INTERNATIONAL STANDARDIZED PROFILE

ISO/IEC ISP 10607-3

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Information technology — International Standardized Profiles AFTnn — File Transfer, Access and Management —

Part 3:
AFT 11 — Simple File Transfer Service (unstructured)

Technologies de l'information — Profil normalisé international AFTnn — Transfert, accès et gestion de fichier —

Partie 3: Service simple de transfert de fichier (non structuré)

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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. In addition to developing International Standards, ISO/IEC JTC 1 has created a Special Group on Functional Standardization for the elaboration of International Standardized Profiles.

An International Standardized Profile is an internationally agreed, harmonized document which identifies a standard or group of standards, together with options and parameters, necessary to accomplish a function or set of functions.

Draft International Standardized Profiles are circulated to national bodies for voting. Publication as an International Standardized Profile requires approval by at least 75 % of the national bodies casting a vote.

International Standardized Profile ISO/IEC ISP 10607-3 was prepared with the collaboration of

— Asia-Oceania Workshop (AOW);

— European Workshop for Open Systems (EWOS);

— NIST OSI Implementors Workshop (NIST OIW).

ISO/IEC ISP 10607 consists of the following parts, under the general title *Information technology — International Standardized Profiles AFTnn — File Transfer, Access and Management*:

— *Part 1: Specification of ACSE, Presentation and Session Protocols for the use by FTAM*

— *Part 2: Definition of document types, constraint sets and syntaxes*

— *Part 3: AFT11 — Simple File Transfer Service (unstructured)*

— *Part 4: AFT12 — Positional File Transfer Service (flat)*

— *Part 5: AFT22 — Positional File Access Service (flat)*

— *Part 6: AFT3 — File Management Service*

Annexes A and B form an integral part of this part of ISO/IEC ISP 10607.

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Introduction

This International Standardized Profile (ISP) is defined within the context of Functional Standardization, in accordance with the principles specified by ISO/IEC TR 10000, "Framework and Taxonomy of International Standardized Profiles". The context of Functional Standardization is one part of the overall field of Information Technology (IT) standardization activities, covering base standards, profiles, and registration mechanisms. A profile defines a combination of base standards that collectively perform a specific well-defined IT function. Profiles standardize the use of options and other variations in the base standards, and provide a basis for the development of uniform, internationally recognized system tests.

One of the most important roles for an ISP is to serve as the basis for the development (by organizations other than ISO and IEC) of internationally recognized tests and test centres. ISPs are produced not simply to "legitimize" a particular choice of base standards and options, but to promote real system interoperability. The development and widespread acceptance of tests based on this and other ISPs is crucial to the successful realization of this goal.

The text for this ISP was developed in close co-operation among the FTAM Expert Groups of the three International OSI Workshops NIST Workshop for Implementors of OSI (NIST OIW), the European Workshop for Open Systems (EWOS) and the OSI Asia-Oceania Workshop (AOW). This ISP is harmonized among these three Workshops and it was finally ratified by the Workshops' plenary assemblies.

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Information technology — International Standardized Profiles AFTnn — File Transfer, Access and Management —

Part 3:
AFT 11 — Simple File Transfer Service (unstructured)

1 Scope

1.1 General

This part of ISO/IEC ISP 10607 (AFT11) covers transfer of files between the filestores of two end systems, using the OSI connection-mode Transport Service to provide the interconnection. One end system acts in the Initiator role and requests access to the file, the other end system acts in the Responder role and provides access to the file in the Virtual Filestore.

These role combinations and the interoperability are shown in table 1.

Table 1 - Interoperable configurations

		Initiator		Responder	
		Sender	Receiver	Sender	Receiver
Initiator	Sender				x
	Receiver			x	
Respon-der	Sender		x		
	Receiver	x			

Transfer of files is supported for files with an unstructured constraint set and containing binary or character data.

This part of ISO/IEC ISP 10607 specifies implementations that support file transfer, i.e. the ability to

a) either read a complete file, or

b) write (replace and/or extend) to a file, or

c) both;

and optionally to

a) create and delete a file, and

b) read the attributes of a file.

This part of ISO/IEC ISP 10607 specifies how the OSI FTAM Application standard shall be used to provide the functions defined above. It does not specify total system capability. In particular, a system may operate this Profile and at the same time engage in other communications. The requirements placed on an implementation in this part of ISO/IEC ISP 10607 are solely those necessary for operation of the protocol specified.

This part of ISO/IEC ISP 10607 describes the actions and attributes of the Virtual Filestore, and the service provided by the file service provider to file service users, together with the necessary communications between the Initiator and the Responder.

