Stable Implementation Agreements for Open Systems Interconnection Protocols: Part 10 - FTAM Phase 3

Output from the December 1993 Open Systems Environment Implementors' Workshop (OIW)

SIG Chair: **Joe Mohen, Proginet**
SIG Editor: **Larry Friedman, Digital Equipment Corporation**

Foreword

This part of the Stable Implementation Agreements was prepared by the File Transfer, Access and Management Special Interest Group (FTAM SIG) of the Open Systems Environment Implementors' Workshop (OIW). See Part 1 - Workshop Policies and Procedures of the "Draft Working Implementation Agreements Document" for the charter.

Text in this part has been approved by the Plenary of the above-mentioned Workshop. This part replaces the previously existing chapter on this subject. There is no significant technical change from this text as previously given. References to Part 9 are made in this part.

Future changes and additions to this version of these Implementor Agreements will be published as change pages. Deleted and replaced text will be shown as struck. New and replacement text will be shown as shaded.

Table of Contents

List of Tables

Part 10 - File Transfer, Access and Management Phase 3

Editor's Note - The "NBS" designation remains in effect for document types, abstract syntaxes, and constraint sets defined in all FTAM agreements up to 1/1/89. After 1/1/89, any new functionality references the "NIST" designation. This is to reflect the change in identifying organization from "NBS" to "NIST."

0 Introduction

This clause contains Implementors Agreements based on ISO 8571 File Transfer, Access and Management. These Agreements define enhancements to the Stable FTAM Implementation Agreements for OSI Protocols, Version 1, Edition 1, December 1987 (FTAM Phase 2 Agreements, NBS 500-150), including all their subsequent Errata changes through Version 4, Edition 1 (NIST Special Publication 500-183, this document part 9).

Therefore it is assumed that the reader is familiar both with the contents of the base standard ISO 8571 and its underlying layers, and also with the above-mentioned NIST FTAM Phase 2 specifications.

Phase 2 Agreements define six Implementation Profiles which are T1, T2, T3, A1, A2, and M1. In order to avoid ambiguity when referring to these Implementation Profiles the above designations will apply only to Phase 2 functionality, references to Phase 3 enhanced Implementation Profiles will be by the addition of a ".3," i.e., T1.3, T2.3, T3.3, A1.3, A2.3, and M1.3.

The following clauses specify the functionality of OIW FTAM Phase 3:

a) Clauses 1 and 8 specify the technical details of FTAM Phase 3 which are defined in addition to the functionality of FTAM Phase 2. Included is also a status overview regarding statements on Phase 2/Phase 3 compatibility and interworking;

b) Annex A is a Profile Requirements List for the Implementation Profiles T1.3, T2.3, A1.3 and M1.3, summarizing all features of FTAM Phase 3, including those of FTAM Phase 2. This Profile Requirements List is fully based on the FTAM PICS Proforma ISO 8571-5;

c) Annex B is an index of Object Identifiers. It is the official NIST OIW Register of NIST OIW defined FTAM objects. It contains the Object Descriptors and Object Identifiers for these objects, including a reference to the clause in the NIST OIW Stable Agreements where the respective object is being defined;

d) Annexes C, D, and E provide definitions for additional document types, constraint sets and abstract syntaxes;

1 Scope

These Phase 3 Agreements specify additional functionality to the FTAM Phase 2 Agreements. These additional functions include:

Further specifications of document types;

Specification for Restart Data Transfer and Recovery functional units;

Specification of FADU Locking functional unit;

More details on Access Control and Concurrency Control.

All Phase 2 systems are upward compatible to a Phase 3 system and can therefore interwork with it, if the additional functions are negotiated out (e.g., use of Recovery) or not used for the interconnection (e.g., additional features for document types).

2 Normative References

Amendments and corrigenda to the base standards referenced: See annex G for a complete list of these documents.

ISO 8571-1: 1988(E), Information Processing Systems - Open Systems Interconnection - File Transfer, Access and Management Part 1: General Introduction

ISO 8571-2: 1988(E), Information Processing Systems - Open Systems Interconnection - File Transfer, Access and Management Part 2: Virtual Filestore Definition

ISO 8571-3: 1988(E), Information Processing Systems - Open Systems Interconnection - File Transfer, Access and Management Part 3: The File Service Definition

ISO 8571-4: 1988(E), Information Processing Systems - Open Systems Interconnection - File Transfer, Access and Management Part 4: File Protocol Specification

3 Status

These FTAM Phase 3 Agreements were completed December 15, 1989. No further enhancements will be made to this version (see also next clause ERRATA).

The following tables summarize the functions and features which are defined for FTAM Phase 3 in addition to the FTAM Phase 2 specifications. They also state the degree of possible interworking and the backward compatibility.

Table 1 - Phase 2/Phase 3 Interworking

Additional requirements in FTAM phase 3	Backward compatibility to FTAM phase 2
FTAM-1: GraphicString,VisibleString FTAM-2: VisibleString create-password parameter for Initiator Profile M1.3: Requires support of (1)-T service class including Limited File Management FU, Enhanced FM FU; TM service class including Enhanced FM FU or (2)-A service class including Limited File Management FU, Enhanced FM FU	full backward compatibility if the additional features of Phase 3 are not being used (character sets in FTAM-1, -2), or not requested by an Initiator (functional units) or not required by a Responder (parameters) not requested by an Initiator (functional units)

Table 1 - Phase 2/Phase 3 Interworking (continued)

Additional optional features in FTAM phase 3	Backward compatibility to FTAM phase 2
FTAM-2: GeneralString, IA5String	
FTAM-4	
NBS-8 in T2.3, A1.3	
NBS-9 in A1.3, A2.3	
NBS-10	
NBS-11	
NBS-12	
Recovery functional unit	
Restart-data-transfer functional unit	full backward compatibility if the additional features of Phase 3 are not requested, negotiated out or not being used
FADU-locking functional unit and FADU-lock parameters in A1.3, A2.3	
Concurrency-control parameter for Initiator	
Concurrency-control parameters for Responder	
create-password parameter for Responder	
location-field of access-control element	
suggested-delay term of diagnostic parameter supported conditionally on Recovery functional units	

Table 1 - Phase 2/Phase 3 Interworking (concluded)

Relaxation for FTAM phase 3	Backward compatibility to FTAM phase 2
Profiles A1.3, A2.3 do not require transfer service class no minimum requirements for maximum-string-length parameters for document types	if T service class not being used if a Phase 3 system stays below this minimum requirement

4 Errata

Table 2 - List of Errata

No. of errata	Type	Referenced document	Clause	Description
CP 3/91-1	Editorial	NIST-SP 500-183	All	Update to ISO style. General formatting and error corrections. Alignment with the wording of the ISP. Consistent naming conventions.
CP 6/91-1	Editorial	NIST-SP 500-183	8.6.1 A.13.9.1.2 A.13.9.1.3 A.13.9.1.4	Previous errata changed the Profile Requirements List (PRL) support of Concurrency Control from "m" to "o". This change was not reflected. Alignment with the ISP.

No. of errata	Type	Referenced document	Clause	Description
CP 9/91-1	Editorial	NIST SP 500-183	Table 4	Include "FTAM" in object descriptor for consistency with other OIW FTAM objects.
CP 9/91-2			Table 5	Add definition for Datatype3
CP 9/91-2			Table 8	Delete last line of Write Whole File [previous change incomplete].
CP 9/91-3			Clause 2	Add reference to corrigenda.
CP 9/91-4			A.12.16.1 A.12.16.5 A.12.17.1 A.12.17.5	Support level from "o" to "m". Add note that must support at least one action. Add note about supporting at least one optional FU.
CP 9/91-5			A.13.6.1 A.13.6.2	Change to spelling of ASN.1 text types.
CP 9/91-6			C.2.7 C.2.9.1 C.2.9.2	Changes to add Datatype3 to text descriptions
CP 9/91-7			C.1.11.1 C.2.11.1 C.3.11.1	"Structural Simplification" to "Simplification"
CP 9/91-8			E.1 E.2 E.3	Changed "will" to "can"
CP 9/91-9			Annex B	Added Editors note of intention to remove object definitions when the ISP is published.
CP 9/91-10			Added Annex G	New annex to list corrigenda

5 Conformance

In addition to the specific requirements specified in the following subclauses, conformance to this Phase 3 specification requires

conformance to ISO 8571: 1988

conformance to Phase 2 FTAM, unless specified otherwise in this part 10.

The access Profiles A1.3 and A2.3 do not include the requirement for transferring files using the File Transfer service class.

6 Assumptions

FTAM Phase 3 Agreements specify additional functionality to the Implementation Profiles T1, T2, T3, A1, A2, and M1 as defined in the FTAM Phase 2 Agreements. So all definitions and requirements for these Implementation Profiles apply also to the Phase 3 Agreements.

7 Filestore Agreements

7.1 Document Types

In addition to the Phase 2 Document Type Agreements the document types FTAM-4 (see ISO 8571-2, Annex B) and NBS-10, NBS-11, NBS-12 (see Annex C) are defined for optional support.

Table 2 gives the support levels for all document types with respect to the Implementation Profiles.

For FTAM-1, FTAM-2, FTAM-3 and FTAM-4 the supported parameter values for <universal class number> and <string significance>, respectively are listed. Other values are outside the scope of these Agreements. No restriction or minimum requirement is defined for the <maximum string length> parameter of these document types.

Table 3 - Implementation Profiles and Document Types - FTAM-1 Through FTAM-4

Implementation Profile (Note 1)	Document Type	Universal Class Number (Notes 1,3,4,5)	String Significance
T1.3, T2.3, T3.3, A1.3, A2.3	FTAM-1	GraphicString (25)	‘variable’ ’fixed’
		VisibleString (26)	‘variable’ ’fixed’
		GeneralString (27)	‘not-significant’
		IA5String (22)	‘not-significant’
T2.3, T3.3, A1.3, A2.3	FTAM-2	GraphicString (25)	‘not-significant’
		VisibleString (26)	‘not-significant’
		[GeneralString (27)]	‘not-significant’
		[IA5String (22)]	‘not-significant’
T1.3, T2.3, T3.3, A1.3, A2.3	FTAM-3	-	‘not-significant’
[T2.3], [T3.3], [A1.3], [A2.3]	FTAM-4	-	‘not-significant’

Table 3 - Implementation Profiles and Document Types - NBS-6 Through NBS-11 (continued)

Implementation Profile (Note 1)	Document Type
[T2.3], T3.3, [A1.3], A2.3	NBS-6
[T2.3], T3.3, [A1.3], A2.3	NBS-7
[T2.3], T3.3, [A1.3], A2.3	NBS-8
[T1.3], [T2.3], [T3.3], [A1.3], [A2.3]	NBS-9
[T2.3], [T3.3], [A1.3], [A2.3]	NBS-10
[T2.3], [T3.3], [A1.3], [A2.3]	NBS-11

Table 3 - Implementation Profiles and Document Types - NBS-12 (concluded)

Implementation profile (Note 1)	Document type	Universal class number	Character-set escape sequences as defined for reg. numbers C0 G0 G1	String-significance
[T2.3], [T3.3], [A1.3], [A2.3]	NBS-12 See Note 6	IA5String [22]	(parameter absent)	'variable' 'fixed'
		GraphicString [25]	(parameter absent)	'variable' 'fixed'
		GraphicString [25]	- 6 100	'variable' 'fixed'
		VisibleString [26]	(parameter absent)	'variable' 'fixed'
		GeneralString [27]	(parameter absent)	'variable' 'fixed'
		GeneralString [27]	1 6 100	'variable' 'fixed'

NOTES

1 Brackets around a Profile designator or a parameter value indicate that the respective document type or parameter value is optionally supported in this Implementation Profile.

2 The support level for document types in Implementation Profile M1.3 depends on the T- or A-Implementation Profile, in conjunction with which M1.3 is implemented.

3 The support for IA5 String is the ISO 646, IRV GO character set and the ISO 646, IRV CO set.

4 The minimum level of support for Graphic String is the ISO 646, IRV GO character set and the 8859-1 GO and G1 sets.

5 The minimum level of support for General String is the ISO 646, IRV GO character set and the 8859-1 GO and G1 sets, and ISO 646, IRV CO set.

6 If the Character-Set parameter is absent, the following defaults apply:

Universal-class-number		Default registration numbers CO	GO	G1
IA5String	[22]	1	2	-
GraphicString	[25]	-	2	-
VisibleString	[26]	-	2	-
GeneralString	[27]	1	2	-

Registration number	Content	Escape Sequence
1	CO set of ISO 646	ESC 2/1 4/0
2	ISO 646, IRV	-
6	ISO 646, USA Version-X 3.4 - 1968 (Left-hand part of ISO 8859-1)	ESC 2/8 4/2
100	Right-hand part of Latin Alphabet No 1 ISO 8859-1, ECMA-94	ESC 2/13 4/1

7.2 FADU Identities

In addition to the Phase 2 FADU Identity Agreements the following is specified:

> For the document type NBS-11 used in conjunction with the Transfer service class or the Transfer and Management service class, the support of the FADU identities of "current," "next," "previous" and "end" is outside the scope of these Agreements.

7.3 Access Control Attribute

The location field of access control element is optionally supported. It is the implementor's choice which combinations of fields in an access control element are supported. The ACE combination should be stated in the PICS.

8 Protocol Agreements

8.1 Implementation Profile M1.3

The functions defined for the Implementation Profile M1.3 shall always be implemented in conjunction with one or more of the Implementation Profiles T1.3, T2.3, A1.3, or A2.3. The service classes and functional units that shall be implemented are specified in Annex A, A.12.4 and A.12.5.

For an implementation supporting the Profile M1.3 in conjunction with T1.3 or T2.3, any of the service classes Transfer, Management or (Transfer, Management, Transfer-and-Management) may be requested and any of the classes Transfer, Management, Transfer-and-Management may be responded on F-INITIALIZE.

For an implementation supporting the Profile M1.3 in conjunction with A1.3 or A2.3, any of the service classes Access or Management may be requested and responded on F-INITIALIZE.

