

INTERNATIONAL  
STANDARD

ISO/IEC  
10021-7

Third edition  
2003-12-15

---

---

**Information technology — Message  
Handling Systems (MHS): Interpersonal  
messaging system**

*Technologies de l'information — Systèmes de messagerie (MHS):  
Système de messagerie de personne à personne*

---

---

Reference number  
ISO/IEC 10021-7:2003(E)



© ISO/IEC 2003

**PDF disclaimer**

This PDF file may contain embedded typefaces. In accordance with Adobe's licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing the editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The ISO Central Secretariat accepts no liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

Details of the software products used to create this PDF file can be found in the General Info relative to the file; the PDF-creation parameters were optimized for printing. Every care has been taken to ensure that the file is suitable for use by ISO member bodies. In the unlikely event that a problem relating to it is found, please inform the Central Secretariat at the address given below.

© ISO/IEC 2003

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 either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office  
Case postale 56 • CH-1211 Geneva 20  
Tel. + 41 22 749 01 11  
Fax + 41 22 749 09 47  
E-mail [copyright@iso.org](mailto:copyright@iso.org)  
Web [www.iso.org](http://www.iso.org)

Published in Switzerland

## CONTENTS

	<i>Page</i>
SECTION 1 – INTRODUCTION .....	1
1 Scope .....	1
2 Normative references .....	1
2.1 Open Systems Interconnection .....	1
2.2 Message Handling Systems .....	2
2.3 Directory Systems .....	2
2.4 Language Code .....	2
2.5 Character Sets .....	2
2.6 Telematic Services .....	2
2.7 File Transfer .....	3
2.8 Open Document Architecture .....	3
2.9 Digital Encoding of Sound .....	3
2.10 Cryptography .....	3
3 Definitions .....	3
4 Abbreviations .....	3
5 Conventions .....	3
5.1 ASN.1 .....	4
5.2 Grade .....	4
5.3 Terms .....	5
5.4 Conventions for attribute-types used in Table 5 .....	5
5.5 Interpretation of UTC Time values .....	5
SECTION 2 – ABSTRACT INFORMATION OBJECTS .....	5
6 Overview .....	5
7 Interpersonal Messages .....	6
7.1 Heading Field Component Types .....	6
7.1.1 IPM Identifier .....	7
7.1.2 Recipient Specifier .....	7
7.1.3 OR-Descriptor .....	8
7.1.4 IPMS Extension .....	8
7.2 Heading Fields .....	9
7.2.1 This IPM .....	9
7.2.2 Originator .....	9
7.2.3 Authorizing Users .....	9
7.2.4 Primary Recipients .....	9
7.2.5 Copy Recipients .....	9
7.2.6 Blind Copy Recipients .....	10
7.2.7 Replied-to IPM .....	10
7.2.8 Obsolete IPMs .....	10
7.2.9 Related IPMs .....	10
7.2.10 Subject .....	11
7.2.11 Expiry Time .....	11
7.2.12 Reply Time .....	11
7.2.13 Reply Recipients .....	11
7.2.14 Importance .....	11
7.2.15 Sensitivity .....	11
7.2.16 Auto-forwarded .....	12
7.2.17 Extensions .....	12
7.3 Body Parts .....	12
7.3.1 Extended Body Part .....	13
7.3.2 Body Part Encoding .....	14
7.4 Standard Body Part Types .....	15
7.4.1 IA5 Text .....	15
7.4.2 G3 Facsimile .....	15
7.4.3 G4 Class 1 .....	16
7.4.4 Teletex .....	16

