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STANDARD

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**Information technology — Open Systems
Interconnection — Connection-oriented
protocol for the Association Control
Service Element: Protocol specification**

*Technologies de l'information — Interconnexion de systèmes ouverts
(OSI) — Protocole en mode orienté connexion pour l'élément de service
de contrôle d'association: Spécification du protocole*



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Contents

	<i>Page</i>
1 Scope and field of application	1
2 Normative references	1
2.1 Identical Recommendations International Standards	1
2.2 Paired Recommendations International Standards equivalent in technical content	2
2.3 Additional references	2
3 Definitions	2
3.1 Reference Model definitions	2
3.1.1 Basic Reference Model definitions	2
3.1.2 Security architecture definitions	3
3.1.3 Naming and addressing definitions	3
3.2 Service conventions definitions	3
3.3 Presentation service definitions	3
3.4 Application Layer Structure definitions	4
3.5 ACSE service definitions	4
3.6 Association Control protocol specification definitions	4
4 Abbreviations	4
4.1 Data units	4
4.2 Types of application-protocol-data-units	5
4.3 Other abbreviations	5
5 Conventions	5
6 Overview of the protocol	6
6.1 Service provision	6
6.2 Functional units	6
6.3 Use of the presentation-service	6
6.4 Relationship to the session-service	7
6.5 Model	8

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7	Elements of procedure.....	8
7.1	Association establishment.....	9
7.1.1	Purpose	9
7.1.2	APDUs used.....	9
7.1.3	Association establishment procedure.....	9
7.1.4	Use of the AARQ APDU fields	11
7.1.5	Use of the AARE APDU fields.....	13
7.1.6	Collisions and interactions	15
7.2	Normal release of an association	16
7.2.1	Purpose	16
7.2.2	APDUs used.....	16
7.2.3	Normal release procedure	16
7.2.4	Use of the RLRQ APDU fields.....	18
7.2.5	Use of the RLRE APDU fields	18
7.2.6	Collisions and disruptions.....	18
7.3	Abnormal release of an association	19
7.3.1	Purpose	19
7.3.2	APDUs used.....	19
7.3.3	Abnormal release procedure	19
7.3.4	Use of the ABRT APDU fields.....	20
7.3.5	Collisions and interactions	20
7.4	Rules for extensibility	21
8	Mapping to the presentation-service	21
8.1	Association establishment (normal mode).....	21
8.1.1	Directly mapped parameters	21
8.1.2	Use of other P-CONNECT request and indication parameters.....	22
8.1.3	Use of other P-CONNECT response and confirm parameters.....	22
8.2	Normal release of an association (normal mode).....	23
8.2.1	Use of P-RELEASE request and indication parameters	23
8.2.2	Use of P-RELEASE response and confirm parameters	23
8.3	Abnormal release of an association (normal mode).....	23
8.3.1	Use of P-U-ABORT request and indication parameters	24
8.3.2	Use of P-P-ABORT indication parameter.....	24
8.4	Association establishment (X.410-1984 mode).....	24
8.4.1	Directly mapped parameters	24
8.4.2	Use of other P-CONNECT request and indication parameters.....	24
8.4.3	Use of other P-CONNECT response and confirm parameters.....	24
8.5	Normal release of an association (X.410-1984 mode).....	25
8.6	Abnormal release of an association (X.410-1984 mode).....	25
8.6.1	Use of P-U-ABORT request and indication parameters	25
8.6.2	Use of P-P-ABORT indication parameter.....	25
9	Structure and encoding of ACSE APDUs.....	25
9.1	Abstract syntax of the ACSE APDUs.....	25
9.2	Encoding rules used to reference the transfer syntax.....	29
10	Conformance	29
10.1	Statement requirements.....	30
10.2	Static requirements.....	30
10.2.1	Normal mode	30
10.2.2	X.410-1984 mode	30
10.3	Dynamic requirements	30
10.3.1	Normal mode	30
10.3.2	X.410-1984 mode	30

11	Precedence.....	30
12	Registration requirements	31
12.1	Application titles	31
12.2	Application context.....	31
12.3	Authentication-mechanism	31
Annex A	– ACPM state table	32
A.1	General.....	32
A.2	Conventions	32
A.3	Actions to be taken by the ACPM	32
A.3.1	Invalid intersections	34
A.3.2	Valid intersections	34
A.4	Relationship to Presentation and other ASEs.....	34
Annex B	– Authentication-mechanism using password.....	37
B.0	Introduction.....	37
B.1	Assigned name.....	37
B.2	Authentication-value ASN.1 datatype	37
B.3	Processing specification.....	37
B.3.1	Requesting authentication	37
B.3.2	Performing authentication.....	37

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.