8.2 Functional Units

For FTAM Phase 3 implementations Recovery and Restart Data Transfer are optionally supported.

FADU locking is optionally supported for Implementation Profiles A1.3 and A2.3.

8.3 Implementation Information Parameter

In addition to the Agreements as specified for FTAM Phase 2, part 9 clause 12 , the following value is defined

NBS-Phase3.

8.4 F-Check

In order to maximize interoperability, implementations of FTAM service providers should not restrict the amount of data transmitted between successive F-CHECK requests to a single quantity. Variations in the amount of data transmitted between checkpoints may be required to accommodate differences in real end systems supporting FTAM Virtual Filestores and/or in the communications media underlying FTAM associations. It is required that all FTAM implementations are able to receive at least one PSDU between checkpoints.

8.5 Error Recovery

Procedures for Class I, II and III errors are defined and supported for FTAM Phase 3 implementations. It is the implementor's choice whether to handle class I errors using F-RESTART PDUs or whether to use the class II error procedure.

8.5.1 Docket Handling

When a class III error occurs, the length of time a docket is maintained is determined by the local system. Recovery from a class III error is only possible as long as both end systems maintain the docket.

It is also a local decision how many dockets can be maintained simultaneously.

8.5.2 Parameters for Error Recovery

The following information is given:

The semantics of the <FTAM quality of service> parameter is as defined in ISO 8571; including the local knowledge of FERPM;

No minimum requirement for the <checkpoint window> parameter or the checkpoint size is defined;

For the <recovery mode> parameter of F-OPEN, the values "none" and "at-start-of-transfer" are supported. The value "at-any-active-checkpoint" is optionally supported. If recovery mode "at-start-of-transfer" is negotiated, no F-CHECK shall be issued. When recovering at the start of the transfer, the <recovery point> value of 0 shall be used;

It is required that Responders implementing the Restart-data-transfer or the Recovery functional unit must be able to negotiate <recovery mode> parameter to a value other than "none";

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. The Basic FERPM should wait at least the amount of time as given by the <suggested delay> term before attempting to recover.

8.6 Concurrency Control

8.6.1 Concurrency Control to whole file

If <concurrency control> parameters are supported, details of their possible usage is a local matter and shall be specified in the PICS.

Default values for concurrency control are as specified for FTAM Phase 2 Agreements.

No minimum requirement is defined for <concurrency control> parameter values.

For a first accessor either the specified concurrency locks or the default values are assigned. For a subsequent accessor the access to a file is granted only if this concurrency control requirement, as specified in this concurrency control parameter or given by the default values, can be met. Otherwise the subsequent request shall be rejected.

8.6.2 FADU Locking

FADU locking functional unit and the respective <FADU lock> parameters are optionally supported for the Implementation Profiles A1.3 and A2.3.

It is understood that ISO 8571-4 Clause 18.4 also applies to FADU locks; that means that as long as a docket is maintained, FADU locks locking any FADUs recorded in that docket should be maintained.

8.7 Create Password

The <create password> parameter for an implementation acting as an Initiator is supported. This parameter is optionally supported for an implementation acting as a Responder.

8.8 Initiator Identity, Passwords and Account

An Initiator must be capable of sending and not sending the parameters <initiator identity>, <filestore password>, <access passwords> and <create password> to satisfy the requirements of the Responder.

The contents of the <initiator identity>, <filestore password>, <access passwords>, <create password> and <account> parameters shall be in the convention of the responding implementation.

9 Range of Values for Integer-Type Parameter

In addition to the parameters specified for FTAM Phase 2 under the same heading, the parameters

F-RECOVER request
  bulk-transfer-number
NBS-AS3
NBS-Node-Name
  starting-fadu
  fadu-count

may be encoded so that the length of its contents octets is no more than eight octets.

The following Editor's notes refer to Annex A:

> **Editor's Note -** The page numbering of the PICs tables may not be aligned with the text of this document. The reason for this problem is that the PICs tables are coded using a different wordprocessor. The tables are being converted, but until this is completed the page numbering, and format of the tables may be aligned with the text of this document.

In the event of a discrepancy becomming apparent in the body of these agreements and the tables in this annex, this annex is to take precedence.

> **Editor's Note -** Delete lines A.13.9.1.2, A.13.9.1.3, A.13.9.1.4, when the PICS tables are converted to WordPerfect Version 5.1 format.

> **Editor's Note -** Change table A.5 to reference Annex G. See ISO/IEC ISP 10607-4:1990 A.5. When Annex A is converted to Wordperfect V5.1.

> **Editor's Note -** A.12.16.1, A.12.16.5, A.12.17.1, and A.12.17.5 replace the "o" with "m" in the A1.3 column. Add a note to tables A.12.16 and A.12.17 "For the profile A1.3, the support of at least one of insert, replace, or extend is required." Also add a note to tables A.12.16 and A.12.17 " For profiles T1.3 and T2.3, the support of at least one of read, insert, replace or extend is required." When Annex A is

converted to WordPerfect V5.1.

Editor's Note - A.13.6.1, and A.13.6.2 change parameter names to "Universal time," "Generalized time," "IA5String," "Boolean," "Bit," "Integer." When Annex A is converted to WordPerfect V5.1.

Annex A (normative)

Profile Requirements List for NIST OIW FTAM Phase 3

0 Introduction

This annex to NIST FTAM Phase 3 Agreements defines a Profile Requirements List (PRL) for the Implementation profiles:

T1.3 - Simple File Transfer

T2.3 - Positional File Transfer

A1.3 - Simple File Access

M1.3 - Management

This annex specifies the constraints and characteristics of NIST OIW FTAM Phase 3 on what shall or may appear in the supplier columns of an FTAM Phase 3 PICS. 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 FTAM Phase 3 status, and retains their numbering, in order to facilitate for a supplier to fill in the respective PICS Proforma.

This annex is a summary of all definitions of FTAM Phase 3 as they appear in the Stable Implementation Agreements for OSI Protocols, Version 5 Edition 1, December 1991, parts 9 and 10.

A.0.1 Conformance requirement of Base Standards

The D-column of clauses A.1 to A.13 specifies the conformance requirement of the base standards ISO 8571, as written in ISO 8571-5. The definitions apply as defined in ISO 8571-5, clause 8.1:

m - mandatory support
o - optional support
f - full support of attributes
p - partial support of attributes
- - not applicable

A single value in the D-column applies to the Initiator role of a system as well as to the Responder role. If two values are specified in the D-column separated by a space, they apply to the Initiator (I) role and to the Responder (R) role, respectively.

A.0.2 Conformance requirement of Profiles

The Conformance requirement of the Implementation Profiles is specified in the "Profiles" column/columns in clauses A.1 to A.13. The following convention is applied for this purpose:

a "PROFILES" column is valid for all Profiles T1.3, T2.3 and M1.3

if different conformance requirements apply to different Profiles, separate columns are included in the tables, each bearing the corresponding Profile name as its heading, or separate tables for these Profiles are used

a single value in these columns applies to the Initiator as well as to the Responder role of an implementation

if two values are specified in a column separated by a space, they apply to the Initiator (I) role and to the Responder (R) role, respecitvely.

For the conformance requirements of the NIST FTAM Phase 3 Profiles the following abbreviations are used.

mandatory; m:

This is a mandatory or optional feature in the base standard. It shall be supported, i.e., its syntax and procedures shall be implemented as specified in the base standard or in FTAM Phase 3 by all implementations claiming conformance to the Profile.

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 FTAM Phase 3.

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

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.

optional; o:

It is left to the implementation as to whether this feature is implemented or not.

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

The support for PDUs is determined by the negotiation of functional units when the connection is established.

If a parameter is optionally supported, then its syntax shall be implemented, but it is left to each implementation whether its 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 land interworking shall not be disrupted.

conditional;c:

This feature shall be supported under the conditions specified in FTAM Phase 3. If these conditions are not met, the feature is outside the scope of the Profile.

excluded; x:

This feature is excluded from the Profile. The implementor's answer in the PICS shall always be "no."

outside the scope; i:

This feature is outside the scope of the Profile, i.e., it many be ignored, and will therefore not be subject of a Profile conformance test. However, the syntax of all parameters of supported PDUs shall be implemented, even if their procedures are not (i.e., the Receiver shall be able to decode the PDU).

not applicable; -:

This feature 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 Phase 3 Profiles Requirements List.

Section 1

A.1 (void)

A.2 (void)

Section 2: General ISO 8571 Detail

A.3 ISO 8571 Protocol versions

1	FTAM protocol version number(s)	**version-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

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

A.6 Global statement of conformance

1	Does FTAM Phase 3 conform to ISO 8571?	**yes**

A.7 Initiator/Responder capability

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

NOTE - See part 9, 18.1.

A.8 Application Context Name details

1	ISO 8571-4 defines a value for a simple transfer mechanism. Other values are not defined for FTAM Phase 3 (see part 9 5.9).

Section 3: Syntax Detail

A.9 Abstract syntaxes

	Object Descriptor	Object Identifier	D	T1.3	T2.3	A1.3	M1.3
1	**FTAM PCI**	{iso standard 8571 abstract-syntax(2) ftam-pci(1) }	m	m	m	m	m
2	**FTAM FADU**	{iso standard 8571 abstract-syntax(2) ftam-fadu(2) }	o	i	m	m	i
3		{joint iso ccitt association-control(2) abstract-syntax(1) apdus(0) version1(1) }	m	m	m	m	m
4	**FTAM unstructured text abstract syntax**	{iso standard 8571 abstract-syntax(2) unstructured-text(3) }	o	m	m	m	-
5	**FTAM unstructured binary abstract syntax**	{iso standard 8571 abstract-syntax(2) unstructured-binary(4) }	o	m	m	m	-
6	**NBS file directory entry abstract syntax**	{iso identified-organization oiw(14) ftamsig(5) abstract-syntax(2) nbs-as2(2) }	-	c	c	c	-
7	**NBS abstract syntax AS1**	{iso identified-organization oiw(14) ftamsig(5) abstract-syntax(2) nbs-as1(1) }	-	i	c	c	-
8	**NBS random access node name abstract syntax**	{iso identified-organization oiw(14) ftamsig(5) abstract-syntax(2) nbs-node-name(3) }	-	i	c See Clause 9	c	-
9	**NBS random binary access file abstract syntax**	{iso identified-organization oiw(14) ftamsig(5) abstract-syntax(2) nbs-random-binary(4) }	-	i	c	c	-
10	**NBS simple text abstract syntax**	{iso identified-organization oiw(14) ftamsig(5) abstract-syntax(2) nbs-simple-text(5) }	-	i	c	c	-

NOTES

1 The abstract syntaxes which are supported in the Implementation Profile M1.3 depend on the T-or A-Profile in conjunction with which M1.3 is implemented.

2 The support requirements for the conditional abstract syntaxes depend on the constraint sets and document types which are implemented (see clause A.13).

3 ISO 8571 requires the presence of the transfer syntax derived fromthe "Basic Encoding of a single ASN.1 type" "{joint-iso-ccitt asn1 (1) basic-encoding (1)} encoding rules fortransfer of the "FTAM-FADU" abstract syntaxes. Implementation detail of this transfer syntax, and other transfer syntaxes supported, is specified in the PICS of ISO 8823.

Section 4: Virtual Filestore Detail

A.10 Virtual filestore

This clause details the conformance to the file model, file attribute support and to file structure support.

A.10.1 File model

	FILE MODEL	D	PROFILES R
1	Hierarchical	o	m
	Other models		i

A.10.2 Attributes

A.10.2.1 Attribute groups

	ATTRIBUTE GROUP NAME	D	PROFILES
1	Kernel	m	m
2	Storage	o	o
3	Security	o	o
4	Private	o	i

A.10.2.2 Attribute values

	KERNEL GROUP(INITIATOR)	D	PROFILES I full	RANGE OF VALUES
1	Filename	f	m	see A.10.2.3
2	Permitted Actions	f	m	
3	Contents Type	f	m	see A.12.7

	KERNEL GROUP (RESPONDER)	D	PROFILES R full	RANGE OF VALUES
4	Filename	f	m	see A.10.2.3
5	Permitted Actions	f	m	
6	Contents Type	f	m	see A.12.7

	STORAGE GROUP (INITIATOR)	D	PROFILES I full	RANGE OF VALUES
7	Storage account	f	m	
8	File availability	f	m	
9	Future filesize	f	m	see part 9, 17.9

NOTE - An initiator shall not partially support attributes

	STORAGE GROUP (RESPONDER)	D	PROFILES R full	R partial	RANGE OF VALUES
10	Storage account	p	o	o	
11	Date and time of creation	p	o	o	
12	Date and time of last modification	p	o	o	
13	Date and time of last read access	p	o	o	
14	Date and time of last attribute modification	p	o	o	
15	Identity of creator	p	o	o	
16	Identity of last modifier	p	o	o	
17	Identity of last reader	p	o	o	
18	Identity of last attribute modifier	p	o	o	
19	File availability	p	m	x	
20	Filesize	p	m	x	see part 9 17.9
21	Future filesize	p	o	o	see part 9 17.9

	SECURITY GROUP (INITIATOR)	D	PROFILES I full	RANGE OF VALUES
22	Access control	f	m	see A.12.2
23	Legal qualifications	f	m	

NOTE - An initiator shall not partially support attributes

	SECURITY GROUP (RESPONDER)	D	PROFILES R full	R partial	RANGE OF VALUES
24	Access control	p	m	x	see A.12.2, part 9, 9.2
25	Legal qualifications	p	o	o	

A.10.2.3 Filename detail

See part 9 9.1

A.10.3 File structures

A.10.3.1 Constraint sets

	CONSTRAINT SET NAME	D	T1.3	T2.3	A1.3	M1.3
1	Unstructured	o	m	m	m	-
2	Sequential Flat	o	i	m	m	-
3	Ordered flat	o	i	o	o	-
4	Ordered flat with unique names	o	i	o	o	-
5	Ordered hierarchical	o	i	i	i	-
6	General hierarchical	o	i	i	i	-
7	General hierarchical with unique names	o	i	i	i	-
8	NBS ordered flat	-	i	o	o	-
9	NBS random access access	-	i	o	o	-

