
**Information technology — Test methods
for measuring conformance to Open
Systems Interconnection (OSI) abstract
data manipulation — Application Program
Interface (API) [Language independent]**

*Technologies de l'information — Méthodes d'essai pour mesurer la
conformité à la manipulation de données abstraites en interconnexion de
systèmes ouverts (OSI) — Interface de programme d'application (API)
[indépendante du langage]*

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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 14362 was prepared by IEEE (as IEEE Std 1326-1993) and was adopted, under a special “fast-track procedure”, by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, in parallel with its approval by national bodies of ISO and IEC.

Annex A of this International Standard is for information only.

Introduction

(This introduction is not a normative part of ISO/IEC 14362, Information technology—Test methods for measuring conformance to Open Systems Interconnection (OSI) abstract data manipulation—Application Program Interface (API) [Language independent], but is included for information only.)

The purpose of this International Standard is to define test methods for measuring conformance to ISO/IEC 14360 {1}, which defines a general purpose OSI Abstract Data Manipulation (OM) Application Program Interface (API) in terms that are independent of any particular programming language.

Related Standards

ISO/IEC 14360 {1} is stated in terms that are independent of any particular programming language, but is intended to provide the basis for the definition of programming language bindings to which implementations and applications can conform. Such a language binding, for the C programming language, is contained in ISO/IEC 14364 {B6}. The requirements specified in this International Standard apply to test methods for measuring conformance to standards defining all such programming language bindings of ISO/IEC 14360 {1}. Additional programming language-specific requirements may be defined for test methods for measuring conformance to each programming language binding of ISO/IEC 14360 {1}. Such a set of requirements, for test methods for measuring conformance to the C programming language binding contained in ISO/IEC 14364 {B6}, is contained in ISO/IEC 14366 {B7}.

ISO/IEC 14360 {1}, and the language bindings derived from it, are intended to be used in the definition of application-specific APIs that provide OSI services, such as the X.400-Based API defined in ISO/IEC 14361 {B5} and the API to Directory Services defined in ISO/IEC 14392 {B8}. The requirements specified in this International Standard may also apply to test methods for measuring conformance to standards defining such application-specific APIs.

The test assertions in this International Standard were produced in accordance with IEEE Std 1003.3-1991 {2}.

Overview

This International Standard contains a section corresponding to each section of ISO/IEC 14360 {1}. Each such section contains test assertions for that section of ISO/IEC 14360 {1}. Each set of test methods for measuring conformance to ISO/IEC 14360 {1} is required to test these assertions in conformance with the requirements of IEEE Std 1003.3-1991 {2}.

37 **Related Standards Activities**

38 The following areas are under active consideration at this time, or are expected to
39 become active in the near future, concerning standards for application APIs that
40 use the mechanism defined in this International Standard. Similar efforts can be
41 anticipated in the future:¹⁾

- 42 (1) X.400-based message handling
43 (2) Directory services
44 (3) FTAM API
45 (4) Verification testing methods
46 (5) Network interface facilities
47 (6) System administration.

This International Standard is based on IEEE Std 1326-1993 {B9}, which was prepared by the P1224 Working Group, sponsored by the Portable Applications Standards Committee of the IEEE Computer Society.

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1) A *Standards Status Report* that lists all current IEEE Computer Society standards projects is available from the IEEE Computer Society, 1730 Massachusetts Avenue NW, Washington, DC 20036-1903, USA; Telephone: +1 202 371-0101; FAX: +1 202 728-9614.

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1 **Information technology—Test methods for**
2 **measuring conformance to Open Systems**
3 **Interconnection (OSI) abstract data**
4 **manipulation—Application Program**
5 **Interface (API) [Language independent]**

6 **iTeh STANDARD PREVIEW**
Section 1: General
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7 **1.1 Scope**

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8 This International Standard defines requirements for test methods for measuring
9 conformance to ISO/IEC 14360 {1}.

10 ISO/IEC 14360 {1} is stated in terms that are independent of any particular pro-
11 gramming language, but each implementation that conforms to it implements a
12 particular programming language binding, and conforms to its programming
13 language binding specification. Each set of test methods for measuring confor-
14 mance to ISO/IEC 14360 {1} assumes a particular programming language binding
15 specification. Each programming language binding specification may impose
16 further programming-language specific requirements on the test methods which, in
17 conjunction with the requirements imposed by this International Standard, consti-
18 tute the requirements that shall be satisfied by test methods used for measuring
19 conformance to that programming language binding specification. This Interna-
20 tional Standard applies to all sets of test methods for measuring conformance to
21 any programming language binding specification for ISO/IEC 14360 {1}.

1.2 Normative References

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

- 29 {1} ISO/IEC 14360: 1996, *Information technology—Open Systems Interconnec-*
30 *tion (OSI) abstract data manipulation—Application Program Interface (API)*
31 *[Language independent]*.
- 32 {2} IEEE Std 1003.3-1991,¹⁾ *IEEE Standard for Information Technology—Test*
33 *Methods for Measuring Conformance to POSIX*.