International Standard ISO/IEC 8650-1 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 21, *Open Systems Interconnection, data management and open distributed processing*, in collaboration with ITU-T. The identical text is published as ITU-T Recommendation X.227.

This second edition cancels and replaces the first edition (ISO 8650:1988), which has been technically revised. It also incorporates Amendment 1:1990 and Technical Corrigendum 1:1990.

ISO/IEC 8650 consists of the following parts, under the general title *Information technology — Open Systems Interconnection — Connection-oriented protocol for the Association Control Service Element*:

- *Part 1: Protocol specification*
- *Part 2: Protocol Implementation Conformance Statement (PICS) proforma*

Annexes A and B form an integral part of this part of ISO/IEC 8650.

Introduction

This Protocol Specification is one of a set of Recommendations and International Standards produced to facilitate the interconnection of information processing systems. It is related to other ITU-T Recommendations and International Standards in the set as defined by the Reference Model for Open Systems Interconnection (see ITU-T Rec. X.200 | ISO/IEC 7498-1). The Reference Model subdivides the areas of standardization for interconnection into a series of layers of specification, each of manageable size.

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.

This Protocol Specification specifies the connection-oriented mode protocol for the application-service-element for application-association control: the Association Control Service Element (ACSE). The protocol for the ACSE connectionless mode service (A-UNIT-DATA) is specified in ITU-T Rec. X.237 | ISO/IEC 10035-1.

This Recommendation | International Standard specifies the protocol for the application-service-element for application-association control: the Application Control Service Element (ACSE). The ACSE provides services for establishing and releasing application-associations. The ACSE protocol includes two optional functional units. One functional unit supports the exchange of information in support of authentication during association establishment. The second functional unit supports the negotiation of application context during association establishment. The ACSE services apply to a wide range of application-process communications requirements.

This Protocol Specification includes an annex that describes the protocol machine of ACSE in terms of a state table. This protocol machine is referred to as the Association Control Protocol Machine (ACPM).

The protocol defined in this Protocol Specification is also governed by the use of the presentation-service (ITU-T Rec. X.216 | ISO/IEC 8822) and the session-service (see ITU-T Rec. X.215 | ISO/IEC 8326).

Quality of Service (QOS) is a parameter of the A-ASSOCIATE service. Work is still in progress to provide an integrated treatment of QOS across all of the 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 Protocol Specification at a later time which reflects further QOS developments and integration.

INTERNATIONAL STANDARD

ITU-T RECOMMENDATION

INFORMATION TECHNOLOGY – OPEN SYSTEMS INTERCONNECTION – CONNECTION-ORIENTED PROTOCOL FOR THE ASSOCIATION CONTROL SERVICE ELEMENT: PROTOCOL SPECIFICATION

1 Scope and field of application

The ACSE supports two modes of communication: connection-oriented and connectionless. The ACSE service definition (ITU-T Rec. X.217 | ISO/IEC 8649) includes both modes of communication. This Protocol Specification provides the protocol specification for the connection-oriented mode of communication. The protocol specification for the connectionless mode of communication is contained in ITU-T Rec. X.237 | ISO/IEC 10035-1.

This Protocol Specification defines procedures that are applicable to instances of communication between systems which wish to interconnect in an Open Systems Interconnection environment in a connection-oriented mode. The Protocol Specification includes the Kernel functional unit that is used to establish and release application-associations. The Authentication functional unit provides additional facilities for exchanging information in support of authentication during association establishment without adding new services. The ACSE authentication facilities can be used to support a limited class of authentication methods. The Application Context Negotiation functional unit provides additional facility for the selection of the application context during association establishment.

This Protocol Specification specifies:

- a) procedures for the transfer of information for application-association control and the authentication of application-entities;
- b) the interaction between an ACSE protocol machine and the occurrence of external presentation events; and
- c) the abstract syntax for the representation of the ACSE APDUs.