A.10.3.2 File and filestore actions

A.10.3.2.1 Filestore Actions

Support for filestore actions is dependent upon the functional units implemented (see A.12.4 and A.12.5)

A.10.3.2.2 File Actions

	RESPONDER ACTION	**CONSTRAINT SET unstructured D**	**T1.3**
1	Locate	---	---
2	Read	o	o
3	Insert	---	---
4	Replace	o	o
5	Extend	o	o
6	Erase	o	i

	Responder	CONSTRAINT SET											
		unstructured		sequential flat		ordered flat		ordered flat with unique names		NBS ordered flat		NBS random access	
	Action	D	T2.3	D	T2.3	D	T2.3	D	T2.3	D	T2.3	D	T2.3
7	Locate	--	--	o	i	o	i	o	i	--	i	--	i
8	Read	o	o	o	o	o	o	o	o	--	o	--	o
9	Insert	--	--	o	o	o	o	o	o	--	o	--	o
10	Replace	o	o	--	--	o	o	o	o	--	o	--	o
11	Extend	o	o	--	--	o	o	o	o	--	--	--	--
12	Erase	o	i	o	i	o	i	o	i	--	i	--	i

		CONSTRAINT SET											
	Responder	unstructured		sequential flat		ordered flat		ordered flat with unique names		NBS ordered flat		NBS random access	
	Action	D	A1.3	D	A1.3	D	A1.3	D	A1.3	D	A1.3	D	A1.3
13	Locate	--	--	o	o	o	o	o	o	--	o	--	o
14	Read	o	o	o	o	o	o	o	o	--	o	--	o
15	Insert	--	--	o	o	o	o	o	o	--	o	--	o
16	Replace	o	o	--	--	o	o	o	o	--	o	--	o
17	Extend	o	o	--	--	o	o	o	o	--	--	--	--
18	Erase	o	o	o	o	o	o	o	o	--	o	--	o

NOTE - File actions are not defined in implementation Profile M1.3

A.10.3.2.3 Access contexts supported

	RESPONDER	CONSTRAINT SET	
		unstructured	
	ACCESS CONTEXT	D	T1.3
1	US	--	--
2	UA	o	m
3	FS	--	--
4	FL	--	--
5	FA	--	--
6	HN	--	--
7	HA	--	--

		CONSTRAINT SET											
	Responder	unstructured		sequential flat		ordered flat		ordered flat with unique names		NBS ordered flat		NBS random access	
	Access Context	D	T2.3	D	T2.3	D	T2.3	D	T2.3	D	T2.3	D	T2.3
8	US	--	--	--	--	--	--	--	--	--	--	--	--
9	UA	o	m	o	m	o	m	o	m	--	m	--	m
10	FS	--	--	--	--	--	--	--	--	--	--	--	--
11	FL	--	--	--	--	--	--	--	--	--	--	--	--
12	FA	--	--	o	m	o	m	o	m	--	m	--	--
13	HN	--	--	--	--	--	--	--	--	--	--	--	--
14	HA	--	--	--	--	o	o	o	o	--	o	--	--

		CONSTRAINT SET											
	Responder	unstructured		sequential flat		ordered flat		ordered flat with unique names		NBS ordered flat		NBS random access	
	Access Context	D	A1.3	D	A1.3	D	A1.3	D	A1.3	D	A1.3	D	A1.3
15	US	--	--	--	--	--	--	--	--	--	--	--	--
16	UA	o	m	o	m	o	m	o	m	--	m	--	m
17	FS	--	--	--	--	--	--	--	--	--	--	--	--
18	FL	--	--	--	--	--	--	--	--	--	--	--	--
19	FA	--	--	o	m	o	m	o	m	--	m	--	--
20	HN	--	--	--	--	--	--	--	--	--	--	--	--
21	HA	--	--	--	--	o	o	o	o	--	o	--	--

NOTE - The supported access contexts for implementation Profile M1.3 are defined in the T- or A-Profile in conjunction with which M1.3 is implemented.

A.10.4 Additional Information

(Void)

A.10.5 Override

	RESPONDER OVERRIDE	D	PROFILES R
1	Create failure	o	m
2	Select old file	o	m
3	Delete and recreate with old attributes	o	o
4	Delete and create with new attributes	o	m

NOTE - The specification of the role of initiator is given in A.12.15.

Section 5: File Protocol Detail

A.11 File protocol

See part 9, 5.1 - 5.3 and 17

Subclauses A.11.2 to A.11.24 specify an indication of which PDUs are supported. The conformance requiremnts for PDUs are dependent on the particular functional units implemented. PDUs indicated in A.11.8 to A.11.24 as conditional shall be considered as mandatory when a particular functional unit is implemented, according to the following table:

PDUs	Clause	Functional Units								
		Kernel	Read	Write	Access	LFM	EFM	Grou-ping	Reco-very	Restart
F-CREATE	A.11.8					m				
F-DELETE	A.11.9					m				
F-READ-ATTRIB	A.11.10					m				
F-CHANGE-ATTRIB	A.11.11						m			
F-OPEN	A.11.12		m	m						
F-CLOSE	A.11.13		m	m						
F-BEGIN-GROUP	A.11.14							m		
F-END-GROUP	A.11.15							m		
F-RECOVER	A.11.16								m	
F-LOCATE	A.11.17				m					
F-ERASE	A.11.18				m					
F-READ	A.11.19		m							
F-WRITE	A.11.20			m						
F-DATA-END	A.11.21		m	m						
F-TRANSFER-END	A.11.22		m	m						
F-CANCEL	A.11.23		m	m						
F-RESTART	A.11.24									m

NOTES

1 In order to keep the protocol tables compact, some forward references have been introduced to clauses which expand upon the detail of field support.

2 The FTAM protocol will require a number of optional lower layer services to be available (e.g., Application Entity Titles in ACSE). This requirement is outside the scope of this Profiles Requirements List.

A.11.1 GraphicString support

(Void)

A.11.2 FTAM regime establishment

		D I	D R	PROFILES I	PROFILES R	
1	**F-INITIALIZE PDU**	m	m	m	m	
	FIELD NAME					**RANGE OF VALUES OR REFERENCES**
2	State result	-	m	-	m	all values defined in ISO 8571
3	Action result	-	m	-	m	all values defined in ISO 8571
4	Protocol version	m	m	m	m	see section 2
5	Implementation information	o	o	o	o	see A.12.1
6	Presentation context management	m	m	m	m	see note 1, part 9, 17.10
7	Service class	m	m	m	m	see A.12.4
8	Functional units	m	m	m	m	see A.12.5
9	Attribute groups	m	m	m	m	see A.10.2
10	Shared ASE information	o	o	i	i	see part 9, 5.8
11	FTAM Quality of Service	m	m	m	m	see A.12.8
12	Contents type list	o	o	m	m	see A.12.7.1, part 9 18.4
13	Initiator identity	o	-	m	-	see 8.8, part 9, 16.1 and 18.4
14	Account	o	-	o	-	see 8.8, part 9, 18.4
15	Filestore password	o	-	m	-	see A.12.11, 8.8, part 9 16.1
16	Diagnostic	-	o	-	m	see A.12.6, 8.5.2, part 9 13
17	Checkpoint window	m	m	m	m	see note 2, 8.5.2

NOTES

1 The values available for the presentation context management field depend upon the functional units implemented in ISO 8823.

2 Checkpoint window field is indicated as mandatory in accordance with ISO 8571-4. The field is defaulted to the value 1.

A.11.3 FTAM regime termination (orderly)

		D		PROFILES		
		I	**R**	**I**	**R**	
1	**F-TERMINATE PDU**	m	m	m	m	
	FIELD NAME					**RANGE OF VALUES OR REFERENCES**
2	Shared ASE information	o	o	i	i	see part 9 5.8
3	Charging	-	o	-	o	see A.12.10

A.11.4 FTAM regime termination (abrupt) by service user

		D	PROFILES	
1	**F-U-ABORT PDU**	m	m	
	FIELD NAME			**RANGE OF VALUES OR REFERENCES**
2	Action result	m	m	all values defined in ISO 8571
3	Diagnostic	o	m	see A.12.6, part 9 13

A.11.5 FTAM regime termination (abrupt) by service provider

		D	PROFILES	
1	**F-P-ABORT PDU**	m	m	
	FIELD NAME			**RANGE OF VALUES OR REFERENCES**
2	Action result	m	m	all values defined in ISO 8571
3	Diagnostic	o	m	see A.12.6, 8.5.2, part 9 13

A.11.6 File selection

		D I	D R	PROFILES I	PROFILES R	
1	**F-SELECT PDU**	m	m	m	m	
	FIELD NAME					**RANGE OF VALUES OR REFERENCES**
2	State result	-	m	-	m	all values defined in ISO 8571
3	Action result	-	m	-	m	all values defined in ISO 8571
4	Attributes	m	m	m	m	see A.10.2, part 9 17.9
5	Requested access	m	-	m	-	see A.12.16
6	Access passwords	o	-	m	-	see 8.8, part 9 16.2
7	Concurrency control	o	-	o	-	see A.12.13, 8.6.1
8	Shared ASE information	o	o	i	i	see part 9, 5.8
9	Account	o	-	o	-	see 8.8, part 9 18.4
10	Diagnostic	-	o	-	m	see A.12.6, part 9 13

A.11.7 File deselection

		D I	D R	PROFILES I	PROFILES R	
1	**F-DESELECT PDU**	m	m	m	m	
	FIELD NAME					**RANGE OF VALUES OR REFERENCES**
2	Action result	-	m	-	m	all values defined in ISO 8571
3	Charging	-	o	-	o	see A.12.10
4	Shared ASE information	o	o	i	i	see part 9 5.8
5	Diagnostic	-	o	-	m	see A.12.6, part 9 13

A.11.8 File creation

		D		PROFILES		
		I	R	I	R	
1	**F-CREATE PDU**	c	c	c	c	see A.11, A.12.5
	FIELD NAME					**RANGE OF VALUES OR REFERENCES**
2	State result	-	m	-	m	all values defined in ISO 8571
3	Action result	-	m	-	m	all values defined in ISO 8571
4	Override	m	-	m	-	see A.12.15
5	Initial attributes	m	m	m	m	see A.10.2, part 9 10.2.2, 17.9
6	Create password	o	-	m	-	see A.12.12, 8.7, 8.8, part 9 16.2
7	Requested access	m	-	m	-	see A.12.16
8	Access passwords	o	-	m	-	see 8.8, part 9 16.2
9	Concurrency control	o	-	o	-	see A.12.13, 8.6.1
10	Shared ASE information	o	o	i	i	see part 9 5.8
11	Account	o	-	o	-	see 8.8, part 9 18.4
12	Diagnostic	-	o	-	m	see A.12.6, part 9 13

A.11.9 File deletion

		D		PROFILES		
		I	**R**	**I**	**R**	
1	**F-DELETE PDU**	c	c	c	c	see A.11, A.12.5
	FIELD NAME					**RANGE OF VALUES OR REFERENCES**
2	Action result	-	m	-	m	all values defined in ISO 8571
3	Shared ASE information	o	o	i	i	
4	Charging	-	o	-	o	see A.12.10
5	Diagnostic	-	o	-	m	see A.12.6, part 9 13

A.11.10 Read attributes

		D		PROFILES		
		I	**R**	**I**	**R**	
1	**F-DELETE PDU**	c	c	c	c	see A.11, A.12.5
	FIELD NAME					**RANGE OF VALUES OR REFERENCES**
2	Action result	-	m	-	m	all values defined in ISO 8571
3	Attribute names	m	-	m	-	
4	Attributes	-	o	-	m	see A.10.2, part 9 17.9
5	Diagnostic	-	o	-	m	see A.12.6, part 9 13

A.11.11 Change attributes

		D I	D R	T1.3, T2.2, A1.3	M1.3 I	M1.3 R	
1	F-CHANGE-ATTRIB PDU	c	c	i	m	m	see A.11, A.12.5
	FIELD NAME			i			RANGE OF VALUES OR REFERENCES
2	Action result	-	m	i	-	m	all values defined in ISO 8571
3	Attributes	m	o	i	m	m	see A.10.2, part 9 17.9
4	Diagnostic	-	o	i	-	m	see A.12.6, part 9 13

File open

		D I	D R	T1.3, T2.3, A1.3 I	T1.3, T2.3, A1.3 R	M1.3	
1	**F-OPEN-PDU**	c	c	m	m	i	see A.11, A.12.5
	FIELD NAME						**RANGE OF VALUES OR REFERENCES**
2	State result	-	m	-	m	i	all values defined in ISO 8571
3	Action result	-	m	-	m	i	all values defined in ISO 8751
4	Processing mode	m	-	m	-	i	see A.12.17
5	Contents type	m	m	m	m	i	see A.12.7.2
6	Concurrency control	o	o	o	o	i	see A.12.13, 8.6.1
7	Shared ASE information	o	o	i	i	i	see part 9 5.8
8	Enable FADU locking	m	-	m	-	i	'false' for T1.3 and T2.3
9	Activity identifier	o	-	o	-	i	
10	Diagnostic	-	m	-	m	i	see A.12.6, part 9, 13
11	Recovery mode	m	m	m	m	i	see A.12.18
12	Remove contexts	o	-	i	-	i	
13	Define contexts	o	-	i	-	i	

14	Presentation action	-	m	-	m	i	see note

NOTE - The values depend upon the functional units implemented in ISO 8823.

A.11.12 File close

		D	T1.3, T2.3, A1.3	M1.3	
1	**F-CLOSE-PDU**	c	m	i	see A.11, A.12.5
	FIELD NAME				**RANGE OF VALUES OR REFERENCES**
2	Action result	m	m	i	all values defined in ISO 8571
3	Shared ASE information	o	i	i	see part 9 5.8
4	Diagnostic	o	m	i	see A.12.6, part 9 13

A.11.13 Beginning of grouping

		D I	D R	T1.3, T2.3 I	T1.3, T2.3 R	A1.3 I	A1.3 R	
1	**F-BEGIN-GROUP PDU**	c	c	m	m	o	o	see A.11, A.12.5
	FIELD NAME							**RANGE OF VALUES OR REFERENCES**
2	Threshold	m	-	m	-	m	-	

A.11.14 End of grouping

		D	T1.3, T2.3	A1.3	
1	**F-END-GROUP PDU**	c	m	o	see A.11, A.12.5
	The F-END-GROUP PDU carries no fields.				