	<i>Page</i>
7.4.5 Videotex .....	17
7.4.6 Encrypted .....	17
7.4.7 Message .....	18
7.4.8 Mixed-mode .....	18
7.4.9 Bilaterally Defined .....	19
7.4.10 Nationally Defined .....	19
7.4.11 General Text .....	19
7.4.12 File Transfer .....	20
7.4.13 Voice .....	25
7.4.14 Report .....	27
7.4.15 Notification .....	27
7.4.16 Forwarded Content .....	27
7.4.17 PKCS7 .....	28
8 Interpersonal Notifications .....	29
8.1 Common Fields .....	30
8.1.1 Subject IPM .....	30
8.1.2 IPN Originator .....	30
8.1.3 IPM Intended Recipient .....	30
8.1.4 Conversion EITs .....	31
8.1.5 Notification Extensions .....	31
8.2 Non-receipt Fields .....	31
8.2.1 Non-receipt Reason .....	31
8.2.2 Discard Reason .....	31
8.2.3 Auto-forward Comment .....	32
8.2.4 Returned IPM .....	32
8.2.5 NRN Extensions .....	32
8.3 Receipt Fields .....	32
8.3.1 Receipt Time .....	33
8.3.2 Acknowledgment Mode .....	33
8.3.3 Suppl Receipt Info .....	33
8.3.4 RN Extensions .....	33
8.4 Other Notification Type Fields .....	33
8.4.1 Absence Advice .....	33
8.4.2 Change of Address Advice .....	34
SECTION 3 – ABSTRACT SERVICE DEFINITION .....	35
9 Overview .....	35
10 Primary Object Types .....	35
10.1 Interpersonal Messaging System User .....	35
10.2 Interpersonal Messaging System .....	36
11 Primary Port Types .....	36
11.1 Origination .....	36
11.2 Reception .....	36
11.3 Management .....	36
12 Abstract Operations .....	36
12.1 Origination Abstract Operations .....	37
12.1.1 Originate Probe .....	37
12.1.2 Originate IPM .....	37
12.1.3 Originate RN .....	38
12.1.4 Originate ON .....	38
12.2 Reception Abstract Operations .....	39
12.2.1 Receive Report .....	39
12.2.2 Receive IPM .....	39
12.2.3 Receive RN .....	40
12.2.4 Receive NRN .....	40
12.2.5 Receive ON .....	40
12.3 Management Abstract Operations .....	40
12.3.1 Change Auto-discard .....	40
12.3.2 Change Auto-acknowledgment .....	41
12.3.3 Change Auto-forwarding .....	41

	<i>Page</i>	
13	Abstract Errors .....	42
	13.1 Subscription Error .....	42
	13.2 Recipient Improperly Specified.....	42
14	Other Capabilities.....	42
SECTION 4 – ABSTRACT SERVICE PROVISION .....		43
15	Overview .....	43
16	Secondary Object Types.....	43
	16.1 Interpersonal Messaging System User Agent.....	43
	16.2 Interpersonal Messaging System Message Store .....	43
	16.3 Telematic Agent.....	43
	16.4 Telex Access Unit .....	44
	16.5 Physical Delivery Access Unit.....	44
	16.6 Message Transfer System.....	45
17	Secondary Port Types.....	45
	17.1 Submission .....	45
	17.2 Delivery .....	45
	17.3 Retrieval .....	45
	17.4 Administration .....	45
	17.5 Import .....	45
	17.6 Export .....	45
18	User Agent Operation.....	46
	18.1 State Variables .....	46
	18.2 Performance of Origination Operations .....	46
	18.2.1 Originate Probe .....	46
	18.2.2 Originate IPM .....	47
	18.2.3 Originate RN .....	47
	18.2.4 Originate ON.....	48
	18.3 Performance of Management Operations.....	48
	18.3.1 Change Auto-discard.....	48
	18.3.2 Change Auto-acknowledgment.....	49
	18.3.3 Change Auto-forwarding .....	49
	18.4 Invocation of Reception Operations.....	49
	18.4.1 Receive Report.....	49
	18.4.2 Receive IPM.....	49
	18.4.3 Receive RN .....	50
	18.4.4 Receive NRN .....	50
	18.4.5 Receive ON .....	50
	18.5 Internal Procedures.....	50
	18.5.1 Auto-discard.....	50
	18.5.2 Auto-acknowledgment .....	51
	18.5.3 Auto-forwarding.....	52
19	Message Store Operation.....	53
	19.1 Binding to the IPMS-MS.....	53
	19.1.1 MS-Bind-argument .....	53
	19.1.2 MS-Bind-result.....	53
	19.2 Creation of Information Objects.....	53
	19.2.1 Mapping an IPMS Message to an MS entry.....	54
	19.2.2 Mapping of forwarding messages in the IPMS-MS .....	54
	19.2.3 Presence of General-attributes in child-entries .....	55
	19.3 Maintenance of Attributes .....	56
	19.4 Notification of Non-receipt .....	57
	19.5 IPMS-MS abstract-operation extensions.....	57
	19.5.1 MS-Bind extensions .....	57
	19.5.2 MS-Bind-Result extensions .....	58
	19.5.3 IPM -submission options.....	58
	19.5.4 IPM submission errors .....	60