The ACSE procedures are defined in terms of:

- a) the interactions between peer ACSE protocol machines through the use of presentation-services; and
- b) the interaction between an ACSE protocol machine and its service-user.

This Protocol Specification also specifies conformance requirements for systems implementing these procedures. It does not contain tests which can be used to demonstrate conformance.

2 Normative references

The following Recommendations and International Standards contain provisions which, through reference in this text, constitute provisions of this Recommendation | International Standard. At the time of publication, the editions indicated were valid. All Recommendations and International Standards are subject to revision, and the parties to agreements based on this Recommendation | International Standard are encouraged to investigate the possibility of applying the most recent edition of the Recommendations and Standards listed below. Members of IEC and ISO maintain registers of currently valid International Standards. The Telecommunication Standardization Bureau of the ITU maintains a list of currently valid ITU-T Recommendations.

2.1 Identical Recommendations | International Standards

- ITU-T Recommendation X.200 (1994) | ISO/IEC 7498-1:1994, *Information technology – Open Systems Interconnection – Basic Reference Model: The Basic Model*.
- ITU-T Recommendation X.207 (1993) | ISO/IEC 9545:1994, *Information technology – Open Systems Interconnection – Application layer structure*.
- ITU-T Recommendation X.210 (1993) | ISO/IEC 10731:1994, *Information technology – Open Systems Interconnection – Basic Reference Model: Conventions for the definition of OSI services*.

- ITU-T Recommendation X.215 (1995) | ISO/IEC 8326:1996, *Information technology – Open Systems Interconnection – Session service definition.*
- ITU-T Recommendation X.216 (1994) | ISO/IEC 8822:1994, *Information technology – Open Systems Interconnection – Presentation service definition.*
- ITU-T Recommendation X.217 (1995) | ISO/IEC 8649:1996, *Information technology – Open Systems Interconnection – Service definition for the Association Control Service Element.*
- ITU-T Recommendation X.225 (1995) | ISO/IEC 8327-1:1996, *Information technology – Open Systems Interconnection – Connection-oriented Session protocol: Protocol specification.*
- ITU-T Recommendation X.237 (1995) | ISO/IEC 10035-1:1995, *Information technology – Open Systems Interconnection – Connectionless protocol for the Association Control Service Element: Protocol specification.*
- CCITT Recommendation X.660 (1992) | ISO/IEC 9834-1:1993, *Information technology – Open Systems Interconnection – Procedures for the operation of OSI Registration Authorities: General procedures.*
- CCITT Recommendation X.665 (1992) | ISO/IEC 9834-6:1993, *Information technology – Open Systems Interconnection – Procedures for the operation of OSI Registration Authorities: Application Processes and Application Entities.*
- ITU-T Recommendation X.690 (1994) | ISO/IEC 8825-1:1995, *Information technology – ASN.1 encoding rules: Specification of Basic Encoding Rules (BER), Canonical Encoding Rules (CER) and Distinguished Encoding Rules (DER).*

2.2 Paired Recommendations | International Standards equivalent in technical content

- CCITT Recommendation X.208 (1988), *Specification of Abstract Syntax Notation One (ASN.1).*
ISO/IEC 8824:1990, *Information technology – Open Systems Interconnection – Specification of Abstract Syntax Notation One (ASN.1).*
- CCITT Recommendation X.650 (1992), *Open Systems Interconnection (OSI) – Reference model for naming and addressing.*
ISO 7498-3:1989, *Information processing systems – Open Systems Interconnection – Basic Reference Model – Part 3: Naming and addressing.*
- CCITT Recommendation X.800 (1991), *Security architecture for Open Systems Interconnection for CCITT applications.*
ISO 7498-2:1989, *Information processing systems – Open Systems Interconnection – Basic Reference Model – Part 2: Security Architecture.*

2.3 Additional references

- CCITT Recommendation X.410 (1984), *Message Handling Systems: Remote operation and reliable transfer server.*
- ISO 6523:1984, *Data interchange – Structures for the identification of organizations.*

3 Definitions

For the purposes of this Recommendation | International Standard, the following definitions apply:

3.1 Reference Model definitions

3.1.1 Basic Reference Model definitions

This Protocol Specification is based on the concepts developed in ITU-T Rec. X.200 | ISO/IEC 7498-1 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;