A.11.15 Regime recovery

See 8.5

		D		T1.3, T2.2, A1.3		M1.3	
		I	R	I	R		
1	F-RECOVER PDU	c	c	c	c	i	see A.11, A12.5
	FIELD NAME						RANGE OF VALUES OR REFERENCE
2	State result	-	m	-	m	i	all values defined in ISO 8571
3	Action result	-	m	-	m	i	all values defined in ISO 8571
4	Activity identifier	m	-	m	-	i	
5	Bult transfer number	m	-	m	-	i	see clause 9
6	Requested access	m	-	m	-	i	see A.12.16
7	Access passwords	o	-	m	-	i	see 8.8 part 9 16.2
8	Contents type	-	m	-	m	i	see A.12.7.2
9	Recovery point	m	m	m	m	i	
10	Diagnostic	-	o	-	m	i	see A.12.6, 8.5.2, part 9 13
11	Remove contexts	o	-	i	-	i	see notes
12	Define contexts	o	-	i	-	i	see notes
13	Presentation action	-	m	-	m	i	see notes

NOTES

1 The values available for the presentation action field depend upon the functional units implemented in ISO 8823.

2 Presentation action field is indicated as mandoratory is accordance with ISO 8571-4. The field is defaulted to no action.

A.11.16 Locate file access data unit

		D I R	T1.3, T2.3	A1.3 I R	M1.3	
1	**F-LOCATE PDU**	c c	**i**	**m m**	**i**	see A.11, A.12.5
	FIELD NAME					**RANGE OF VALUES OR PREFERENCE**
2	Action result	- m	**i**	**- m**	**i**	all values defined in ISO 8571
3	FADU identity	m o	**i**	**m o**	**i**	see part 9 17.9
4	FADU lock	o -	**i**	**o -**	**i**	see A.12.14
5	Diagnostic	- o	**i**	**- m**	**i**	see A.12.6, part 9 13

A.11.17 Erase file access data unit

		D I R	T1.3, T2.3	A1.3 I R	M1.3	
1	**F-ERASE PDU**	c c	**i**	**m m**	**i**	see A.11, A.12.5
	FIELD NAME					**RANGE OF VALUES OR REFERENCE**
2	Action result	- m	**i**	**- m**	**i**	all values defined in ISO 8571
3	FADU identity	m -	**i**	**m -**	**i**	see part 9 17.9
4	Diagnostic	- o	**i**	**- m**	**i**	see A.12.6, part 9 13

A.11.18 Read bulk data

		D I R	T1.3, T2.3 I R	A1.3 I R	M1.3	
1	**F-READ PDU**	c c	**c c**	**m m**	**i**	see A.11, A.12.5
	FIELD NAME					**RANGE OF VALUES OR REFERENCE**
2	FADU identity	m -	**m -**	**m -**	**i**	see part 9 17.9
3	Access context	m -	**m -**	**m -**	**i**	see A10.3.2.3
4	FADU lock	o -	**i -**	**o -**	**i**	

A.11.19 Write bulk data

		D I R	T1.3, T2.3 I R	A1.3 I R	M1.3	
1	**F-WRITE PDU**	c c	**c c**	**m m**	**i**	see A.11, A. 12.5
	FIELD NAME					**RANGE OF VALUES OR REFERENCE**
2	FADU operation	m -	**m -**	**m -**	**i**	
3	FADU identity	m -	**m -**	**m -**	**i**	see part 9 17.9
4	FADU Lock	o -	**i -**	**o -**	**i**	

A.11.20 End of data transfer

		D	T1.3, T2.3, A1.3	M1.3	
1	**F-DATA-END PDU**	c	**m**	**i**	see A.11, A.12.5
	FIELD NAME				**RANGE OF VALUES OR REFERENCE**
2	Action result	m	**m**	**i**	all values defined in ISO 8571
3	Diagnostic	o	**m**	**i**	see A.12.6, part 9 13

A.11.21 End of transfer

		D I R	T1.3, T2.3, A1.3 I R	M1.3	
1	**F-TRANSFER-END PDU**	c c	**m m**	**i**	see A.11, A.12.5
	FIELD NAME				**RANGE OF VALUES OR REFERENCE**
2	Action result	- m	**- m**	**i**	all values defined in ISO 8571
3	Shared ASE information	o o	**i i**	**i**	see part 9 5.8
4	Diagnostic	- o	**- m**	**i**	see A.12.6, part 9 13

A.11.22 Cancel data transfer

See part 9 clause 11

		D	T1.3, T2.3, A1.3	M1.3	
1	**F-CANCEL PDU**	c	**m**	**i**	see A.11, A.12.5
	FIELD NAME				**RANGE OF VALUES OR REFERENCE**
2	Action result	m	**m**	**i**	all values defined in ISO 8571
3	Shared ASE information	o	**i**	**i**	see part 9 5.8
4	Diagnostic	o	**m**	**i**	see A.12.6, part 9 13

A.11.23 F-CANCEL mapping

See part 9 clauses 11 and 17.10

A.11.24 Restart data transfer

		D	T1.3, T2.3, A1.3	M1.3	
1	**F-RESTART PDU**	c	**c**	**i**	see A.11, A.12.5
	FIELD NAME				**RANGE OF VALUES OR REFERENCE**
2	Checkpoint identifier	m	**m**	**i**	

A.12 Expanded PDU field andfilestore detail

This clause identifies further PDU filed and filestore detail to expand on that given in A.10 and A.11.

A.12.1 Implementation information detail

See 8.3, part 9 5.6 and 12

A.12.2 Access control detail

See 7.3, part 9 9.2

	Access control element terms	D	PROFILES	RANGE OF VALUES
1	Action list	m	**m**	
2	Concurrency access	o	**o**	see A.12.3.3
3	Identity	o	**o**	
4	Passwords	o	**o**	see A.12.3.5, A.12.3.6, 8.8
5	Location	o	**o**	

A.12.3 Access control element detail

A.12.3.1 Action list detail (initiator)

(Void)

A.12.3.2 Action list detail (responder)

(Void)

A.12.3.3 Concurrency access term

If the concurrency access term is supported in the access control element the following details of the concurrency control shall be available with each action.

	T1.3	not required		shared		exclusive		no access	
	Action	D	T1.3	D	T1.3	D	T1.3	D	T1.3
1	Read	o	**o**	o	**o**	o	**o**	o	**o**
2	Insert	o	**i**	o	**i**	o	**i**	o	**i**
3	Replace	o	**o**	o	**o**	o	**o**	o	**o**
4	Extend	o	**o**	o	**o**	o	**o**	o	**o**
5	Erase	o	**i**	o	**i**	o	**i**	o	**i**
6	Read attributes	o	**o**	o	**o**	o	**o**	o	**o**
7	Change attributes	o	**i**	o	**i**	o	**i**	o	**i**
8	Delete file	o	**o**	o	**o**	o	**o**	o	**o**

	T2.3 Action	not required D	T2.3	shared D	T2.3	exclusive D	T2.3	no access D	T2.3
9	Read	o	**o**	o	**o**	o	**o**	o	**o**
10	Insert	o	**o**	o	**o**	o	**o**	o	**o**
11	Replace	o	**o**	o	**o**	o	**o**	o	**o**
12	Extend	o	**o**	o	**o**	o	**o**	o	**o**
13	Erase	o	**i**	o	**i**	o	**i**	o	**i**
14	Read attributes	o	**o**	o	**o**	o	**o**	o	**o**
15	Change attributes	o	**i**	o	**i**	o	**i**	o	**i**
16	Delete file	o	**o**	o	**o**	o	**o**	o	**o**

	A1.3 Action	not required D	A1.3	shared D	A1.3	exclusive D	A1.3	no access D	A1.3
17	Read	o	**o**	o	**o**	o	**o**	o	**o**
18	Insert	o	**o**	o	**o**	o	**o**	o	**o**
19	Replace	o	**o**	o	**o**	o	**o**	o	**o**
20	Extend	o	**o**	o	**o**	o	**o**	o	**o**
21	Erase	o	**o**	o	**o**	o	**o**	o	**o**
22	Read attributes	o	**o**	o	**o**	o	**o**	o	**o**
23	Change attributes	o	**i**	o	**i**	o	**i**	o	**i**
24	Delete file	o	**o**	o	**o**	o	**o**	o	**o**

	M1.3 Action	not required D	M1.3	shared D	M1.3	exclusive D	no access M1.3	D	M1.3
25	Read	o	**i**	o	**i**	o	**i**	o	**i**
26	Insert	o	**i**	o	**i**	o	**i**	o	**i**
27	Replace	o	**i**	o	**i**	o	**i**	o	**i**
28	Extend	o	**i**	o	**i**	o	**i**	o	**i**
29	Erase	o	**i**	o	**i**	o	**i**	o	**i**

30	Read attributes	o	**o**	o	**o**	o	**o**	o	**o**
31	Change attributes	o	**o**	o	**o**	o	**o**	o	**o**
32	Delete file	o	**o**	o	**o**	o	**o**	o	**o**

A.12.3.4 Identity term

(void)

A.12.3.5 Initiator access passwords

If the passwords term of the access control element is implemented the following values shall be supported for the initiator role.

See part 9 16.3

	Initiator Access Passwords	D	PROFILES I
1	OctetString	o	**o**
2	Graphic String	o	**o**

A.12.3.6 Responder access passwords

If the passwords term of the access control element is implemented the following values shall be supported for the responder role.

See part 9 16.3

	Responder Access Passwords	D	T1.3 OctetString GraphicString	T2.3 OctetString GraphicString	A1.3 OctetString GraphicString	M1.3 OctetString GraphicString
1	Read-password	o	**o**	**o**	**o**	**i**
2	Insert-password	o	**i**	**o**	**o**	**i**
3	Replace-password	o	**o**	**o**	**o**	**i**
4	Extend-password	o	**o**	**o**	**o**	**i**
5	Erase-password	o	**i**	**i**	**o**	**i**
6	Read-attribute-password	o	**o**	**o**	**o**	**o**

7	Change-attribute-password	o	**i**	**i**	**i**	**o**
8	Delete-password	o	**o**	**o**	**o**	**o**

A.12.3.7 Location Term

(Void)

A.12.3.7.1 Application Entity Titles detail

See part 9 5.7

A.12.3.8 Access control element combinations

	Combinations			**D**	**PROFILES R**
1	Identity	Password	Location	o	**o**
2	Identity	Password		o	**o**
3	Identity		Location	o	**o**
4		Password	Location	o	**o**
5	Identity			o	**o**
6		Password		o	**o**
7			Location	o	**o**

NOTE - Implementation of access control without any of the above combinations is valid.

A.12.4 Service class field detail

See 5.1, 8.1, part 9 table 7

		D	T1.3, T2.3	A1.3	M1.3 (T)	M1.3 (A)
1	Transfer class	o	**m**	**i**	**m**	**i**
2	Access class	o	**i**	**m**	**i**	**m**
3	Management class	o	**i**	**i**	**m**	**m**
4	Transfer and management class	o	**o**	**i**	**m**	**i**
5	Unconstrained class	o	**i**	**i**	**i**	**i**

NOTES

1 The initiator is only permitted to specify those combinations defined in ISO 8571-3

2 The notation M1.3(T) indicates M1.3 combined with a Transfer Profile T1.3 or T2.3. M1.3(A) means 1.3 combined with the Access Profile A1.3.

A.12.5 Functional unit field detail

See 8.1, 8.2, part 9 table 7

	T1.3, T2.3 **FUNCTIONAL UNITS**	**SERVICE CLASSES** **Transfer** **D**	 **T1.2, T2.3**	**Transfer and Management** **D**	 **T1.3, T2.3**
1	Kernel	m	**m**	m	**m**
2	Read (see note 2)	c	**o**	c	**o**
3	Write (see note 2)	c	**o**	c	**o**
4	File Access				
5	Limited File Management	o	**o**	m	**m**
6	Enhanced File Management	o	**i**	o	**i**
7	Grouping	m	**m**	m	**m**
8	FADU Locking				
9	Recovery	o	**o**	o	**o**
10	Restart	o	**o**	o	**o**

NOTES

1 The recovery and the restart functional units are only available at the internal file service interface and should only be explicity referenced in the protocol.

2 The c indicates that either or both of the read and write functional units shall be implemented in the particular service class.

	A1.3 **FUNCTIONAL UNITS**	SERVICE CLASSES Access D	A1.3	
11	Kernel	m	**m**	
12	Read	m	**m**	
13	Write	m	**m**	
14	File Access	m	**m**	
15	Limited File Management	o	**o**	
16	Enhanced File Management	o	**i**	
17	Grouping	o	**o**	
18	FADU Locking	o	**o**	see 8.6.2
19	Recovery	o	**o**	
20	Restart	o	**o**	

See 8.1

	M1.3(T)	**SERVICE CLASSES**					
		Transfer		**Management**		**Transfer and Management**	
	FUNCTIONAL UNITS	**D**	**M1.3(T)**	**D**	**M1.3(T)**	**D**	**M1.3(T)**
21	Kernel			m	**m**	m	**m**
22	Read			____		c	**o**
23	Write			____		c	**o**
24	File Access			____		____	
25	Limited File Management	o	**m**	m	**m**	m	**m**
26	Enhanced File Management	o	**m**	o	**m**	o	**m**
27	Grouping			m	**m**	m	**m**
28	FADU Locking			____		____	
29	Recovery			____		o	**o**
30	Restart			____		o	**o**

NOTE - M1.3(T) indicates M1.3 in conjuction with a Transfer Profile T1.3 or T2.3. This table lists only the additional functionality as defined by M1.3.