	<i>Page</i>
19.5.5 Forwarding-request extension .....	60
19.5.6 Delete extensions .....	60
19.6 IPMS-MS Attributes .....	60
19.6.1 Summary Attributes .....	63
19.6.2 Heading Attributes .....	66
19.6.3 Body Attributes .....	71
19.6.4 Notification Attributes .....	74
19.6.5 Correlation Attributes .....	76
19.6.6 The IPMS-attribute-table information object class .....	83
19.6.7 Generation of the IPMS-specific Attributes .....	84
19.6.8 Attributes Subject to Modification .....	89
19.7 IPMS-MS matching rules.....	89
19.7.1 IPM-identifier-match.....	89
19.7.2 IPM-location-match .....	89
19.7.3 OR-descriptor-match.....	90
19.7.4 OR-descriptor-elements-match .....	90
19.7.5 OR-descriptor-substring-elements-match .....	90
19.7.6 OR-descriptor-single-element-match .....	90
19.7.7 Recipient-specifier-match .....	90
19.7.8 Recipient-specifier-elements-match.....	91
19.7.9 Recipient-specifier-substring-elements-match.....	91
19.7.10 Recipient-specifier-single-element-match.....	91
19.7.11 Circulation-member-match .....	91
19.7.12 Circulation-member-elements-match.....	91
19.7.13 Circulation-member-substring-elements-match.....	91
19.7.14 Circulation-member-single-element-match.....	92
19.7.15 Circulation-member-checkmark-match.....	92
19.7.16 Distribution-code-match .....	92
19.7.17 Information-category-match.....	92
19.8 IPMS-MS auto-actions.....	93
19.8.1 Auto-action performance .....	94
19.8.2 IPM Auto-forward.....	94
19.8.3 IPM Auto-acknowledgement .....	96
19.8.4 IPM Auto-correlate .....	97
19.8.5 IPM Auto-discard.....	98
19.8.6 IPM auto-advise .....	98
19.9 Procedures for the IPMS-MS .....	100
19.9.1 Additional procedures for Message-delivery and Report-delivery .....	100
19.9.2 Additional Procedures for MS-message-submission.....	104
19.9.3 Additional Procedures for Fetch .....	106
19.9.4 Additional Procedures for Delete and Auto-delete .....	106
19.9.5 Auto-discard of expired IPMs .....	106
20 Message Contents.....	107
20.1 Content .....	107
20.2 Content Type.....	107
20.3 Content Length.....	107
20.4 Encoded Information Types .....	108
21 Port Realization .....	108
22 Conformance .....	109
22.1 Origination Versus Reception .....	109
22.2 Statement Requirements.....	109
22.3 Static Requirements .....	109
22.4 Dynamic Requirements .....	110
Annex A – General IPMS Extensions .....	111
A.1 Heading Extensions.....	111
A.1.1 Incomplete Copy .....	111
A.1.2 Languages .....	111
A.1.3 Auto-submitted.....	111
A.1.4 Body Part Signature .....	111