34 1.3 Conformance

35 A set of test methods that conforms to this International Standard shall conform to
36 IEEE Std 1003.3-1991 {2}, with references to the “POSIX.n test method
37 specification” being interpreted as references to this International Standard, and
38 references to “the POSIX standard for which conformance is being measured” being
39 interpreted as references to ISO/IEC 14360 {1}.

40 In addition to meeting the conformance criteria defined in IEEE Std 1003.3-1991
41 {2}, a set of test methods that conforms to this International Standard shall test all
42 documentation assertions defined in this International Standard.

43 NOTE: Conformance to IEEE Std 1003.3-1991 {2} implies that the test methods will test all other
44 assertions defined in this International Standard.

45 1) ISO/IEC documents can be obtained from the ISO Central Secretariat, 1 Rue de Varembé, Case
46 Postale 56, CH-1211, Genève 20, Switzerland/Suisse. IEEE documents can be obtained from the
47 IEEE Service Center, 445 Hoes Lane, P.O. Box 1331, Piscataway, NJ, 08855-1331, USA.

Section 2: Terminology and General Requirements

2.1 Conventions

2.1.1 General and Typographical Conventions

Language-independent, concrete OM class names; OM attribute names; and OM attribute value names are spelled with hyphens between words. The first letters of language-independent OM class and OM attribute names are capitalized (e.g., **Arbitrary-Encoding**).

Language-independent datatype, operation, argument and error names are lower-case and are spelled with underscores between words (e.g., `om_get`).

The use of fonts in this International Standard is as follows:

- The Helvetica font is used for:
 - Language-independent operation names, such as `om_copy_value`
 - Language-independent datatype names, such as `om_exclusions_type`
 - Language-independent error names, such as `no_such_class`
- The *italic* font is used for:
 - Language-independent operation arguments, such as *source_value_position*
 - Introducing important terms
 - Cross-references in 2.2
- The **bold** font is used for:
 - Language-independent, concrete OM class names, such as **External**
 - Language-independent OM attribute names, such as **Arbitrary-Encoding**
 - Language-independent OM attribute values, such as **insert-at-certain-point**

— The ***bold italic*** font is used for:

26 — Language-independent, abstract OM class names, such as ***Object***

27 — The constant width (Courier) font is used for:

28 — References to terms defined in the X.400 standards.

29 **2.1.2 Language-Independent Conventions**

30 The language-independent conventions defined in ISO/IEC 14360 {1} shall apply in
31 this International Standard.

32 **2.1.3 Test Methods Conventions**

33 The assertion classification and labelling schemes defined in IEEE Std 1003.3-1991
34 {2} are used in this International Standard, with the following addition.

35 This International Standard contains an assertion for each statement that is
36 derived from the standard to which conformance is being measured, that pertains
37 to the documentation associated with the implementation being tested, and that is
38 true for a conforming implementation. These assertions are called *documentation*
39 *assertions*. Each documentation assertion is labelled *Dnn*, where *nn* is a two digit
40 number that is unique within this International Standard.

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41 **2.2 Definitions** <https://standards.iteh.ai/catalog/standards/sist/c6373458-4569-42ec-accf-5ed29e41ebec/iso-iec-14362-1996>

42 **2.2.1 Terminology**

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

44 **2.2.1.1 conformance document:** A document provided by an implementor that
45 contains implementation details as described in ISO/IEC 14360 {1}.

46 **2.2.1.2 implementation defined:** An indication that the implementation shall
47 define and document the requirements for correct program constructs and correct
48 data of a value or behavior [ISO/IEC 9945-1 {B1}].

49 **2.2.1.3 may:** An indication of an optional feature [ISO/IEC 9945-1 {B1}].

50 With respect to implementations, the word *may* is to be interpreted as an optional
51 feature that is not required in this International Standard, but can be provided.
52 With respect to Strictly Conforming Applications, the word *may* means that the
53 optional feature shall not be used.

2.2.1.4 shall: An indication of a requirement on the implementation or on Strictly Conforming Applications, where appropriate [ISO/IEC 9945-1 {B1}].

2.2.1.5 should:

- (1) With respect to implementations, an indication of an implementation recommendation, but not a requirement.
- (2) With respect to applications, an indication of a recommended programming practice for applications and a requirement for Strictly Conforming Application

2.2.1.6 supported: A condition regarding optional functionality.

Certain functionality in this International Standard is optional, but the interfaces to that functionality are always required. If the functionality is *supported*, the interfaces work as specified by this International Standard (except that they do not return the error condition indicated for the unsupported case). If the functionality is not *supported*, the interface shall always return the indication specified for this situation [ISO/IEC 9945-1 {B1}].

2.2.1.7 system documentation: All documentation provided with an implementation, except the conformance document [ISO/IEC 9945-1 {B1}].

Electronically distributed documents for an implementation are considered part of the system documentation.