See 8.1

	M1.3(A) FUNCTIONAL UNITS	SERVICE CLASSES Access D	Access M1.3(A)	Management D	Management M1.3(A)
31	Kernel			m	**m**
32	Read				
33	Write				
34	File Access				
35	Limited File Management	o	**m**	m	**m**
36	Enhanced File Management	o	**m**	o	**m**
37	Grouping			m	**m**
38	FADU Locking				
39	Recovery				
40	Restart				

NOTE - M1.3(A) indicates M1.3 in conjuction with the Access Profile A1.3. This table lists only the additional functionality as defined by M1.3.

A.12.6 Diagnostic field detail

		D	T1.3, T2.3, A1.3	M1.3	
1	Diagnostic type	m	**m**	**m**	
2	Error identifier	m	**m**	**m**	
3	Error observer	m	**m**	**m**	
4	Error source	m	**m**	**m**	
5	Suggested delay	o	**c**	**i**	see 8.5.2
6	Further details	o	**m**	**m**	
	For values of the 'further details' term only the support of character strings of the ISO 646 IRV (G0) and ISO 8859-1 (G0 and G1) character sets is required (see part 9 clause 13).				

A.12.7 Contents type detail

A.12.7.1 Contents list parameter

See part 9 10.2.1

		D	PROFILES		Maximum number of elements
			I	R	
1	document type specifications	o	**o**	**m**	
2	abstract syntax specifications	o	**o**	**m**	

A.12.7.2 Contents type parameter

See part 9 10.2.3

		D	PROFILES	REFERENCE
1	document type specifications	o	**m**	see part 9 9.1
2	abstract syntax / constraint set pair specificaitons	o	**i**	

NOTE - The detail of document types supported is contained in clause A.13.

A.12.8 FTAM Quality of service details

See 8.5.2

A.12.9 Details of shared ASE information

(Void)

A.12.10 Details of charging

See part 9 5.8 and 18.4

	Charging	D	PROFILES R
1	Resource indentifier term	m	**m**
2	Charging unit term	m	**m**
3	Charging value term	m	**m**

A.12.11 Filestore password detail

	Filestore password detail	D	PROFILES
1	OctetString	o	**o**
2	GraphicString	o	**o**

A.12.12 Create password detail

See part 9 16.3

	Create password detail	D	PROFILES
1	OctetString	o	**o**
2	GraphicString	o	**o**

A.12.13 Concurrency control

A.12.13.1 Supported values

See 8.6.1

	T1.3	not required		shared		exclusive		no access	
	Action	**D**	**T1.3**	**D**	**T1.3**	**D**	**T1.3**	**D**	**T1.3**
1	Read	o	**o**	o	**o**	o	**o**	o	**o**
2	Insert	o	**i**	o	**i**	o	**i**	o	**i**
3	Replace	o	**o**	o	**o**	o	**o**	o	**o**
4	Extend	o	**o**	o	**o**	o	**o**	o	**o**
5	Erase	o	**i**	o	**i**	o	**i**	o	**i**
6	Read attrib	o	**o**	o	**o**	o	**o**	o	**o**
7	Change attrib	o	**i**	o	**i**	o	**i**	o	**i**
8	Delete file	o	**o**	o	**o**	o	**o**	o	**o**

	T2.3	not required		shared		exclusive		no access	
	Action	**D**	**T2.3**	**D**	**T2.3**	**D**	**T2.3**	**D**	**T2.3**
9	Read	o	**o**	o	**o**	o	**o**	o	**o**
10	Insert	o	**o**	o	**o**	o	**o**	o	**o**
11	Replace	o	**o**	o	**o**	o	**o**	o	**o**
12	Extend	o	**o**	o	**o**	o	**o**	o	**o**
13	Erase	o	**i**	o	**i**	o	**i**	o	**i**
14	Read attrib	o	**o**	o	**o**	o	**o**	o	**o**
15	Change attrib	o	**i**	o	**i**	o	**i**	o	**i**
16	Delete file	o	**o**	o	**o**	o	**o**	o	**o**

	A1.3	not required		shared		exclusive		no access	
	Action	**D**	**A1.3**	**D**	**A1.3**	**D**	**A1.3**	**D**	**A1.3**
17	Read	o	**o**	o	**o**	o	**o**	o	**o**
18	Insert	o	**o**	o	**o**	o	**o**	o	**o**
19	Replace	o	**o**	o	**o**	o	**o**	o	**o**
20	Extend	o	**o**	o	**o**	o	**o**	o	**o**
21	Erase	o	**o**	o	**o**	o	**o**	o	**o**
22	Read attrib	o	**o**	o	**o**	o	**o**	o	**o**
23	Change attrib	o	**i**	o	**i**	o	**i**	o	**i**
24	Delete file	o	**o**	o	**o**	o	**o**	o	**o**

	M1.3	not required		shared		exclusive		no access	
	Action	**D**	**M1.3**	**D**	**M1.3**	**D**	**M1.3**	**D**	**M1.3**
25	Read	o	**i**	o	**i**	o	**i**	o	**i**
26	Insert	o	**i**	o	**i**	o	**i**	o	**i**
27	Replace	o	**i**	o	**i**	o	**i**	o	**i**
28	Extend	o	**i**	o	**i**	o	**i**	o	**i**
29	Erase	o	**i**	o	**i**	o	**i**	o	**i**
30	Read attrib	o	**o**	o	**o**	o	**o**	o	**o**
31	Change attrib	o	**o**	o	**o**	o	**o**	o	**o**
32	Delete file	o	**o**	o	**o**	o	**o**	o	**o**

A.12.13.2 Responder Default values

See 8.6.1, part 9 clause 14

A.12.14 FADU Locking

	A1.3	FADU Locking Support Values							
		not required		shared		exclusive		no access	
	Action	**D**	**A1.3**	**D**	**A1.3**	**D**	**A1.3**	**D**	**A1.3**
1	Read	o	**o**	o	**o**	o	**o**	o	**o**
2	Insert	o	**o**	o	**o**	o	**o**	o	**o**
3	Replace	o	**o**	o	**o**	o	**o**	o	**o**
4	Extend	o	**o**	o	**o**	o	**o**	o	**o**
5	Erase	o	**o**	o	**o**	o	**o**	o	**o**

A.12.15 Initiator Override

	Initiator override	D	PROFILES I
1	Create failure	o	**o**
2	Select old file	o	**o**
3	Delete and recreate with old attributes	o	**o**
4	Delete and create with new attributes	o	**o**

NOTE - The specification of the role of responder is given in A.10.5

A.12.16 Requested Access

See part 9 clause 15

	Action	D	T1.3	T2.3	A1.3	M1.3
1	Read	o	**o**	**o**	**o**	**i**
2	Insert	o	**i**	**o**	**o**	**i**
3	Replace	o	**o**	**o**	**o**	**i**
4	Extend	o	**o**	**o**	**o**	**i**
5	Erase	o	**i**	**i**	**o**	**i**
6	Read attrib	o	**o**	**o**	**o**	**m**
7	Change attrib	o	**i**	**i**	**i**	**m**
8	Delete file	o	**o**	**o**	**o**	**m**

A.12.17 Processing mode

	Processing mode	D	T1.3	T2.3	A1.3	M1.3
1	Read	o	**o**	**o**	**o**	**i**
2	Insert	o	**i**	**o**	**o**	**i**
3	Replace	o	**o**	**o**	**o**	**i**
4	Extend	o	**o**	**o**	**o**	**i**
5	Erase	o	**i**	**i**	**o**	**i**

A.12.18 Recovery mode

See 8.5.2

	Recovery mode	D	T1.3, T2.3, A1.3	M1.3
1	None	o	**o**	**i**
2	At start of transfer	o	**o**	**i**
3	Any active checkpoint	o	**o**	**i**

Section 6: Document Type Detail

A.13 Document types

See 7.1

Conformance to document types is given a two levels. The following table indicates which document types have some level of support. The detail of that level of support is stated in the following tables.

	Entry number	FTAM-1	D	T1.3	T2.3	A1.3	M1.3
1	Object descriptor	ISO FTAM unstructured text	o	**m**	**m**	**m**	**i**
	Object identifier	{iso standard 8571 document-type(5)unstructered-text(1)}	see A.13.1				

	Entry number	FTAM-2	D	T1.3	T2.3	A1.3	M1.3
2	Object descriptor	ISO FTAM sequential text	o	**i**	**m**	**m**	**i**
	Object identifier	{iso standard 8571 document-type(5)sequential-text(2)}	see A.13.2				

	Entry number	FTAM-3	D	T1.3	T2.3	A1.3	M1.3
3	Object descriptor	ISO FTAM unstructured binary	o	**m**	**m**	**m**	**i**
	Object identifier	{iso standard 8571 document-type(5)sequential-binary(3)}				see A.13.3	

	Entry number	FTAM-4	D	T1.3	T2.3	A1.3	M1.3
4	Object descriptor	ISO FTAM sequential binary	o	**i**	**o**	**o**	**i**
	Object identifier	{iso standard 8571 document-type(5)sequential-bindary(4)}				see A.13.4	

	Entry number	NBS-6	D	T1.3	T2.3	A1.3	M1.3
5	Object descriptor	NBS-6 FTAM sequential file	-	i	m	m	i
	Object identifier	{iso identified-organization oiw(14) ftamsig(5) document-type(5) sequential(6)}	see A.13.5				

	Entry number	NBS-7	D	T1.3	T2.3	A1.3	M1.3
6	Object descriptor	NBS-7 FTAM random access file	-	i	m	m	i
	Object identifier	{iso identified-organization oiw(14) ftamsig(5) document-type(5) random file(7)}	see A.13.6				

	Entry number	NBS-8	D	T1.3	T2.3	A1.3	M1.3
7	Object descriptor	NBS-8 FTAM indexed file	-	i	o	o	i
	Object identifier	{iso identified-organization oiw(14) ftamsig(5) document-type(5) indexed-file(8)}	see A.13.7				

	Entry number	NBS-9	D	T1.3	T2.3	A1.3	M1.3
8	Object descriptor	NBS-9 FTAM file directory file	-	o	o	o	i
	Object identifier	{iso identified-organization oiw(14) ftamsig(5) document-type(5) random-binary(10)}	see 7.1				

	Entry number	NBS-10	D	T1.3	T2.3	A1.3	M1.3
9	Object descriptor	NBS-10 FTAM random binary access file	-	i	o	o	i
	Object identifier	{iso identified-organization oiw(14) ftamsig(5) document-type(5) random bindary(10)}	see 7.1				

	Entry number	NBS-11	D	T1.3	T2.3	A1.3	M1.3
10	Object descriptor	NBS-11 FTAM indexed file with unique keys	-	i	o	o	i
	Object identifier	{iso identified-organization oiw(14) ftamsig(5) document-type(5) indexed-file-with-unique-keys(11)}	see A.13.8				

	Entry number	NBS-12	D	T1.3	T2.3	A1.3	M1.3
11	Object descriptor	NBS-12 FTAM simple text file	-	i	o	o	i
	Object identifier	{iso identified-organization oiw(14) ftamsig(5) document-type(5) simple-text-file(12)}	see A.13.9				

Constraint sets and FADU identities for document types

For the constraint set/FADU identity tables the following notation is used:

m	mandatory	in the constraint set definition, or optional in the constraint set definition but shall b implemented by implementations claiming conformance to the Profile. The support of the FADU identity will be dependent on the actions which have been implemented.
o	optional	in the constaint set definition
i	not supported	(outside the scope of this ISP, may be ignored)
-	not applicable	(not defined in the constraint set definition)
x	excluded	(disallowed in the document type definition or in FTAM Phase 3)

Implementation Profile T1.3.

FADU Identity Constraint set	Begin	End	First	Last	Curren t	Next	Previous	Node Seq	Node Number
FTAM unstuctured constraint set	-	-	m	-	-	-	-	-	-
FTAM-1	-	-	m	-	-	-	-	-	-
FTAM-3	-	-	m	-	-	-	-	-	-
NBS-9	-	-	m	-	-	-	-	-	-

Implementation Profile T2.3 (see 7.2, part 9 clause 10)

FADU Identity Constraint set	Begin	End	First	Last	Curren t	Next	Previous	Node Seq	Node Number
FTAM unstuctured constraint set	-	-	m	-	-	-	-	-	-
FTAM-1	-	-	m	-	-	-	-	-	-
FTAM-3	-	-	m	-	-	-	-	-	-
NBS-9	-	-	m	-	-	-	-	-	-

FTAM sequential flat Constraint set	o	o	o	o	o	o	o	-	o
FTAM-2	m	m	i	i	i	i	i	-	i
FTAM-4	m	m	i	i	i	i	i	-	i
NBS-6	m	m	i	x	x	i	x	-	x
NBS-12	m	m	x	x	x	x	x	-	x

FTAM ordered flat Constraint set	o	o	o	o	o	o	o	o	o
NBS-8	m	i	i	i	i	i	i	m	i

FTAM ordered flat constr set with unique names	o	o	-	-	o	o	o	o	o
NBS-11	m	i	-	-	i	i	i	m	i

FTAM ordered flat Constraint set	o	o	o	o	o	o	o	-	o
NBS-7	m	m	m	m	i	i	i	-	m

FTAM random access Constraint set	o	o	-	-	-	-	-	o	o
NBS-10	m	m	-	-	-	-	-	m	m

Implementation Profile A1.3 (see part 9 clause 10)

FADU Identity Constraint Set	Begin	End	First	Last	Current	Next	Previous	Node Seq	Node Number
FTAM unstructured constraint set	_	_	m	_	_	_	_	_	_
FTAM-1	-	-	m	-	-	-	-	-	-
FTAM-3	-	-	m	-	-	-	-	-	-
NBS-9	-	-	m	-	-	-	-	-	-
FTAM sequential flat constraint set	o	o	o	o	o	o	o	_	o
FTAM-2	m	m	m	i	i	m	i	-	i
FTAM-4	m	m	m	i	i	m	i	-	i
NBS-6	m	m	m	x	x	m	x	-	x
NBS-12	m	m	m	x	x	m	x	-	x
FTAM ordered flat constraint set	o	o	o	o	o	o	o	o	o
NBS-8	m	m	i	i	m	m	m	m	i
FTAM ordered flat constr set with unique names	o	o	-	-	o	o	o	o	o
NBS-11	m	m	-	-	m	m	m	m	i
NBS ordered flat constraint set	o	o	o	o	o	o	o	-	o
NBS-7	m	m	m	m	m	m	m	-	m
NBS random access constraint set	o	o	-	-	-	-	-	o	o
NBS-10	m	m	-	-	-	-	-	m	m

A.13.1 FTAM-1 (See 7.1)

A.13.1.1 Universal class number parameter (See part 9 10.1)

				D	T1.3, T2.3, A1.3	
1	Universal class number parameter supported			o	**m**	
2	PrintableString	-	Universal class 19	o	**i**	
3	TeletexString	-	Universal class 20	o	**i**	
4	VideotexString	-	Universal class 21	o	**i**	
5	IA5String	-	Universal class 22	o	**m**	see part 9 10.1.1-2
6	GraphicString	-	Universal class 25	o	**m**	see A.13.1.3
7	VisibleString	-	Universal class 26	o	**m**	
8	GeneralString	-	Universal class 27	o	**m**	see A.13.1.4

A.13.1.2 String length parameter and string significance parameter combinations

		D	T1.3, T2.3, A1.3
1	Maximum string length parameter and variable length strings	o	**m**
2	Maximum string length parameter and fixed length strings	o	**m**
3	Maximum string length parameter and not significant strings	o	**m**
4	Unbounded strings and variable length strings	o	**m**
5	Unbounded strings and not significant strings	o	**m**

A.13.1.3 G sets supported

G sets which are supported in FTAM-1 GraphicString.