	<i>Page</i>
A.1.5 IPM Security Label .....	112
A.1.6 Authorization Time .....	113
A.1.7 Circulation List Recipients .....	113
A.1.8 Distribution Codes .....	114
A.1.9 Extended Subject .....	115
A.1.10 Information Category .....	115
A.1.11 Manual Handling Instructions .....	116
A.1.12 Originator's Reference .....	116
A.1.13 Precedence Policy Identifier .....	116
A.2 Recipient Extensions .....	116
A.2.1 Circulation List Indicator .....	116
A.2.2 Precedence .....	117
A.3 Notification Extensions .....	117
Annex B – IPMS Security Extensions .....	118
B.1 Recipient Security Request .....	118
B.2 IPN Security Response .....	119
B.3 Security Diagnostic Code .....	119
B.4 Additional UA Procedures .....	121
B.4.1 Originate IPM .....	121
B.4.2 Originate IPN .....	122
B.5 Additional MS Procedures .....	124
B.6 MTS Extensions .....	124
B.6.1 Body Part Encryption Token .....	124
B.6.2 Forwarded Content Token .....	126
Annex C – Reference Definition of Object Identifiers .....	127
Annex D – Reference Definition of Abstract Information Objects .....	133
Annex E – Reference Definition of Extended Body Part Types .....	143
E.1 Equivalents of Basic Body Part Types .....	143
E.2 General Text .....	144
E.3 File Transfer .....	145
E.4 Voice .....	148
E.5 Report and Notification .....	148
E.6 Forwarded Content .....	149
E.7 PKCS7 .....	150
Annex F – Reference Definition of Functional Objects .....	151
Annex G – Reference Definition of Abstract Service .....	152
Annex H – Reference Definition of IPM Extensions .....	155
Annex I – Reference Definition of Message Store Attributes .....	159
Annex J – Reference Definition of IPMS-MS auto-actions .....	174
Annex K – Reference Definition of IPMS Security Extensions .....	178
Annex L – Reference Definition of Upper Bounds .....	181
Annex M – Support of the Interpersonal Messaging Service .....	182
M.1 Support of Recipient Specifier Components .....	182
M.2 Support of Heading Fields .....	182
M.3 Support of Body Aspects .....	183
M.4 Support of Notification Fields .....	184
M.5 Support of Envelope Fields .....	184
M.6 Support of IPMS Message Store .....	184
Annex N – Security Model Supplement for IPMS .....	185
N.1 Introduction .....	185
N.2 Security Services .....	185
N.3 Supplements to Clause 10.2: Security Services .....	185
N.4 Body Part Encryption .....	185
N.5 Body Part Authentication and Integrity .....	185

	<i>Page</i>
N.6 IPM Security Labelling .....	185
N.7 IPN Authentication.....	186
N.7.1 Proof of Notification .....	186
N.7.2 Proof of Content.....	186
N.8 Non-repudiation of IPM Responsibility .....	186
N.8.1 Non-repudiation of Notification.....	186
N.8.2 Non-repudiation of Content .....	186
Annex O – ASN.1 Module for PKCS#7 .....	187
Annex P – Differences Between ISO/IEC 10021-7 and ITU-T Recommendation X.420 .....	192
Annex Q – Summary of Changes to Previous Editions .....	193
Q.1 Differences between CCITT Rec. X.420 (1984) and CCITT Rec. X.420 (1988).....	193
Q.2 Differences between CCITT Rec. X.420 (1988) and ISO/IEC 10021-7:1990 .....	193
Q.3 Differences between ISO/IEC 10021-7:1990 and CCITT Rec. X.420 (1992).....	193
Q.4 Differences between CCITT Rec. X.420 (1992) and ITU-T Rec. X.420 (1996)   ISO/IEC 10021-7:1997 .....	194
Q.5 Differences between ITU-T Rec. X.420 (1996)   ISO/IEC 10021-7:1997 and ITU-T Rec. X.420 (1998)   ISO/IEC 10021-7:1999 .....	194
Annex R – Index.....	196



## 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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of the joint technical committee is to prepare International Standards. 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.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights.

ISO/IEC 10021-7 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 6, *Telecommunications and information exchange between systems* in collaboration with ITU-T. The identical text is published as ITU-T Rec. X.420.

This third edition cancels and replaces the second edition (ISO/IEC 10021-7:1997), which has been technically revised. It also incorporates Amendment 1:1998 and Corrigendum 1:1998.

ISO/IEC 10021 consists of the following parts, under the general title *Information technology — Message Handling Systems (MHS)*:

- *Part 1: System and service overview*
- *Part 2: Overall architecture*
- *Part 4: Message transfer system — Abstract service definition and procedures*
- *Part 5: Message store: Abstract service definition*
- *Part 6: Protocol specifications*
- *Part 7: Interpersonal messaging system*
- *Part 8: Electronic Data Interchange Messaging Service*
- *Part 9: Electronic Data Interchange Messaging System*
- *Part 10: MHS routing*
- *Part 11: MHS Routing — Guide for messaging systems managers [Technical Report]*

## Introduction

This Specification is one of a set of Recommendations | International Standards for Message Handling. The entire set provides a comprehensive blueprint for a Message Handling System (MHS) realized by any number of cooperating open systems.

