceptual schema for the universe of discourse for communication.

5.7.2 An application-association has only one application-context. The set of rules that make up the application-context may contain rules for alteration of that set of rules. The set of rules may contain alternatives, together with rules for selecting among these alternatives according to the requirements of the APs.

NOTE — The use of a rule to select among alternative rules within an application-context does not constitute an alteration of the application-context. However, the use of a selection rule does change the state information maintained by AE-invocations with respect to an application-association.

5.7.3 An application-context includes the rules that describe a set of things that must be known by both AE-invocations, relationships among those things,

actions which may be performed on them, and permitted states of affairs concerning them. The set of things which must be known by both AE-invocations includes those which may be the subject of communications with respect to an application-association, including those things which provide capabilities for exchanging information (such as ASEs) and information to be exchanged between AE-invocations (categories of APCI to be exchanged).

NOTE — An application-context-definition does not specify the nature of the co-operative processing tasks carried out by the partners of an application-association.

5.7.4 The set of rules in an application-context will always include a specification of a set of ASEs (by reference to the ASE specification standards), and may also include (but is not limited to):

a) specifications of the logical structure of information to be exchanged or referenced;

b) specification of invocation dependencies between the ASEs, beyond those dependencies contained within the ASE specifications;

c) rules concerning the selection and use of optional features of the ASEs;

d) any additional rules, beyond those contained in the ASE specifications, governing the sequence of use of the service primitives, and in consequence the sequence of the APDUs, of each ASE;

e) rules for the co-ordinated operation of ASEs (such as rules for the interleaving of service requests and APDUs from different ASEs);

f) rules concerning the mapping of the APCI from ASEs on to the services of either the Presentation Layer and/or of other ASEs;

g) designation of application-functions, such as application directory functions, and rules governing their use;

h) rules concerning information that has a lifetime that is greater than the lifetime of an application-association; and

i) rules concerning the addition, modification and deletion of rules.

5.7.5 The sequencing rules for the use of the services of the ASEs in combination specify a composite service. The resulting operation of the ASEs in combination generates the composite protocol that supports that service.

5.7.6 An application-context may contain rules describing mechanisms that enable AE-invocations to transfer information for multiple association co-ordination purposes. It may also contain shared rules governing the use of such mechanisms for the purpose of multiple association co-ordination.

5.7.7 The definition of an application-context may be written in a natural language, or in a formal language. Such a definition is called an application-context-definition. An application-context-definition may directly define some application-context rules and may reference others that have been defined elsewhere (e.g. in other application-context-definitions or in ASE standards).

5.7.8 The application-context that applies to an application-association is determined during its establishment in either of the following ways:

a) by identifying a pre-existing application-context-definition; or

b) by transferring an actual description of the application-context.

In particular, a name may be used to identify a pre-existing application-context-definition.

NOTES

1 The predominant method of determining application-contexts is expected to be by reference to pre-existing application-context-definitions.

2 The allocation of names to pre-existing application-context-definitions will be the subject of registration procedures as described in clause 9 of this International Standard.

5.7.9 The communications behaviour of an AE-invocation over an application-association is

constrained to be compatible with a generic behaviour defined by the application-context in use.

5.7.10 An application-context shall be defined in such a manner as to ensure that the ASEs it references use Presentation and ACSE services in a compatible manner.

5.7.11 When an AE-invocation supports a number of concurrent application-associations, there is no architectural requirement that each of these application-associations use the same application-context.

5.8 Single Association Object

5.8.1 A single association object (SAO) is the component of an AE-invocation that models the functions and state information related to the operation of an individual application-association. The lifetime of an SAO is identical to the lifetime of the association it supports. It does not model the existence of state information or application-functions related to multiple association co-ordination functions. An SAO contains one or more ASEs (one of which is always the Association Control Service Element - ACSE) and a Single Association Control Function.

5.8.2 The application-context for an individual application-association contains rules for the composition and operation of the SAO supporting that application-association within the AE-invocation.

5.8.3 At a particular time an AE-invocation may contain none, one or more SAOs. When an AE-invocation contains more than one SAO, the combinations of ASEs within them may be different.

5.9 Single Association Control Function

The Single Association Control Function (SACF) is the component of the SAO that models the co-ordination of the interactions among the ASEs contained in the SAO and also models the co-ordination of their use of the Presentation Service. The rules concerning these interactions are defined by the application-context of the application-association.

5.10 Multiple Association Co-ordination

5.10.1 Co-ordination of related activities on several application-associations may require:

 a) sequencing of activities on different associations;

 b) maintenance of consistency relationships between activities on different associations; and

 c) any other rules necessary for the utilization of multiple associations.