1	**For values of GraphicString only the support of character strings of the ISO 646 IRV (G0) and ISO 8859-1 (G0 and G1) character sets is required.** **(see part 9 10.1.1 and 10-1-3)**

A.13.1.4 G and C sets supported

G and C sets which are supported in FTAM-1 GeneralString

1	**For values of GeneralString only the support of character strings of the ISO 646 IRV (G0) and ISO 8859-1 (G0 and G1) character sets and ISO 646 IRV (C0) control set is required** **(see part 9 10.1-3)**

A.13.2 FTAM-2 (see 7.1)

A.13.2.1 Universal class number parameter (see part 9 10.1)

				D	T2.3, A1.3	
1	Universal class number parameter supported			o	**m**	
2	PrintableString	-	Universal class 19	o	**i**	
3	TeletexString	-	Universal class 20	o	**i**	
4	VideoexString	-	Universal class 21	o	**i**	
5	IA5String	-	Universal class 22	o	**o**	see part 9 10.1.1-2
6	GraphicString	-	Universal class 25	o	**m**	see A.13.2.3
7	VisibleString	-	Universal class 26	o	**m**	
8	GeneralString	-	Universal class 27	o	**o**	see A.13.2.4

A.13.2.2 String length parameter and string significance parameter combinations

		D	T2.3, A1.3
1	Maximum string length parameter and variable length strings	o	**i**
2	Maximum string length parameter and fixed length strings	o	**i**
3	Maximum string length parameter and not significant strings	o	**m**
4	Unbounded strings and variable length strings	o	**i**
5	Unbounded strings and not significant strings	o	**m**

A.13.2.3 G sets supported

G sets which are supported in FTAM-2 GraphicString.

1	**For values of GraphicString only the support of character strings of the ISO 646 IRV (G0) and ISO 8859-1 (G0 and G1) character sets is required.** **(see part 9 10.1.1 and 10.1.3)**

A.13.2.4 G and C sets supported

G and C sets which are supported in FTAM-2 GeneralString

1	**For values of GraphicString only the support of character strings of the ISO 646 IRV (G0) and ISO 8859-1 (G0 and G1) character sets and ISO 646 IRV (C0) control character set is required.** **(see part 9 10.1.1-3)**

A.13.3 FTAM-3

A.13.3.1 String length parameter and string significance parameter combinations (see 7.1)

		D	T1.3, T2.3, A1.3
1	Maximum string length parameter and variable length strings	o	**i**
2	Maximum string length parameter and fixed length strings	o	**i**
3	Maximum string length and not significant strings	o	**m**
4	Unbounded strings and variable length strings	o	**i**
5	Unbounded strings and not significant strings	o	**m**

A.13.4 FTAM-4 (see 7.1)

A.13.4.1 String length parameter and string significance parameter combinations

		D	T2.3, A1.3
1	Maximum string length parameter and variable length strings	o	**i**
2	Maximum string length parameter and fixed length strings	o	**i**
3	Maximum string length parameter and not significant strings	o	**m**
4	Unbounded strings and variable length strings	o	**i**
5	Unbounded strings and not significant strings	o	**m**

A.13.5 NBS-6

See part 9 tables 2, 3

A.13.5.1 Parameter0

				D	T2.3, A1.3
1	Parameter0 supported			-	**m**
2	Universal-time	-	Universal class 23	-	**m**
3	Generalized-time	-	Universal class 24	-	**m**
4	boolean	-	Universal class 1	-	**m**
5	null	-	Universal class 5	-	**m**

A.13.5.2 Parameter1 (see part 9 10.1)

				D	T2.3, A1.3
1	Parameter1 supported			-	**m**
2	integer	-	Universal class 2	-	**m**
3	bit	-	Universal class 3	-	**m**
4	IA5	-	Universal class 22	-	**m**
5	GraphicString	-	Universal class 25	-	**m**
6	GeneralString	-	Universal class 27	-	**m**
7	OctetString	-	Universal class 4	-	**m**

A.13.5.3 Parameter2

		D	T2.3, A1.3
1	Parameter2 supported	-	**o**

A.13.6 NBS-7

See part 9 tables 2, 3

A.13.6.1 Parameter0

				D	T2.3, A1.3
1	Parameter0 supported			-	**m**
2	Universal-time	-	Universal class 23	-	**m**
3	Generalized-time	-	Universal class 24	-	**m**
4	boolean	-	Universal class 1	-	**m**
5	null	-	Universal class 5	-	**m**

A.13.6.2 Parameter1 (see part 9 10.1)

				D	T2.3, A1.3
1	Parameter1 supported			-	**m**
2	integer	-	Universal class 2	-	**m**
3	bit	-	Universal class 3	-	**m**
4	IA5	-	Universal class 22	-	**m**
5	GraphicString	-	Universal class 25	-	**m**
6	GeneralString	-	Universal class 27	-	**m**
7	OctetString	-	Universal class 4	-	**m**

A.13.6.3 Parameter2

		D	T2.3, A1.3
1	Parameter2 supported	-	**o**

A.13.7 NBS-8

See part 9 tables 2,3

A.13.7.1 Parameter0

				Data Types D	T2.3, A1.3	Key Type D	T2.3, A1.3
1	Parameter0 supported			-	**m**	-	**m**
2	Universal-time	-	Universal class 23	-	**m**	-	**m**
3	Generalized-time	-	Universal class 24	-	**m**	-	**m**
4	boolean	-	Universal class 1	-	**m**	-	**-**
5	null	-	Universal class 5	-	**m**	-	**-**

A.13.7.2 Parameter1 (see part 9 10.1)

				Data Types D	T2.3, A1.3	Key Type D	T2.3, A1.3
1	Parameter1 supported			-	**m**	-	**m**
2	integer	-	Universal class 2	-	**m**	-	**m**
3	bit	-	Universal class 3	-	**m**	-	**-**
4	IA5	-	Universal class 22	-	**m**	-	**m**
5	GraphicString	-	Universal class 25	-	**m**	-	**m**
6	GeneralString	-	Universal class 27	-	**m**	-	**m**
7	OctetString	-	Universal class 4	-	**m**	-	**m**

A.13.7.3 Parameter2

		Data Types D	T2.3, A1.3	Key Type D	T2.3, A1.3
1	Parameter2 supported	-	**o**	-	**o**

A.13.8 NBS-11

See part 9 tables 2,3

A.13.8.1 Parameter0

				Data Types D	T2.3, A1.3	Key Type D	T2.3, A1.3
1	Parameter0 supported			-	m	-	m
2	Universal-time	-	Universal class 23	-	m	-	m
3	Generalized-time	-	Universal class 24	-	m	-	m
4	boolean	-	Universal class 1	-	m	-	-
5	null	-	Universal class 5	-	m	-	-

A.13.8.2 Parameter1 (see part 9 10.1)

				Data Types D	T2.3, A1.3	Key Type D	T2.3, A1.3
1	Parameter1 supported			-	m	-	m
2	integer	-	Universal class 2	-	m	-	m
3	bit	-	Universal class 3	-	m	-	-
4	IA5	-	Universal class 22	-	m	-	m
5	GraphicString	-	Universal class 25	-	m	-	m
6	GeneralString	-	Universal class 27	-	m	-	m
7	OctetString	-	Universal class 4	-	m	-	m

A.13.8.3 Parameter2

		Data Types D	T2.3, A1.3	Key Type D	T2.3, A1.3
1	Parameter2 supported	-	o	-	o

A.13.9 NBS-12 (see 7.1)

A.13.9.1 Universal class number parameter (see part 9 10.1)

				D	T2.3, A1.3	
1	Universal class number parameter supported			-	**m**	
2	PrintableString	-	Universal class 19	-	**i**	
3	TeletexString	-	Universal class 20	-	**i**	
4	VideotexString	-	Universal class 21	-	**i**	
5	IA5String	-	Universal class 22	-	**m**	
6	GraphicString	-	Universal class 25	-	**m**	see A.13.9.5
7	VisibleString	-	Universal class 26	-	**m**	
8	GeneralString	-	Universal class 27	-	**m**	see A.13.9.6

A.13.9.2 String length parameter

		D	T2.3, A1.3
1	Maximum string length parameter supported	-	**m**

A.13.9.3 String significance parameter

		D	T2.3, A1.3	
1	String significance parameter suported	-	**m**	see 7.1 table 3(c)
2	Variable length strings supported	-	**m**	
3	Fixed length strings supported	-	**m**	

A.13.9.4 Character set parameter

		D	T2.3, A1.3	
1	Character set parameter supported	-	**m**	see 7.1 table 3(c)

A.13.9.5 G sets supported

G sets which are supported in NBS-12 GraphicString.

1	**For values of GraphicString only the support of character strings of the ISO 646 IRV (G0) and ISO 8859-1 (G0 and G1) character sets is required.** **(see part 9 10.1.1 and 10.1.3)**

A.13.9.6 G and C sets supported

G and C sets which are supported in NBS-12 GeneralString.

1	**For values of GeneralString only the support of character strings of the ISO 646 IRV (G0) and ISO 8859-1 (G0 and G1) character set and ISO (C0) control character sets is required.** **(see part 9 10.1.1-3)**

- END OF FTAM PHASE 3 PROFILES REQUIREMENT LIST

Annex B (normative)

Register of FTAM Objects

B.1 Introduction

The objects defined in B.2.1 and B.2.2 will be removed from this document after ISO/IEC ISP 10607-2 and ISO/IEC ISP 10607-2/Amd.1 are published. During the period between publishing the ISP and the removal of the definitions from this document, the definitions in the ISP will take precedence over this document.

When the object definitions are removed, clauses B.2.1 and B.2.2 will be changed to point to the ISP.

B.2 Index of OIW FTAM Objects

B.2.1 FTAM Phase 2 Defined Objects

Object Identifier Prefix: nist-adhoc::= {iso(1) identified-organization(3) icd(9999) organization-code(1)}

Object	Object descriptor	Object identifier	Date of registration	Reference to definition
NBS-6	NBS-6 FTAM sequential file	{nist-adhoc document-type(5) sequential(6) }	Dec 15, '89 Withdrawn March 16, '90	Stable Agreements Vers. 4, Ed. 1, Dec '90 NIST SP 500-183 part 9, annex A clause A.1
NBS-7	NBS-7 FTAM random access file	{nist-adhoc document-type(5) random file(7) }	Dec 15, '89 Withdrawn March 16, '90	Stable Agreements Vers. 4, Ed. 1, Dec '90 NIST SP 500-183 part 9, annex A clause A.2
NBS-8	NBS-8 FTAM indexed file	{nist-adhoc document-type(5) indexed-file(8) }	Dec 15, '89 Withdrawn March 16, '90	Stable Agreements Vers. 4, Ed. 1, Dec '90 NIST SP 500-183 part 9, annex A clause A.3
NBS-9	NBS-9 FTAM file directory file	{nist-adhoc document-type(5) file-directory(9) }	Dec 15, '89 Withdrawn March 16, '90	Stable Agreements Vers. 4, Ed. 1, Dec '90 NIST SP 500-183 part 9, annex A clause A.4
	NHS ordered flat constraint set	{nist-adhoc constraint-set(4) nbs-ordered-flat(1) }	Dec 15, '89 Withdrawn March 16, '90	Stable Agreements Vers. 4, Ed. 1, Dec '90 NIST SP 500-183 part 9, annex B clause B.1
NBS-AS1	NBS abstract syntax AS1	{nist-adhoc abstract-styntax(2) nbs-as1(1) }	Dec 15, '89 Withdrawn March 16, '90	Stable Agreements Vers. 4, Ed. 1, Dec '90 NIST SP 500-183 part 9, annex C clause C.1
NBS-AS2	NBS file directory entry abstract syntax	{nist-adhoc abstract-styntax(2) nbs-as2(2) }	Dec 15, '89 Withdrawn March 16, '90	Stable Agreements Vers. 4, Ed. 1, Dec '90 NIST SP 500-183 part 9, annex C clause C.2
AP-Title		{nist-adhoc ftam-nil-ap-title(7) }	Dec 15, '89	Stable Agreements Vers. 4, Ed. 1, Dec '90 NIST SP 500-183 part 5, 12.1.1.1

Object Identifier Prefix: nist-oiw-ftam::= {iso(1) identified-organization(3) oiw(14)ftamsig(5)}

