

INTERNATIONAL STANDARD

**ISO/IEC
10168-4**

First edition
1996-12-15

Information technology — Open Systems Interconnection — Conformance test suite for the Session protocol —

Part 4:

Test management protocol specification

*Technologies de l'information — Interconnexion de systèmes ouverts —
Suite de tests de conformité pour le protocole de session —*

Partie 4: Spécification du protocole de gestion de tests



Reference number
ISO/IEC 10168-4:1996(E)



Documents

Document Sharing Hub

Contents

	Page
Foreword	iii
Introduction.....	iv
1 Scope	1
2 Normative references	1
3 Definitions.....	1
3.1 Reference model definitions	1
3.2 Conformance testing methodology and framework definitions	1
3.3 Session test management protocol definitions	1
4 Symbols and abbreviations	2
5 Overview.....	2
6 Service assumed from the Session IUT	3
6.1 General	3
6.2 Use of parameters by service primitives	3
7 Definition of the SL-TMP	3
7.1 General procedures	3
7.2 Implicit reaction.....	3
7.3 Explicit reaction.....	3
7.3.1 Definition of SL-TMPDU sent by LT	3
7.3.2 General procedure for executing the reactions memorized in the FIFO queue.....	4
7.3.2.1 Use of this general procedure.....	4
7.3.2.2 Execution of this general procedure	4
7.3.3 Processing a valid explicit reaction.....	4
7.3.3.1 Processing an "Absorption of SP" reaction.....	5
7.3.3.2 Processing an "execute the reactions memorized in the FIFO queue" reaction.....	5
7.3.3.3 Processing a "Purge reactions memorized in the FIFO queue" reaction	6
7.3.3.4 Processing any other reaction	6
7.3.4 Building a reaction	6
7.3.4.1 Building parameters.....	7
7.3.4.2 Building User-Data.....	7
7.4 Service Violation	8
7.5 Protection against connection rejection by session	8
8 Coding rules	9
8.1 PDU sent by LT.....	9
8.1.1 Coding of REACTION parameter.....	10
8.1.2 Coding of RES-PAR-VAL parameter	11
8.2 Coding of the RP-SL-TMPDU	12
8.2.1 Coding of the RECEIVED-SP parameter.....	12
8.2.2 Coding of RECEIVED-PAR parameter	12

© ISO/IEC 1996

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from the publisher.

ISO/IEC copyright Office • Case Postale 56 • CH-1211 Geneve 20 • Switzerland

Printed in Switzerland

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 10168 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 21, *Open systems interconnection, data management and open distributed processing*.

ISO/IEC 10168 consists of the following parts, under the general title *Information technology - Open Systems Interconnection - Conformance test suite for the Session protocol*:

- *Part 1: Test suite structure and test purposes*
- *Part 4: Test management protocol specification*

Introduction

This part of ISO/IEC 10168, a multipart International Standard, specifies a Test Management Protocol together with an Upper Tester for the Coordinated test method as applied to ISO/IEC 8327-1, the Session protocol, versions 1 and 2, except for the symmetric synchronize and the data separation functional units.

A fundamental objective of the related standardized conformance test suites is to establish uniform conformance testing and unambiguous evaluation procedures for checking the ability of a Session protocol implementation to operate according to ISO/IEC 8327.

The standardization of these test suites should lead to comparability and wide acceptance of test results produced by different test laboratories, and therefore minimize repeated conformance testing of the same Session protocol implementation.

The conformance test suites based on this part of ISO/IEC 10168 are designed for use by :

- a) test laboratories which provide a conformance testing service for the Session protocol ;
- b) test realizers which provide a means of testing to be used by such test laboratories ;

The purpose of conformance testing is to increase the probability that different implementations are able to interwork, although conformance testing alone cannot give a guarantee of interworking. Conformance testing increases the confidence that each implementation conforms to the protocol specification by establishing that it has the required capabilities and that its behaviour conforms to the protocol specification in representative instances of communication.

Information technology — Open Systems Interconnection — Conformance test suite for the Session protocol —

Part 4:

Test management protocol specification

1 Scope

This part of ISO/IEC 10168 defines :

- a) procedures for a single protocol for the transfer of data and control information from one test management entity (the Lower Tester) to a peer test management entity (the Upper Tester);
- b) the structure and encoding of the test management protocol data units used to operate the test management protocol.

These procedures are defined in term of :

- a) the service primitives sent and received by the Upper Tester ;
- b) the Session Layer - Test Management Protocol Data Unit sent and received by the Upper Tester.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO/IEC 10168. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of ISO/IEC 10168 are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO/IEC 7498-1 : 1994, *Information technology - Open Systems Interconnection - Basic Reference Model: The Basic Model*.

ISO/IEC 7498-3 : 1989, *Information processing systems - Open Systems Interconnection - Basic Reference Model - Part 3: Naming and addressing*.

ISO/IEC 8326 : 1996, *Information technology - Open Systems Interconnection - Session service definition*.

ISO/IEC 8327-1 : 1996, *Information technology - Open Systems Interconnection - Connection-oriented Session protocol: Protocol specification*.

ISO/IEC 8348 : 1993, *Information technology - Open Systems Interconnection - Network Service Definition*.