5.10.2 Co-ordination of related activities may be the responsibility of a single AE-invocation or may be shared by a group of co-operating AE-invocations in two or more open systems.

5.10.3 A set of application-functions that co-ordinates related activities on several associations is represented in the structure of an AE-invocation by a multiple association control function (MACF). A MACF together with the objects that are under its control provide a composite service.

NOTE — The co-ordination activities in multiple AE-invocations representing one AP-invocation may operate together to provide an integrated co-ordination capability.

5.10.4 A MACF may provide either or both of the following forms of co-ordination:

 a) localized co-ordination, resulting from the autonomous operation of an AE-invocation, which does not require explicit communications;

 b) distributed co-ordination, resulting from the co-operative operation of AE-invocations in different open systems, which does require explicit communications.

NOTE — The distribution of co-ordination functions among a group of AE-invocations in two or more open systems requires agreement on the co-ordination functions performed by each of the AE-invocations.

5.10.5 When it is necessary for two AE-invocations to have a shared understanding of the rules for co-ordination of multiple associations, those shared rules will be contained within the application-context-

definition. Localized co-ordination rules are not part of the application-context-definition.

5.10.6 The communications requirements of a MACF are supported by the generation of protocol on individual associations.

5.10.7 Those rules of an application-context providing support for multiple association co-ordination may be contained in specifications of ASEs, specifications of abstract syntaxes, or be part of the rules for the combined operation of ASEs.

5.10.8 Within an AE-invocation, a MACF may co-ordinate the activity on all or only a subset of the application-associations.

5.10.9 A MACF specification comprises:

a) a definition of the set of services made available by the combined operations over the associations;

NOTE — Services within the scope of such a co-ordination may or may not be made visible by the MACF specification.

b) a specification of the use of services provided by objects under its control; this may include:

1) temporal ordering rules for the services;

2) the interrelationships between the use of services;

3) the specification of information which must be exchanged between AE-invocations for the purpose of co-ordination.

5.11 Names and Directory Functions

5.11.1 As specified in ISO 7498-3, application-directory-functions process presentation-addresses, AE-titles, and application-protocol-addressing-information to provide mappings among these categories of information. Conceptually, these functions are performed by the AE-invocation to derive the addressing information required.

5.11.2 Information on these mappings may be held locally and made available for access by application-directory-functions,   or it may be held remotely. It is a local responsibility to retrieve the information and make it available to an application-directory-function. If this information is stored remotely, OSI protocols may be used to access that information.

NOTE — It is not required that every AE contain an ASE that provides the service to retrieve this remote information; local system management may obtain this service from another AE, even another AE in another AP.

5.11.3 The procedures which constitute the application-directory-functions are modelled within the AE independent of any particular ASE.

NOTE — Application-directory-functions are an example of application-functions that are modelled within the AE independent of any particular ASEs. Other such application-functions may support aspects of security activities, management activities, etc.

5.11.4 In ISO 7498-3, several kinds of name are defined in order to enable the identification of certain objects in the Application Layer. These kinds of name are:

a) application-process-title;

b) application-entity-title;

c) application-process-invocation-identifier;

d) application-entity-invocation-identifier;

e) application-association-identifier;

f) application-process-type-title;

g) application-entity-type-title; and

h) system-title.

The ways in which they may be used in the operation of application-directory-functions and the identification of specific Application Layer objects are described in ISO 7498-3.

6 Operation of Application-Entity-Invocations

6.1 Use of Application Associations

6.1.1 Capabilities for the establishment and termination of application-associations are contained in a specific ASE: the ACSE. This ASE is a necessary part of AEs.

6.1.2 In establishing an application-association, an AE-invocation specifies to the Presentation Service the location of a peer AE by its presentation-address. Additionally, it may use one or more of the following identifiers for the selection of a peer AE-invocation:

a) AP-invocation-identifier;

b) AE-invocation-identifier.

An AE-invocation may also use an application-association-identifier in order to identify the application-association and the SAOs within the related AE-invocations.

6.1.3 In addition, related AE-invocations may transfer AP-title and AE-title information during the establishment of an application-association. This information identifies the peer AEs in a way that is independent of their presentation-addresses.

6.1.4 The termination of an application-association results from the action of the related AE-invocations. AE-invocations may take such action in response to a failure in communications visible in the Presentation Service.

6.2 Use of the Presentation Service

6.2.1 An AE is attached to one or more presentation-service-access-points in order to make it addressable in the OSI environment.