Object	Object descriptor	Object identifier	Date of registration	Reference to definition
NBS-6	NBS-6 FTAM sequential file	{nist-adhoc document-type(5) sequential(6) }	March 16, '90	Stable Agreements Vers. 4, Ed. 1, Dec '90 NIST SP 500-183 part 9, annex A clause A.5
NBS-7	NBS-7 FTAM random access file	{nist-adhoc document-type(5) random file(7) }	March 16, '90	Stable Agreements Vers. 4, Ed. 1, Dec '90 NIST SP 500-183 part 9, annex A clause A.6
NBS-8	NBS-8 FTAM indexed file	{nist-adhoc document-type(5) indexed-file(8) }	March 16, '90	Stable Agreements Vers. 4, Ed. 1, Dec '90 NIST SP 500-183 part 9, annex A clause A.7
NBS-9	NBS-9 FTAM file directory file	{nist-adhoc document-type(5) file-directory(9) }	March 16, '90	Stable Agreements Vers. 4, Ed. 1, Dec'90 NIST SP 500-183 part 9, annex A clause A.8
	NHS ordered flat constraint set	{nist-adhoc constraint-set(4) nbs-ordered-flat(1) }	March 16, '90	Stable Agreements Vers. 4, Ed. 1, Dec '90 NIST SP 500-183 part 9, annex B clause B.2
NBS-AS1	NBS abstract syntax AS1	{nist-adhoc abstract-styntax(2) nbs-as1(1) }	March 16, '90	Stable Agreements Vers. 4, Ed. 1, Dec '90 NIST SP 500-183 part 9, annex C clause C.3
NBS-AS2	NBS file directory entry abstract syntax	{nist-adhoc abstract-styntax(2) nbs-as2(2) }	March 16, '90	Stable Agreements Vers. 4, Ed. 1, Dec '90 NIST SP 500-183 part 9, annex C clause C.4

Object Identifier Prefix: nist-oiw-ftam:= {iso(1) identified-organization(3) oiw(14)ftamsig(5)}

Object	Object descriptor	Object identifier	Date of registration	Reference to definition
NBS-10	NBS-10 random binary access file	{nist-oiw-ftam document-type(5) random-binary(10) }	March 15, '89	Stable Agreements Vers. 4, Ed. 1, December '90 NIST SP 500-183 part 10, annex C clause C.1
NBS-11	NBS-11 FTAM indexed file with unique keys	{nist-oiw-ftam document-type(5) indexed-file-with-unique-keys(11) }	March 15, '89	Stable Agreements Vers. 4, Ed. 1, December '90 NIST SP 500-183 part 10, annex C clause C.2
NBS-12	NBS-12 FTAM simple text file	{nist-oiw-ftam document-type(5) simple-text-file (12) }	March 15, '89	Stable Agreements Vers. 4, Ed. 1, December '90 NIST SP 500-183 part 10, annex C clause C.3
	NBS Random Access	{nist-oiw-ftam constraint-set(4) nbs-random-access(2) }	March 15, '89	Stable Agreements Vers. 4, Ed. 1, December '90 NIST SP 500-183 part 10, annex D clause D.1
NBS-AS3	NBS random access node name abstract syntax	{nist-oiw-ftam abstract-syntax(2) nbs-node-name(3) }	March 15, '89	Stable Agreements Vers. 4, Ed. 1, December '90 NIST SP 500-183 part 10, annex E clause E.1
NBS-AS4	NBS random binary access file abstract syntax	{nist-oiw-ftam abstract-styntax(2) nbs-random-binary(4) }	March 15, '89	Stable Agreements Vers. 4, Ed. 1, December '90 NIST SP 500-183 part 10, annex E clause E.2
NBS-AS5	NBS simple text abstract syntax	{nist-oiw-ftam abstract-styntax(2) nbs-simple-text(5) }	March 15, '89	Stable Agreements Vers. 4, Ed. 1, December '90 NIST SP 500-183 part 10, annex E clause E.3

Annex C (normative)

Document Types

C.1 NBS-10 Random Binary Access File

C.1.1 Entry Number: NBS-10

C.1.2 Information objects

Table 4 - Information objects in NBS-10

document type name	{iso identified-organization oiw(14) ftamsig(5) document-type(5) random-binary(10)} "NBS-10 FTAM random binary access file"
abstract syntax names: a) name of asname1 b) name of asname2 c) name of asname3	{iso identified-organization oiw(14) ftamsig(5) abstract-syntax(2) nbs-random-binary(4)} "NBS random binary access file abstract syntax" {iso standard 8571 abstract-syntax(2) ftam-fadu(2)} "FTAM FADU" {iso identified-organization oiw(14) ftamsig(5) abstract-syntax(2) nbs-node-name(3)} "NBS random access node name abstract syntax"
transfer syntax names:	{joint-iso-ccitt asn1(1) basic-encoding(1)} "Basic encoding of a single ASN.1 type"
file model	{iso standard 8571 file-model(3) hierarchical(1)} "FTAM hierarchical file model"
constraint set	{iso identified-organization oiw(14) ftamsig(5) constraint-set(4) nbs-random-access(2)} "NBS random access constraint set"
File contents: Datatype1 ::= OCTET STRING Datatype2 ::= Node-Name --The type to be used for Node-Name is defined in ISO 8571-FADU --The only Choice for Node-Name is user-coded Datatype3 ::= NBS-Node-Name --As defined by the NBS Random Access Node-Name Abstract Syntax	

C.1.3 Scope and field of application

This document type defines the contents of a file for storage, for transfer and access by FTAM.

C.1.4 References

ISO 8571, Information Processing Systems - Open Systems Interconnection - File Transfer, Access and Management

C.1.5 Definitions

This definition makes use of the terms data element, data unit and file access data unit as defined in ISO 8571-1.

C.1.6 Abbreviations

FTAM File Transfer, Access and Management

C.1.7 Document semantics

The document consists of zero, one, or more File Access Data Units. Each FADU contains precisely one data unit which consists of precisely one data element. The data element is made up of one octet. The order of each of these elements is significant. The semantics of the data elements is not specified by this document type.

The document structure takes any of the forms allowed by the FTAM hierarchical file model as constrained by the NBS random access constraint set. The definition for FTAM hierarchical file model appears in 8571-2.

There are no size or length limitations imposed by this definition.

C.1.8 Abstract syntactic structure

The abstract syntactic structure of the document is a series of octets.

C.1.9 Definition of transfer

C.1.9.1 Datatype definition

The presentation data value used for transfer is an ASN.1 OCTET STRING.

Datatype2 is used to specify the FADU-Identity of "name-list" in the FTAM PDUs specifying FADU-Identity, where "name-list" is defined as a SEQUENCE of EXTERNAL. The EXTERNAL is defined as Node-Name in the FTAM FADU abstract syntax. The use of Datatype2 is defined in "NBS random access constraint set."

Datatype3 specifies the "user-coded" form of the Node-Name in the FTAM FADU abstract syntax, where "user-coded" is defined as an EXTERNAL. That EXTERNAL is defined by Datatype3. The use of Datatype3 is defined in "NBS random access constraint set."

C.1.9.2 Presentation data values

The document is transmitted as a series of presentation data values. Each presentation data value shall consist of the "data" from one or more FADUs concatenated together. The result is one value of the ASN.1 data type OCTET STRING. The "fadu-count" field supplied in the Node-Name specifies the number of FADUs to transfer during a Read operation. The requested FADUs may be transferred as one or more presentation data values.

All values are transmitted in the same (but any) presentation context established to support the abstract syntax name "asname1" declared in table 4.

> **NOTE -** Specific carrier standards may impose additional constraints on the presentation context to be used, when the above permits a choice.

Boundaries between P-DATA primitives and between presentation data values are chosen locally by the sending entity at the time of transmission. The boundaries are not preserved when the file is stored and they carry no semantics of the document type. Receivers which support this document type shall accept a document with any of the permitted transfer options.

C.1.9.3 Sequence of presentation data values

The sequence of presentation data values is the same as the sequence of Data Units within the file.

C.1.10 Transfer syntax

An implementation supporting these document types shall support the transfer syntax generation rules named in table 4 for all presentation data values transferred.

Implementations may optionally support other transfer syntaxes.

C.1.11 ASE Specific Specifications

C.1.11.1 Simplification

The document type NBS-10 may be simplified to the document type FTAM-3. The resultant document contains the same sequence of data values as would result from accessing the file as an NBS-10 file.

C.1.11.2 The READ operation

A READ operation may be applied to a range of FADUs via the FADU-Identity of "NodeSeq." The "starting-fadu" part of the node name specifies the node number of the first FADU; the "fadu-count" specifies the number of consecutive FADUs to be transferred.

A READ operation applied to a range of FADUs that spans beyond the end of file is valid. All available data in the range is transferred. An informative diagnostic (5005) is returned on the F-Data-End request indicating that the end of file was reached and a portion of the request was satisfied.

C.1.11.3 The REPLACE operation

When the REPLACE operation is applied to the root FADU of an NBS-10 document, the transferred data shall be any NBS-10 document.

The REPLACE operation applied to a FADU-Identity of "node number" is used to replace a series of FADUs, starting at the specified position in the file, by the new FADUs being transferred. The number of replaced FADUs is determined by the number of transferred FADUs.

If the replacement spans beyond the end of the existing file, then the additional FADUs are inserted at the end of the file.

C.1.11.4 The INSERT operation

When the INSERT operation is applied at the end of file, the transferred data shall be a series of FADUs which would be generated by reading any NBS-10 document type in access context UA.

C.2 NBS-11 Indexed File With Unique Keys

C.2.1 Entry Number: NBS-11

C.2.2 Information objects

Table 5 - Information objects in NBS-11

<table>
<tr><td>document name</td><td>{iso identified-organization oiw(14) ftamsig(5) document-type(5) indexed-file-with-unique-keys(11)}
"NBS-11 FTAM indexed file with unique keys"</td></tr>
<tr><td>abstract syntax names:
a) name for asname1

b) name for asname2</td><td>
{iso identified-organization oiw(14) ftamsig(5) abstract syntax(2) nbs-as1(1)}
"NBS abstract syntax AS1"
{iso standard 8571 abstract-syntax(2) ftam-fadu(2)}
"FTAM FADU"</td></tr>
<tr><td>transfer syntax names:</td><td>{joint-iso-ccitt asn1(1) basic-encoding(1)}
"Basic Encoding of a single ASN.1 type"</td></tr>
<tr><td colspan="2">parameter syntax:
PARAMETERS ::= SEQUENCE {
DataTypes,
KeyType,
KeyPosition }
DataTypes ::= SEQUENCE OF CHOICE {
Parameter0,
Parameter1,
Parameter2 }
KeyType ::= CHOICE {
Parameter0,
Parameter1,
Parameter2 }
-- Parameter0, Parameter1, Parameter2, as
-- defined for the document types NBS-6,
-- NBS-7, NBS-8

KeyPosition::= INTEGER</td></tr>
<tr><td>file model</td><td>{iso standard 8571 file-model(3) hierarchical(1)}
"FTAM hierarchical file model"</td></tr>
<tr><td>constraint set</td><td>{iso standard 8571 constraint-set(4) ordered-flat-unique-names(4)}
"FTAM ordered flat constraint set with unique names"</td></tr>
<tr><td colspan="2">file contents:
Datatype1 ::= PrimType
-- as defined in NBS-AS1

Datatype2 ::= CHOICE {
Node-Descriptor-Data-Element,
Enter-Subtree-Data-Element,
Exit-Subtree-Data-Element }
Datatype3 ::= Prim Type -- as defined by the NBS abstract syntax AS1</td></tr>
</table>

C.2.3 Scope and field of application

The document type defines the contents of a file for storage, for transfer and access using FTAM.

> **NOTE -** Storage refers to apparent storage within the Virtual Filestore.

C.2.4 References

> *ISO 8571, Information Processing Systems - Open Systems Interconnection - File Transfer, Access and Management*

C.2.5 Definitions

This definition makes use of the terms data element, data unit and file access data unit as defined in ISO 8571-1.

C.2.6 Abbreviations

> FTAM File Transfer, Access and Management

C.2.7 Document semantics

The document consists of zero, one, or more File Access Data Units. Each FADU consists of precisely one data unit which consists of zero, one, or more data elements. The order of each of these elements is significant.

The document structure takes any of the forms allowed by the FTAM hierarchical file model as constrained by the FTAM ordered flat constraint set with unique names (see table 5). These definitions appear in ISO 8571-2.

The following additional requirements are specified for the use of the ordered flat constraint set with unique names:

> The FADU identity "node number" is not required for conformant implementations;
>
> The identities "next" and "previous" are allowed for all FADUs.

Each data element is a data type from the set of primitive data types defined in part 9 Annex C, NBS abstract syntax AS1. Each data unit contains the same data element types in the same order as all other data units. These types and their respective maximum lengths are defined by the <DataTypes> parameter.

For Datatype1 and Datatype3, the string-length field of Parameter1 specifies the length of the value in octets for the INTEGER, BIT STRING and OCTET STRING types. For character-type data elements, the string-length indicates the actual number of characters from the specified character set, not including any escape sequences or overhead from the character encoding.

For floating point numbers, finite form, length-1 and length-2 specify the length in bits of mantissa and exponent, respectively. The length-1 and length-2 values are irrelevant for the other choices of floating point numbers.

Each data unit in the file has a key associated with it, which is the user-coded form of Node-Name. The key of each data unit is of the same data type as the key of all other data units in the file and is a single data element from the set of primitive data types defined in part 9 Annex C, C.3 of NIST SP 500-183.

The type and length of the key are defined by the <KeyType> parameter.

The primitive data types and minimum size ranges of each unit which an implementation must accept as a key value are given in the following table 6.

Table 6 - Datatypes for keys

Key Type	Minimum Range (octets)	Order
ASN.1 INTEGER	(1-2)	increasing numeric value
ASN.1 IA5String	(1-16)	lexical order
ASN.1 GraphicString ASN.1 GeneralString	(1-16)	lexical order
ASN.1 OCTET STRING	(1-16)	lexical order
ASN.1 GeneralizedTime	(1-16)	increasing value
ASN.1 UniversalTime		increasing time value
NBS-AS1 FloatingPointNumber		increasing time value
		increasing numeric value

The position of the key in the data unit is specified by the <KeyPosition> parameter.