1.2 Position within the taxonomy

This part of ISO/IEC ISP 10607 is identified in ISO/IEC TR 10000-2 as "AFT11, Simple File Transfer Service (Unstructured)"

It may be combined with any T-Profiles (see ISO/IEC TR 10000) specifying the OSI connection-mode transport service.

1.3 Scenario

The model used is one of two end systems establishing an association and transferring files into and out of the Responder's Virtual Filestore as shown in figure 1.

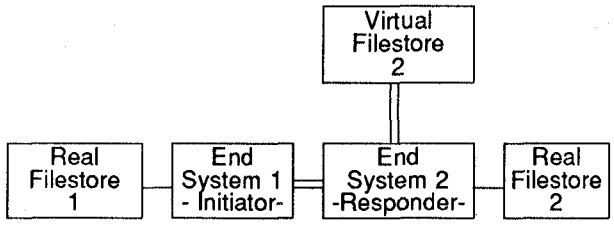

Figure 1 - File transfer between two end systems

Specifications of this part of ISO/IEC ISP 10607 apply on the double lines of figure 1. The mapping between the Virtual Filestore and the Real Filestore together with

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the local data management system is not part of this part of ISO/IEC ISP 10607.

This part of ISO/IEC ISP 10607 defines the selection of specific Virtual Filestore options, file service options and file protocol options. The required functions from the supporting protocol stack of ACSE, Presentation and Session are specified in ISO/IEC ISP 10607-1 (see also table 2).

Table 2 - Profile Stack

Application Layer	ISO 8571 ISO 8650
Presentation Layer	ISO 8824, 8825 ISO 8823
Session Layer	ISO 8327

2 Normative references

The following documents contain provisions which, through reference in this text, constitute provisions of this part of ISO/IEC ISP 10607. At the time of publication, the editions indicated were valid. All documents are subject to revision, and parties to agreements based on this part of ISO/IEC ISP 10607 are warned against automatically applying any more recent editions of the documents listed below, since the nature of references made by ISPs to such documents, is that they may be specific to a particular edition. Members of IEC and ISO maintain registers of currently valid International Standards and ISPs, and CCITT maintains published editions of its current Recommendations.

Amendments and corrigenda to the base standards referenced : See annex B for a complete list of these documents which are used in this part of ISO/IEC ISP 10607.

ISO 646:1983, *Information processing - ISO 7-bit coded character set for information interchange.*

ISO 4873:1986, *Information processing - ISO 8-bit code for information interchange - Structure and rules for implementation.*

ISO 6429:1988, *Information processing - Control functions for 7-bit and 8-bit coded character sets for character imaging devices.*

ISO 6937-2:1983, *Information processing - Coded character sets for text communication - Part 2 : Latin alphabetic and non-alphabetic graphic characters.*

ISO 8327:1987, *Information Processing Systems - Open Systems Interconnection - Basic Connection Oriented Session Protocol Specification.*

ISO 8327/Add.2:---[1], *Information processing systems - Open Systems Interconnection - Basic Connection Oriented Session Protocol Specification - ADDENDUM 2: Incorporation of unlimited user data.*

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 8571-3:1988, *Information processing systems - Open Systems Interconnection - File Transfer, Access and Management - Part 3 : File Service Definition .*

ISO 8571-4:1988, *Information processing systems - Open Systems Interconnection - File Transfer, Access and Management - Part 4 : File Protocol Specification.*

ISO 8571-5:---[1], *Information processing systems - Open Systems Interconnection - File Transfer, Access and Management - Part 5 : Protocol Implementation Conformance Statement Proforma.*

ISO 8650:1988, *Information processing systems - Open Systems Interconnection - Protocol Specification for the Association Control Service Element.*

ISO 8823:1988, *Information processing systems - Open Systems Interconnection - Connection Oriented Presentation Protocol Specification.*

ISO 8824:1987, *Information processing systems - Open Systems Interconnection - Specification of Abstract Syntax Notation One (ASN.1).*

ISO 8825:1987, *Information processing systems - Open Systems Interconnection - Specification of Basic Encoding Rules for Abstract Syntax Notation One (ASN.1).*

ISO 8859-1:1987, *Information processing - 8-bit single-byte coded graphic character sets - Part 1 - Latin alphabet No. 1.*

ISO/IEC TR 10000-1:1990, *Information technology - Framework and taxonomy of International Standardized Profiles - Part 1 : Framework.*

ISO/IEC TR 10000-2:1990, *Information technology - Framework and taxonomy of International Standardized Profiles - Part 2 : Taxonomy of Profiles.*

ISO/IEC ISP 10607-1:1990, *Information technology - International Standardized Profiles AFTnn - File Transfer, Access and Management - Part 1 : Specification of ACSE, Presentation and Session Protocols for the use*

1) To be published.