2.2.1.8 undefined: An indication that this International Standard imposes no portability requirements on an application's use of an indeterminate value or its behavior with erroneous program constructs or erroneous data [ISO/IEC 9945-1 {B1}].

Implementations (or other standards) may specify the result of using that value or causing that behavior. An application using such behaviors is using extensions, as defined in ISO/IEC 14360 {1}.

2.2.1.9 unspecified: An indication that this International Standard imposes no portability requirements on applications for correct program constructs or correct data regarding a value or behavior [ISO/IEC 9945-1 {B1}].

Implementations (or other standards) may specify the result of using that value or causing that behavior. An application requiring a specific behavior, rather than tolerating any behavior when using that functionality, is using extensions, as defined in ISO/IEC 14360 {1}.

2.2.2 General Terms

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

87 **2.2.2.1 abstract class:** A class, instances of which are forbidden unless they
88 belong to one of its concrete subclasses [ISO/IEC 14360 {1}].

89 **2.2.2.2 accessible object:** An object for which the client possesses a valid design-
90 ator or handle [ISO/IEC 14360 {1}].

91 **2.2.2.3 assertion:** A statement that is derived from the standard to which conform-
92 ance is being measured, that is true for a conforming implementation, and that
93 pertains either to functionality or behavior of a functional interface or namespace
94 allocation or to the documentation associated with the implementation being tested
95 [ISO/IEC 14360 {1}].

96 **2.2.2.4 attribute:** A component of an object, comprised of an integer denoting the
97 type of the attribute and an ordered sequence of one or more attribute values, each
98 accompanied by an integer denoting the syntax of the value [ISO/IEC 14360 {1}].

99 **2.2.2.5 base assertion:** An assertion that is required to be tested for required
100 features and for implemented conditional features [IEEE Std 1003.3-1991 {2}].

101 **2.2.2.6 bit string:** An ordered sequence of zero or more bits [ISO/IEC 14360 {1}].

102 **2.2.2.7 byte:** A unit of machine storage containing an ordered sequence of 8 bits
103 [ISO/IEC 14360 {1}].

104 **2.2.2.8 character string:** An ordered sequence of zero or more characters
105 [ISO/IEC 14360 {1}].

106 **2.2.2.9 class:** A category into which objects are placed on the basis of both their
107 purpose and their internal structure [ISO/IEC 14360 {1}].

108 **2.2.2.10 client:** Software that uses the interface [ISO/IEC 14360 {1}].

109 **2.2.2.11 concrete class:** A class, instances of which are permitted either by
110 direct instantiation or the instantiation of its concrete subclasses [ISO/IEC 14360
111 {1}].

112 **2.2.2.12 datatype:** A collection of distinguished values, together with a collection
113 of characterizing operations on those values [ISO/IEC 14360 {1}].

114 **2.2.2.13 documentation assertion:** An assertion that pertains to the documen-
115 tation associated with the implementation being tested.

- 116 **2.2.2.14 element:** Any of the bits of a bit string, the octets of an octet string, or
117 the bytes by means of which the characters of a character string are represented
[ISO/IEC 14360 {1}].
- 118 **2.2.2.15 extended assertion:** An assertion that is not required to be tested
119 [IEEE Std 1003.3-1991 {2}].
- 120 **2.2.2.16 generic interface:** The interface, defined at a level that is independent
121 of any particular programming language [ISO/IEC 14360 {1}].
- 122 **2.2.2.17 immediate subclass:** A subclass, of a class *C*, having no superclasses
123 that are themselves subclasses of *C* [ISO/IEC 14360 {1}].
- 124 **2.2.2.18 immediate subobject:** One object that is a value of an attribute of
125 another [ISO/IEC 14360 {1}].
- 126 **2.2.2.19 immediate superclass:** The superclass, of a class *C*, having no sub-
127 classes that are themselves superclasses of *C* [ISO/IEC 14360 {1}].
- 128 **2.2.2.20 immediate superobject:** One object that contains another among its
129 attribute values [ISO/IEC 14360 {1}].
- 130 **2.2.2.21 inaccessible object:** An object for which the client does not possess a
131 valid designator or handle [ISO/IEC 14360 {1}].
- 132 **2.2.2.22 independent copy:** A copy of the object plus independent copies of all
133 its subobjects (applied recursively) [ISO/IEC 14360 {1}].
- 134 **2.2.2.23 instance:** An object in the category represented by a class [ISO/IEC
135 14360 {1}].
- 136 **2.2.2.24 intermediate datatype:** Any of the basic datatypes in terms of which
137 the other, substantive datatypes of the interface are defined [ISO/IEC 14360 {1}].
- 138 **2.2.2.25 length:** The number of bytes required to represent any string [ISO/IEC
139 14360 {1}].
- 140 **2.2.2.26 minimally consistent object:** An object that satisfies various condi-
141 tions set forth in the definition of its class [ISO/IEC 14360 {1}].