The purpose of an MHS is to enable users to exchange messages on a store-and-forward basis. A message submitted on behalf of one user, the originator, is conveyed by the Message Transfer System (MTS) and subsequently delivered to the agents of one or more additional users, the recipients. Access units (AUs) link the MTS to communication systems of other kinds (e.g., postal systems). A user is assisted in the preparation, storage, and display of messages by a user agent (UA). Optionally, it is assisted in the storage of messages by a message store (MS). The MTS comprises a number of message transfer agents (MTAs) which collectively perform the store-and-forward message transfer function.

This Specification defines the Message Handling application called *Interpersonal Messaging*, specifying in the process the message content type and associated procedures known as *P2*.

This Specification was developed jointly by ITU-T and ISO/IEC. It is published as common text as ITU-T Rec. X.420 | ISO/IEC 10021-7.

**INTERNATIONAL STANDARD  
ITU-T RECOMMENDATION**

**Information technology –  
Message Handling Systems (MHS) –  
Interpersonal Messaging System**

**SECTION 1 – INTRODUCTION**

**1 Scope**

This Recommendation | International Standard defines **Interpersonal Messaging**, a form of Message Handling tailored for ordinary interpersonal business or private correspondence.

This Recommendation | International Standard is one of a series on Message Handling. ITU-T Rec. X.402 | ISO/IEC 10021-2 constitutes the introduction to the series and identifies the other documents in it.

The architectural basis and foundation for Message Handling are defined in still other Recommendations | International Standards. ITU-T Rec. X.402 | ISO/IEC 10021-2 identifies those documents as well.

This Recommendation | International Standard is structured as follows. Section one is this introduction. Section two defines the kinds of information objects exchanged in Interpersonal Messaging. Section three defines the associated abstract service. Section four specifies how it is provided. Annexes provide important supplemental information.

The requirements for conformance to this Recommendation | International Standard are given in clause 22.

**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 Standards are subject to revision, and parties to agreements based on this Recommendation | International Standard are encouraged to investigate the possibility of applying the most recent editions of the Recommendations and Standards listed below. Members of ISO and IEC 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 Open Systems Interconnection**

This Specification cites the following OSI specifications:

- ITU-T Recommendation X.227 (1995) | ISO/IEC 8650-1:1995, *Information technology – Open Systems Interconnection – Connection-oriented protocol for the Association Control Service Element: Protocol specification.*
- ITU-T Recommendation X.680 (1997) | ISO/IEC 8824-1:1998, *Information technology – Abstract Syntax Notation One (ASN.1) – Specification of Basic Notation.*
- ITU-T Recommendation X.681 (1997) | ISO/IEC 8824-2:1998, *Information technology – Abstract Syntax Notation One (ASN.1) – Information Object Specification.*
- ITU-T Recommendation X.682 (1997) | ISO/IEC 8824-3:1998, *Information technology – Abstract Syntax Notation One (ASN.1) – Constraint Specification.*
- ITU-T Recommendation X.683 (1997) | ISO/IEC 8824-4:1998, *Information technology – Abstract Syntax Notation One (ASN.1) – Parameterization of ASN.1 Specifications.*
- ITU-T Recommendation X.690 (1997) | ISO/IEC 8825-1:1998, *Information technology – ASN.1 Encoding Rules – Specification of Basic Encoding Rules (BER), Canonical Encoding Rules (CER) and Distinguished Encoding Rules (DER).*

## ISO/IEC 10021-7:2003 (E)

- ITU-T Recommendation X.880 (1994) | ISO/IEC 13712-1:1995, *Information technology – Remote Operations – Concepts, Model and Notation.*

### 2.2 Message Handling Systems

This Specification cites the following Message Handling System specifications:

- ITU-T Recommendation F.400/X.400 (1999), *Message handling: System and service overview.*  
ISO/IEC 10021-1:2003, *Information technology – Message Handling Systems (MHS) – Part 1: System and service overview.*
- ITU-T Recommendation X.402 (1999) | ISO/IEC 10021-2:2003, *Information technology – Message Handling Systems (MHS) – Overall architecture.*
- CCITT Recommendation X.408 (1988), *Message handling systems: Encoded information type conversion rules.*
- ITU-T Recommendation X.411 (1999) | ISO/IEC 10021-4:2003, *Information technology – Message Handling Systems (MHS) – Message transfer system – Abstract service definition and procedures.*
- ITU-T Recommendation X.413 (1999) | ISO/IEC 10021-5:1999, *Information technology – Message Handling Systems (MHS) – Message store: Abstract service definition.*
- ITU-T Recommendation X.419 (1999) | ISO/IEC 10021-6:2003, *Information technology – Message Handling Systems (MHS) – Protocol specifications.*
- CCITT Recommendation X.420 (1984), *Message handling systems: Interpersonal messaging user agent layer.*