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by FTAM.

ISO/IEC ISP 10607-2:1990, *Information technology - International Standardized Profiles AFTnn - File Transfer, Access and Management - Part 2 : Definition of document types, constraint sets and syntaxes.*

ISO/IEC ISP 10607-4:---[1], *Information technology - International Standardized Profiles AFTnn - File Transfer, Access and Management - Part 4 : AFT12 - Positional File Transfer Service (flat).*

ISO/IEC ISP 10607-5:---[1], *Information technology - International Standardized Profiles AFTnn - File Transfer, Access and Management - Part 5 : AFT22 - Positional File Access Service (flat).*

ISO/IEC ISP 10607-6:---[1], *Information technology - International Standardized Profiles AFTnn - File Transfer, Access and Management - Part 6 : AFT3 - File Management Service.*

3 Definitions

For the purpose of this part of ISO/IEC ISP 10607, the following definitions apply.

Terms used in this part of ISO/IEC ISP 10607 are defined in the referenced base standards.

In addition, the following terms are defined.

3.1 General

interwork : to be able to communicate to satisfy the intent of the Initiator.

3.2 Support level

To specify the support level of protocol features for this part of ISO/IEC ISP 10607, the following terminology is defined.

3.2.1 supported; m : Any feature denoted by "m" is mandatory or optional in the base standard. That feature shall be supported, i.e. its syntax and procedures shall be implemented as specified in the base standard or in this part of ISO/IEC ISP 10607 by all implementations claiming conformance to this part of ISO/IEC ISP 10607.

However, it is not a requirement that the feature shall be used in all instances of communication, unless mandated by the base standard or stated otherwise in this part of ISO/IEC ISP 10607.

For fully supported attributes, this implies that at least the minimum range of attribute values, as defined in ISO 8571-2, shall be supported unless stated otherwise in this part of ISO/IEC ISP 10607.

NOTES

1 For features which are optional in the base standard, conformant implementations shall be able to interwork with other implementations not supporting this feature.

2 The support of a feature can be conditional, depending on the support of a class of features to which it belongs, e.g. an attribute in an attribute group, a parameter in a PDU, a PDU in a functional unit.

3.2.2 optionally supported; o : Any feature denoted by "o" is left to the implementation as to whether that feature is implemented or not.

If an attribute group with a support level of "o" is chosen to be implemented, then all the attributes in this group that are classified as "m" shall be supported.

If a parameter is optionally supported, then the syntax shall be supported, but it is left to each implementation whether the procedures are implemented or not.

When receiving an optional parameter which is not subject of negotiation and is not supported by the Receiver, the Receiver shall at least inform the Sender by informative diagnostic and interworking shall not be disrupted.

3.2.3 conditionally supported; c : Any feature denoted by "c" shall be supported under the conditions specified in this part of ISO/IEC ISP 10607. If these conditions are not met, the feature is outside the scope of this part of ISO/IEC ISP 10607.

3.2.4 excluded; x : Any feature denoted by "x" is excluded in this part of ISO/IEC ISP 10607, i.e. it shall not be implemented.

3.2.5 outside the scope; i : Any feature denoted by "i" is outside the scope of this part of ISO/IEC ISP 10607, i.e. it may be ignored, and will therefore not be subject of an ISP conformance test. However the syntax of all parameters of supported PDUs shall be implemented, even if the procedures are not (i.e. the Receiver shall be able to decode the PDU).

3.2.6 not applicable; - : Any feature denoted by "-" is not defined in the context where it is mentioned, e.g. a parameter which is not part of the respective PDU. The occurrence of "not applicable" features is mainly due to the format of the tables in the ISPICS Requirements List.

[1] To be published.

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4 Abbreviations

ACSE	Association Control Service Element
AFT	Profile sub-class : File Transfer, Access and Management
CR	Carriage Return
FADU	File Access Data Unit
FPDU	File Protocol Data Unit
FTAM	File Transfer, Access and Management
IA5	International Alphabet No. 5
IRV	International Reference Version
ISP	International Standardized Profile
ISPICS	ISP Implementation Conformance Statement
LF	Line Feed
OSI	Open Systems Interconnection
PCI	Protocol Control Information
PDU	Protocol Data Unit
PICS	Protocol Implementation Conformance Statement

Definitions and abbreviations used in ISO/IEC ISP 10607-3, annex A are defined in ISO 8571.