ISO/IEC 10731 : 1994, *Information technology - Open Systems Interconnection - Basic Reference Model - Conventions for the definition of OSI services*.

ISO/IEC 9646-1 : 1994, *Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 1: General concepts*.

ISO/IEC 9646-2 : 1994, *Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 2: Abstract Test Suite specification*.

3 Definitions

3.1 Reference model definitions

For the purposes of this part of ISO/IEC 10168, the following definitions are taken from ISO/IEC 7498-1 :

- a) Service primitive,
- b) Session service,
- c) Session connection,
- d) Session service data unit,
- e) Protocol data unit.

3.2 Conformance testing methodology and framework definitions

For the purposes of this part of ISO/IEC 10168, the following definitions are taken from ISO/IEC 9646-1 :

- a) Upper tester,
- b) Lower tester,
- c) Test coordination procedures,
- d) Test management protocol,
- e) Coordinated test method,
- f) Implementation under test,
- g) System under test,
- h) Point of control and observation,
- i) Verdict.

3.3 Session test management protocol definitions

For the purposes of this part of ISO/IEC 10168, the following definitions are also used :

3.3.1 TLV : an encoding technique in which a parameter is encoded by a type, a length and a value.

3.3.2 Session layer test management protocol : the test management protocol used to test session entities.

3.3.3 Session layer test management protocol data unit : a protocol data unit of the above defined protocol.

3.3.4 Report test management protocol data unit: a protocol data unit sent by the upper tester to report to the lower tester the service primitive and associated received by the UT.

4 Symbols and abbreviations

The following abbreviations are used :

ADDREF	Additional reference information
CDADDP1	Called Session Address Part 1
CDADDP2	Called Session Address Part 2
CDADDP3	Called Session Address Part 3
CDSSREF	Called SS user reference
CGADDP1	Calling Session Address Part 1
CGADDP2	Calling Session Address Part 2
CGADDP3	Calling Session Address Part 3
CGSSREF	Calling SS user reference
COMREF	Common reference
CS	Coordinated Single Layer test method
ISERNUM	Initial Serial Number
TOKSET	Initial Token Assignment
LT	Lower Tester
NACTID	New Activity identifier
OACTID	Old Activity identifier
PCO	Point of Control and Observation
REASON	Reason
RESULT	Result
RP-SL-TMPDU	Report SL-TMPDU
RSTYPE	Resynchronization type
SERNUM	Serial number
SL-TMP	Session Layer Test Management Protocol
SL-TMPDU	Session Layer Test Management Protocol Data Unit
SP	Service Primitive
SQOS	Session quality of service
SYNCTYPE	Synchronization type
TLV	Type, Length, Value
TMP	Test Management Protocol
TOKITEM	Tokens (give/please)
USEREQ	Functional Units
UT	Upper Tester

5 Overview

The SL-TMP is based on the principle of parameterized echo : an SL-TMPDU is included in the user data parameter of any SPDU which may contain user data.

This is used to dictate the behaviour of the SUT.

The echo is parameterized in the sense that :

- The expected reaction is determined by the received SL-TMPDU. The expected reaction is in general to issue a service primitive: therefore the

SL-TMPDU explicitly designates the service primitive(s) to be issued.

- The SL-TMPDU also indicates the parameters to be used in the service primitive.
- The SL-TMPDU also indicates what user data is to be included in the service primitive (if relevant). The user data forms an SL-TMPDU sent by the UT to the LT.

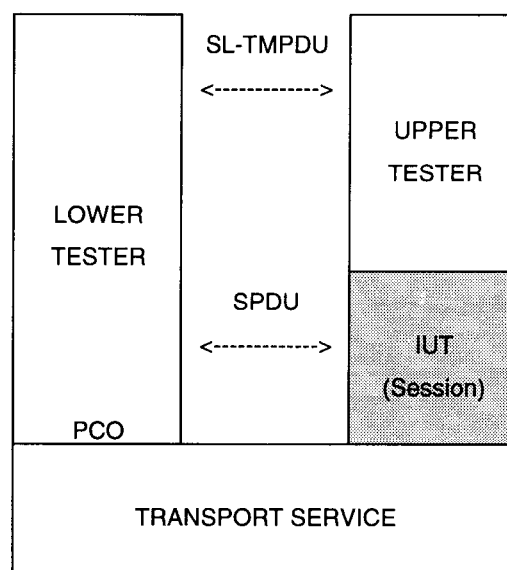


Figure 1 - Description of Test Management Protocol

Additionally the expected reaction may be delayed : the upper tester maintains one FIFO queue of delayed reactions associated with each existing connection and on receipt of a particular stimulus the UT shall issue in turn all service primitives held in the queue associated with the connection.

The UT shall be able to hold at least five reactions in each FIFO queue.

The TMP definition also defines the reaction expected from the UT on receipt of a service primitive which cannot contain user data and cannot therefore carry any SL-TMPDU (this is called implicit reaction).

NOTES

1 - The maximum length of the user data parameter of the EXPEDITED DATA SPDU is only 14 bytes. That means that not all types of SL-TMPDUs can be included in the user data parameter of the EXPEDITED DATA SPDU.

2 - Most of the primitives that "may not contain user data" in Session version 1, may contain user data in Session version 2. However the implicit reaction that was used with version 1 for such primitives is still valid.