6.2.2 The communicating AE-invocations use the Presentation Service to transfer APDUs between each other. The method of use of the Presentation Service is prescribed by the rules of the application-context of an application-association.

6.2.3 The structure of the APDUs of an ASE is specified by at least one named abstract syntax. To transfer these APDUs between AE-invocations using the Presentation Service it is necessary to establish one or more presentation-contexts for each abstract syntax. During an association, occurrences of these APDUs are linked to presentation-contexts. Each presentation-context specifies a pairing of a particular abstract syntax with a transfer syntax.

6.2.4 An application-association is bound to a single presentation-connection. It does not span concurrent or consecutive presentation-connections.

NOTE — In this way it is a restricted use of the (N)-association concept. The general (N)-association concept allows such spanning.

6.3 Co-ordination of ASE Activities

6.3.1 Communication within an application-association makes use of one or more ASEs in each of its AE-invocations. There are two aspects to the co-ordination of ASEs:

a) co-ordination of ASEs within an SAO;

b) co-ordination of peer ASE activities in related SAOs.

Both of these aspects are governed by means of rules in the application-context of the application-association.

6.3.2 The operation of ASEs in an SAO may be organised in whatever way is necessary for a particular association, as defined by the application-context that applies to the association. In some cases the operation of ASEs may be organised so as to enable the shared use of particular presentation-services by means of the concatenation of APDUs from different ASEs.

NOTES

1 The specification of an ASE should take into account any particular requirements for its operation in combination with other ASEs in an SAO. Such requirements may concern the co-operative use of ASE services and presentation-services.

In particular, assumptions regarding the way in which the establishment and termination of associations is achieved can seriously affect the feasibility of the combined operation

of ASEs. For instance, an ASE may require access to ACSE services; alternatively, or perhaps optionally, it may be capable of using a pre-existing association.

2 The relationship between the initialization phase of an application-protocol and procedures for application-association establishment needs to be clearly defined. The initialization phase of an application-protocol may be related to such procedures in one or both of the following ways:

a) it may be invoked at the time of association establishment;

b) it may be invoked at points during the lifetime of an association.

6.4 Co-ordination of the Activities of an AE-Invocation

An AE-invocation may control its activities within several application-associations either to ensure their independence or to co-ordinate them in ways necessary to satisfy a specific communication requirement.

6.5 Error Recovery within an Application-Association

6.5.1 The action to be taken in the event of errors that are visible within an application-association is prescribed by rules in the application-context of the application-association. Following such errors, the application-association may be terminated or, in some cases, communication may be resumed from a mutually acceptable point.

6.5.2 An application-association-identifier may be used to denote a particular application-association as part of the error recovery procedures specified in an application-context.

7 Description of Application-Service-Element Standards

7.1 An ASE is defined in terms of a service definition and a protocol specification.

7.2 An important part of an ASE definition may be the description of a model explaining the requirements of the service user. Such a model may include reference

to more general models. Their descriptions must remain conceptual, carrying the appearance within OSI of their real operation. No implementation conformance requirements can be derived from such models.

7.3 A service definition conveys the understanding of the function carried out by the ASE. It is the first step that leads to the specification of the corresponding protocol. By analogy with the service definitions at the OSI layer boundaries, the service definitions for ASEs are conceptual and do not imply conformance.

7.4 A protocol specification defines the structure for the exchange of information between peer ASEs. In so doing, the protocol specification may make use of other Application Layer services and/or the Presentation Service.

8 Abstract Syntax Definition

8.1 An abstract syntax is made up of those aspects of the rules used in the formal specification of data which are independent of the encoding techniques to represent the data.

8.2 For a given ASE the structure of the APDUs is specified by a set of one or more abstract syntaxes. The structure of any user information conveyed within these APDUs on an association is specified by another set of one or more abstract syntaxes.

8.3 A name may be assigned to the definition of an abstract syntax. Such a name may be used in the specification of requirements for the establishment of a presentation context by the Presentation Service.

9 Registration Requirements

9.1 The use of Application Layer International Standards requires the establishment of registration procedures for the assignment of names (which are unambiguous throughout the OSI environment) for the following objects:

a) The Application Layer related objects from the list in 13.1 of ISO 7498-3;

b) The following additional objects:

1) abstract syntaxes;

2) application-contexts;

3) application-entities.

9.2 An abstract syntax definition or an application-context-definition that is registered may be an international or national standard, a published definition developed by a community of interest, or a private agreement.

9.3 The registration procedures used in each of these situations should be compatible with an internationally recognized framework for registration procedures.