Support level for protocol features

m	supported
o	optionally supported
c	conditionally supported
x	excluded
i	outside the scope
-	not applicable

5 Conformance

This part of ISO/IEC ISP 10607 states requirements upon implementations to achieve interworking. A claim of conformance to this part of ISO/IEC ISP 10607 is a claim that all requirements in the relevant base standards are satisfied, and that all requirements in the following clauses and in annex A are satisfied. Annex A states the relationship between these requirements and those of the base standards.

5.1 Conformance statement

For each implementation claiming conformance to this part of ISO/IEC ISP 10607 a PICS shall be made available stating support or non-support of each option identified in this part of ISO/IEC ISP 10607.

5.2 FTAM conformance

This part of ISO/IEC ISP 10607 specifies implementation options or selections such that conformant implementations will satisfy the conformance requirements of ISO 8571.

This part of ISO/IEC ISP 10607 includes some additional requirements above those required in ISO 8571-2 for a minimum range of values for the attributes that are supported (as indicated in annex A).

Implementations conforming to this part of ISO/IEC ISP 10607 shall state whether they support the Initiator and/or the Responder role. They shall implement all the supported (m) features (identified in annex A) unless they are part of an unimplemented optional feature. They shall state which optionally supported (o) features are implemented (including a list of supported diagnostics).

6 Virtual filestore

For interworking with implementations conforming to this part of ISO/IEC ISP 10607, the Virtual Filestore is restricted to files within the unstructured constraint set. The defined actions are restricted to actions on whole files.

The support for file and filestore characteristics, file actions, attribute groups and attributes is as specified in annex A.

6.1 Filenames

Apart from the minimum conformance requirements specified in ISO 8571-2, filenames have to be specified in the naming convention of the responding FTAM implementation. It is a local implementation matter of the FTAM Responder, whether or not additional name mapping onto the real filestore's filename convention is supported.

A Responder shall not require an Initiator to use multiple component GraphicString filenames. Requests using a single-component filename value with a sequence of one GraphicString shall be responded to using a single-component filename value. Use of multiple-component sequences of GraphicString is outside the scope of this ISP.

6.2 Permitted actions file attribute

The values for the "permitted actions" attribute are not restricted by this part of ISO/IEC ISP 10607 (see also ISO 8571-1 figure 5 and ISO 8571-2, 12.2).

6.3 Format effectors

When a single format effector for vertical (or horizontal) movement is optionally permitted to effect a combined vertical and horizontal movement, implementations shall not use this single format effector for effecting the combined vertical and horizontal movement.

NOTES

1 For further information see ISO 646:1983, 4.1.2.2 and 6.4; ISO 6429:1988, E.1.2; and ISO 4873:1986, A.3.2.

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2 This part of ISO/IEC ISP 10607 requires only support of C0 control characters of ISO 646, containing among others the format effectors <CR> and <LF>. Implementations should use <CR> <LF> pairs as line terminators.

6.4 Document type FTAM-1 Unstructured Text

For FTAM-1 the support level for combinations of "universal-class-number" and "string-significance" parameters is as specified in table 3.

Table 3 - string significance, universal class number

string significance / universal class number	variable	fixed	not-significant
26 Visible String	m	m	i
22 IA5 String	i	i	m
25 Graphic String	m	m	i
27 General String	i	i	m

All other values and combinations are outside the scope of this part of ISO/IEC ISP 10607.

6.5 Document type NBS-9 File Directory File

Creation and deletion of NBS-9 files are outside the scope of this part of ISO/IEC ISP 10607.

When reading an NBS-9 document, a Responder is only required to return the "filename" attribute values, subject to local security and access control. All other requested attributes need not be returned.

6.6 Document type INTAP-1 Record File

The support of the transfer syntax INTAP-TS1 is an option. INTAP-1 may be implemented without supporting the compression method as defined in INTAP-TS1.

7 File protocol

To support the internal file service identified in this part of ISO/IEC ISP 10607, the basic file protocol and the basic bulk data transfer protocol are included. The error recovery file protocol machine, which may be null depending upon whether the recovery or restart functional units are in use, is used to provide the external file service specified in this part of ISO/IEC ISP 10607. Annex A summarizes the characteristics of the file protocol.

7.1 Length of FPDUs

FTAM protocol machines shall be able to parse and process at a minimum 7 k octets of FTAM PCI, FTAM structural and FTAM user data (including grouped FPDUs) as they would be encoded with the ASN.1 Basic Encoding Rules.

7.2 File service class

An Initiator implementation shall include the "transfer" class in the F-INITIALIZE request PDU.