### 2.3 Directory Systems

This Specification cites the following Directory System specifications:

- ITU-T Recommendation X.501 (1997) | ISO/IEC 9594-2:1998, *Information technology – Open Systems Interconnection – The Directory – Models.*
- ITU-T Recommendation X.509 (1997) | ISO/IEC 9594-8:1998, *Information technology – Open Systems Interconnection – The Directory – Authentication Framework.*
- ITU-T Recommendation X.520 (1997) | ISO/IEC 9594-6:1998, *Information technology – Open Systems Interconnection – The Directory – Selected Attribute Types.*

### 2.4 Language Code

This Specification cites the following Language Code specification:

- ISO 639: 1988, *Code for the representation of names of languages.*

### 2.5 Character Sets

This Specification cites the following Character Set specifications:

- ISO/IEC 2022:1994, *Information technology – Character code structure and extension techniques.*
- ISO 2375:1985, *Data processing – Procedure for registration of escape sequences.*
- ISO 8859-1:1987, *Information processing – 8-bit single-byte coded graphic character sets – Part 1: Latin alphabet No. 1.*
- ISO 10646-1:1993, *Information technology – Universal Multiple-Octet Coded Character Set (UCS) – Part 1: Architecture and Basic Multilingual Plane.*
- CCITT Recommendation T.61 (1988), *Character repertoire and coded character sets for the international Teletex service.*

### 2.6 Telematic Services

This Specification cites the following Telematic Service specifications:

- ITU-T Recommendation T.4 (1993), *Standardization of group 3 facsimile apparatus for document transmission.*

- ITU-T Recommendation T.30 (1993), *Procedures for document facsimile transmission in the general switched telephone network*.
- CCITT Recommendation T.100 (1988), *International information exchange for interactive videotex*.
- ITU-T Recommendation T.101 (1994), *International interworking for videotex services*.
- CCITT Recommendation T.330 (1988), *Telematic access to interpersonal messaging system*.

## 2.7 File Transfer

This Specification cites the following File Transfer specifications:

- ISO 8571-1:1988, *Information processing systems – Open Systems Interconnection – File Transfer, Access and Management – Part 1: General Introduction*.
- ISO 8571-2:1988, *Information processing systems – Open Systems Interconnection – File Transfer, Access and Management – Part 2: Virtual Filestore Definition*.
- ISO 8571-2:1988/Amd.1:1992, *Information processing systems – Open Systems Interconnection – File Transfer, Access and Management – Part 2: Virtual Filestore Definition – Amendment 1: Filestore Management*.
- ISO 8571-4:1988, *Information processing systems – Open Systems Interconnection – File Transfer, Access and Management – Part 4: File Protocol Specification*.
- ISO 8571-4:1988/Amd.1:1992, *Information processing systems – Open Systems Interconnection – File Transfer, Access and Management – Part 4: File Protocol Specification – Amendment 1: Filestore Management*.

## 2.8 Open Document Architecture

This Specification cites the following Open Document Architecture specifications:

- ITU-T Recommendation T.415 (1993), | ISO/IEC 8613-5:1994, *Information technology – Open document architecture (ODA) and Interchange Format: Open Document Interchange Format*.

## 2.9 Digital Encoding of Sound

This Specification cites the following specifications on the Digital Encoding of Sound:

- CCITT Recommendation G.711 (1988), *Pulse code modulation (PCM) of voice frequencies*.
- CCITT Recommendation G.726 (1990), *40, 32, 24, 16 kbit/s Adaptive Differential Pulse Code Modulation (ADPCM)*.
- CCITT Recommendation G.728 (1992), *Coding of Speech at 16 kbit/s Using Low-Delay Code Excited Linear Prediction*.
- IEC 908: 1987, *Compact Disc Digital Audio*.

## 2.10 Cryptography

This Specification cites the following Cryptographic specification:

- RSA Laboratories. PKCS#7: *Cryptographic Message Syntax Standard. Version 1.5, November 1993*.