7.3 Diagnostic parameter

A value for the "diagnostic" parameter in a response FPDU shall be sent when the "action result" or "state result" parameters are not "success".

For the "diagnostic" parameter of F-INITIALIZE, F-P-ABORT and F-RECOVER PDUs, the term "suggested delay" shall be supported if the Recovery functional unit is implemented.

7.4 Passwords

The parameters "filestore-password" for F-INITIALIZE PDU and "create-password" for F-CREATE PDU shall be supported for Initiators and are optionally supported for Responders.

If the security attribute group is supported, the "access passwords" parameters for F-SELECT, F-CREATE and F-RECOVER PDUs shall be supported for Initiators and are optionally supported for Responders.

7.5 Initiator identity

The parameter "initiator identity" of F-INITIALIZE PDU shall be supported both by Initiator and Responder implementations.

7.6 Initiator identity, passwords and account

An Initiator must be capable of both sending and not sending Initiator identity, Filestore password, Access passwords, Create password and, if implemented, Account to satisfy the requirements of a Responder.

The contents of the Initiator identity, Filestore password, Access passwords, Create password and Account shall be in the convention of the responding implementation.

7.7 Presentation contexts

Values of the "presentation context management" parameter other than "false" are outside the scope of this part of ISO/IEC ISP 10607. Therefore, the "contents type list" parameter of F-INITIALIZE PDU shall be used in all instances of communications.

7.8 FTAM quality of service

This part of ISO/IEC ISP 10607 specifies no relation between the values of the "ftam-quality-of-service" parameter and the selection of Restart-data-transfer or Recovery functional units.

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7.9 Recovery-mode parameter

Responder implementations supporting the Restart-data-transfer or the Recovery functional unit shall be able to negotiate the "recovery-mode" parameter value to a value other than "none" from the value received in an F-OPEN request.

7.10 Recommendations

7.10.1 The optional Limited-file-management functional unit is used to create and delete a file. Therefore, this functional unit should be supported.

7.10.2 Since F-CANCEL is more effective when mapped onto P-RESYNCHRONIZE, implementations should support the session resynchronize functional unit.

7.10.3 The "implementation-information" parameter of F-INITIALIZE may be used to pass information as a series of values, separated by ";" (for example "AFT11; ENV-41204; NBS-Phase2; NBS-Phase3; INTAP-AP111").

7.10.4 If the "concurrency control" parameter is not supported, the following file locks should apply:

a) If the "requested-access" parameter includes only the "read" or "read attribute" action, then:

requested action	- shared/exclusive (local choice)
not requested read attribute action	- not required
all other write actions	- no access

b) If the "requested access" parameter includes at least one of the "replace", "extend" or "delete file" actions, then:

requested actions	- exclusive
all other actions	- no access

If the "concurrency-control" parameter is supported but not present, then the file locks specified above should also be applied by default.

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Annex A

(normative)

ISPICS Requirements List for ISO/IEC ISP 10607-3 (AFT11)

In the event of a discrepancy becoming apparent in the body of this part of ISO/IEC ISP 10607 and the tables in this annex, this annex is to take precedence.

This annex specifies the constraints and characteristics of ISO/IEC ISP 10607-3 on what shall or may appear in the implementation columns of an ISPICS. This annex is completely based on ISO 8571-5. It uses only a selection of the tables from ISO 8571-5 which are necessary for the specification of the ISP status, and retains their numbering, in order to facilitate for an implementor to fill in the respective PICS Proforma.

The terminology is used as defined in ISO 8571-5. In addition, the status of this part of ISO/IEC ISP 10607, i.e. the conformance requirements, is specified in the I- and R-columns of the tables in this annex, using the terms as defined in 3.2 of ISO/IEC ISP 10607-3.

Section one : (void)

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Section 2 : General ISO 8571 Detail

A.3 ISO 8571 Protocol versions

1	FTAM protocol version number(s)	1

A.4 ISO 8571 Addenda

1	ISO 8571-1	—
2	ISO 8571-2	—
3	ISO 8571-3	—
4	ISO 8571-4	—
5	ISO 8571-5	—

A.5 Defect report numbers and amendments

see annex B

A.6 Global statement of conformance

1	Does ISO/IEC ISP 10607-3 conform to ISO 8571 ?	**yes**

A.7 Initiator / Responder capability

	ROLES	D	I	R
1	Sender	o	o	o
2	Receiver	o	o	o

A.8 Application context name details

1	**ISO 8571-4 defines a value for a simple transfer mechanism. Other values are not defined in this part of ISO/IEC ISP 10607.**

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