KeyPosition = 0 implies the key is not part of the data

KeyPosition > 0 specifies the actual data element in the data unit.

C.2.8 Abstract syntactic structure

The abstract syntactic structure of the document is a hierarchically structured file as defined in the ASN.1 module ISO8571-FADU in ISO 8571, in which each of the file access data units has the abstract syntactic structure of NBS-AS1 as defined by the parameters.

C.2.9 Definition of transfer

C.2.9.1 Datatype definitions

The file consists of data values which are of

a) Datatype1 defined in table 5, where the PrimType in the datatype is given by the NBS-AS1 definition; or

b) Datatype2 defined in table 5, which is the ASN.1 datatype declared as "Data-Element" in the ASN.1 module ISO8571-FADU; or

c) Datatype3, defined in Table 5, which specifies the user-coded form of the Node-Name in the FTAM FADU abstract syntax, where user-coded is defined as EXTERNAL.

C.2.9.2 Presentation data values

The document is transferred as a series of presentation data values, each of which is

a) one value of the ASN.1 datatype "Datatype1," carrying one of the data elements from the document. All values are transmitted in the same (but any) presentation context established to support the abstract syntax name "asname1" or

b) a value of "Datatype2." All values are transmitted in the same (but any) presentation context established to support the abstract syntax name "asname2."; or

c) a value of "Datatype3" carrying a Key. All values are transmitted in the same (but any) presentation context established to support the abstract syntax name "asname1".

NOTES

1 Specific carrier standards may impose additional constraints on the presentation context to be used, where the above permits a choice.

2 Any document type defined in this entry either makes no use of Datatype2, or starts with a Datatype2 transmission.

Boundaries between presentation data values in the same presentation context, and boundaries between P-DATA primitives, are chosen locally by the sending entity at the time of transmission, and carry no semantics of the document type. Receivers which support this document type shall accept a document with any of the permitted transfer options (e.g., document type parameters and transfer syntaxes).

C.2.9.3 Sequence of presentation data values

The sequence of presentation data values of type a) and the sequence of presentation data values of types a) and b) is the same as the sequence of data elements within a Data Unit, and Data Units in the hierarchical structure, when flattened according to the definition of the hierarchical file model in ISO

8571-2.

C.2.10 Transfer syntax

An implementation supporting this document type shall support the transfer syntax generation rules named in table 5 for all presentation data values transferred. Implementation may optionally support other named transfer syntaxes.

C.2.11 ASE Specific Specifications

C.2.11.1 Simplification

This simplification loses information.

The document type NBS-11 may be accessed as a document type FTAM-3 (allowed only when reading the file) by specifying document type FTAM-3 in the <contents type> parameter in <F-OPEN request>, and limiting access context to UA on F-READ.

The octet representation of the transferred data is unpredictable. It will usually correspond to the data values as stored in the local Real Filestore of the Responder.

A document of type NBS-11 can be accessed as a document of type NBS-6 (allowed only when reading the file) by specifying document type NBS-6 with appropriate data type parameters in the <contents type> parameter on the <F-OPEN request>. The traversal order of the FADUs must be maintained.

NOTE - The traversal order is as reading the file as NBS-11 in key order.

A document of type NBS-11 may be accessed as a document of type NBS-8 (allowed only when reading the file) by specifying document type NBS-8 in the <contents type> parameter in the <F-OPEN REQUEST>.

C.2.11.2 Access context selection

A document of type NBS-11 may be accessed in any one of the access contexts defined in the FTAM ordered flat constraint set with unique names. The presentation data units transferred in each case are those derived from the structuring elements defined for that access context in ISO 8571-2.

C.2.11.3 The INSERT operation

When the <INSERT> operation is applied, the transferred material shall be the series of FADUs which would be generated by reading any NBS-11 document with the same parameter values in access context FA.

A transferred FADU whose name duplicates that of an already existing FADU will cause the <INSERT> operation to fail. The failure shall be signalled by issuing an F-CANCEL Request with a corresponding diagnostic.

C.2.11.4 The EXTEND operation

This operation is excluded for use with this document type.

C.2.11.5 The REPLACE operation

When the <REPLACE> operation is applied with FADU Identity "begin," a transferred FADU whose name duplicates that of a previously transferred FADU will cause the <REPLACE> operation to fail. The failure shall be signalled by issuing an F-CANCEL Request with a corresponding diagnostic.

C.3 NBS-12 Simple Text File Document Type

C.3.1 Entry Number: NBS-12

C.3.2 Information objects

Table 7 - Information objects in NBS-12

<table>
<tr><td>document type names</td><td>{iso identified-organization oiw(14) ftamsig(5) document-type(5) simple-text-file(12)}
"NBS-12 FTAM simple text file"</td></tr>
<tr><td>abstract syntax names:
a) name for asname1

b) name for asname2</td><td>
{iso identified-organization oiw(14) ftamsig(5) abstract-syntax(2) nbs-simple-text(5)}
"NBS simple text abstract syntax"
{iso standard 8571 abstract-syntax(2) ftam-fadu(2)}
"FTAM FADU"</td></tr>
<tr><td>transfer syntax names:</td><td>{joint-iso-ccitt asn1 (1) basic-encoding (1)}
"Basic Encoding of a single ASN.1 type"</td></tr>
<tr><td colspan="2">Parameter Syntax
PARAMETERS ::= SEQUENCE {
universal-class-number [0] IMPLICIT INTEGER,
maximum-string-length [1] IMPLICIT INTEGER,
string-significance [2] IMPLICIT INTEGER
{variable (0), fixed (1)},
character-set [3] IMPLICIT OCTET STRING OPTIONAL }</td></tr>
<tr><td>file model</td><td>{iso standard 8571 file-model(3) hierarchical(1)}
"FTAM hierarchical file model"</td></tr>
<tr><td>constraint set</td><td>{iso standard 8571 constraint-set(4) sequential flat(2)} "FTAM sequential flat constraint set"</td></tr>
<tr><td colspan="2">File contents
Datatype1 ::= NBS-Text
--as defined in the NBS Simple Text
--Abstract Syntax registration entry

Datatype2 ::= Node-Descriptor-Data-Element</td></tr>
</table>

C.3.3 Scope and field of application

The document type defines the contents of a file for storage, and for transfer and access by FTAM.

NOTE - Storage refers to apparent storage within the Virtual Filestore.

C.3.4 References

ISO 8571, Information Processing Systems - Open Systems Interconnection - File Transfer, Access and Management

ISO 8824, Information Processing Systems - Open Systems Interconnection-Specification of Abstract Syntax Notation 1 (ASN.1).

ISO 8825, Information Processing Systems - Open Systems Interconnection-Basic Encoding Rules for Abstract Syntax Notation One (ASN.1).

ISO 6429, Information Processing - ISO 7-bit and 8-bit coded character sets-Additional control functions for character imaging devices.

C.3.5 Definitions

This definition makes use of the terms data element, data unit and file access data unit as defined in ISO 8571-1. In addition, it makes use of the terms character string, graphics character, and format effector as defined in document type registration entry "FTAM-2" in ISO 8571-2.

C.3.6 Abbreviations

FTAM File Transfer, Access and Management

C.3.7 Document semantics

This document consists of zero, one, or more File Access Data Units. Each FADU consists of precisely one data unit which consists of precisely one character string. The order of each of these elements is significant. The semantics of the character strings is not specified by this document type.

The document structure takes any of the forms allowed by the FTAM hierarchical file model as constrained by the sequential flat constraint set. These definitions appear in ISO 8571-2. As additional constraints, FADU identity will be limited to the following values:

a) "begin" "and "end" when using the Transfer or Transfer and Management service classes;

b) "begin," "end," "first," and "next" when using the Access service class.

Each character string consists of characters from the character set defined by the ASN.1 (ISO 8824) character set type whose universal class number is given by the "universal-class-number" parameter and by the escape sequences contained in the optional "character-set" parameter. If the character set type allows explicit escape sequences, the "character-set" parameter, if present, contains escape sequences which designate and invoke specific character sets. If the "character-set" parameter is not present, character sets are assumed to be designated and invoked as specified in table 2 in ISO 8825. Character strings shall not contain escape sequences.

There are no size or length limitations imposed by this definition, except those specified here. Each character string is of a length determined by the number of characters given by the "maximum-string-length" parameter.

> **NOTE -** The length restriction refers to the number of characters from the applicable character set, not to the number of octets in the encoding, nor to the line length in any rendition of the document, where these are different.

The exact significance of the character strings is determined by the "string-significance" parameter. If its value is "variable," the length of the character strings is less than or equal to the length given. If the value is "fixed," the length of each character string is exactly equal to the length given.

If the document is interpreted on a character imaging device (outside the scope of ISO 8571), the interpretation depends on the character set in use.

a) If the character set contains format effectors, they shall be interpreted as defined in ISO 6429; end of string and end of file access data unit are given no formatting significance, and do not contribute to the document semantics;

b) If the character set does not contain format effectors, the end of each character string is interpreted as implying carriage return and line feed formatting actions in any rendition. The end of file access data unit is given no formatting significance beyond that attached to the end of the string in it.

C.3.8 Abstract syntactic structure

The abstract syntactic structure of the document is a hierarchically structured file as defined in the ASN.1 modules ISO8571-FADU and ISO 8571-CONTENTS in ISO 8571, in which each of the file contents data elements has the abstract syntactic structure of "NBS-Text."

C.3.9 Definition of transfer

C.3.9.1 Datatype definitions

The file consists of data values which are of either

a) Datatype1 defined in table 7, the ASN.1 datatype declared as "NBS-Text" in the NBS simple text abstract syntax definition. The choice in "NBS-Text" is determined by the universal-class-number parameter; or

b) Datatype2 defined in table 7, the ASN.1 datatype declared as "Data-Element" in the ASN.1 module ISO 8571-FADU.

C.3.9.2 Presentation data values

The document is transferred as a series of presentation data values, each of which is either

a) one value of the ASN.1 datatype "Datatype1," carrying one of the character strings of the document. Each character shall be transmitted using one of the character sets identified by the universal-class-number parameter. All values are transmitted in the same (but any) presentation context established to support the abstract syntax name "asname1" declared in table 7; or

b) one value of the ASN.1 datatype "Datatype2." All values are transmitted in the same (but any) presentation context established to support the abstract syntax name "asname2" declared in table 7.

NOTES

1 Specific carrier standards may impose additional constraints on the presentation context to be used, where the above permits a choice.

2 Any document type defined in this entry either makes no use of Datatype2, or starts with a Datatype2 transmission.

Boundaries between P-DATA primitives are chosen locally by the sending entity at the time of transmission, and carry no semantics of the document type. Receivers which support this document type shall accept a document with any of the permitted transfer options.

C.3.9.3 Sequence of presentation data values

The sequence of presentation data values of type a) and the sequence of presentation data values of types a) and b) is the same as the sequence of character strings within a Data Unit, and Data Units in the hierarchical structure, when flattened according to the definition of the hierarchical file model in ISO 8571-2.

C.3.10 Transfer syntax

An implementation supporting this document type shall support the transfer syntax generation rules named in table 7 for all presentation data values transferred.

C.3.11 ASE Specific Specifications

C.3.11.1 Simplification and relaxation

C.3.11.1.1 Simplification to FTAM-1

This simplification loses information.

The document type NBS-12 may be accessed as a document type FTAM-1. The resultant document contains the same sequence of data values as would result from accessing the structured text file in access context UA. That is, only the presentation data values in the abstract syntax "asname1" are present. If the "character-set" parameter was present before the simplification, its contents will be added to the beginning of each string.

> **NOTE -** The boundary between file access data units remains a boundary between strings, but any special significance given to it is lost.

C.3.11.1.2 Relaxation to FTAM-2

The document type NBS-12 may be relaxed to the document type FTAM-2. If the "character-set" parameter was present before the relaxation, its contents will be added to the beginning of each string.

C.3.11.1.3 Character set relaxation

This operation loses explicit information in the document type identification.
A document of type NBS-12 may be relaxed to a different document of type NBS-12 with

a different "universal-class-number" parameter value;

a different "character-set" parameter value;

different values for both of these parameters;

a different "universal-class-number" parameter value and no "character-set" parameter value; or no "character-set" parameter value

if the resultant document type permits all characters from the original document type. If this relaxation involves including format effectors and none were present before the relaxation, the characters "carriage return" and "line-feed" shall be added to the end of each string.

NOTE - If the characters "carriage return" and "line feed" are not part of the format effectors, the formatting action may be represented by "newline," or some other implementation specific choice if there is no representation of "newline" defined.

C.3.11.1.4 String length relaxation

This operation loses explicit information in the document type identification.

A document of type NBS-12 may be relaxed to another document type NBS-12 with a larger "maximum-string-length" parameter.

C.3.11.2 Access context selection

A document of type NBS-12 may be accessed in any one of the access contexts defined in the sequential flat constraint set. The presentation data units transferred in each case are those derived from the structuring elements defined for that access context in ISO 8571-2.

C.3.11.3 The INSERT operation

When the INSERT operation is applied at the end of file, the transferred material shall be the series of FADUs which would be generated by reading any NBS-12 document type with the same parameter values in access context FA.

Annex D (normative)

Constraint Sets

D.1 NBS random access constraint set

Table 8 - Basic constraints in the NBS Random Access Constraint Set

Constraint set descriptor	"NBS random access constraint set"
Constraint set identifier	{iso identified-organization oiw(14) ftamsig(5) constraint-set(4) nbs-random-access(2)}
Node names	All names shall be of the same type; the type of the names and an ordering of the names shall be defined when reference is made to the constraint set.
File access actions	Locate, Read, Insert, Erase, Replace
Qualified actions	None
Available access context	UA
Creation state	Root node without an associate data unit
Location after open	Root node
Beginning of file	Root node
End of file	No node selected
Read whole file	Read in access context UA with FADU-Identity of "begin"
Write whole file	Transfer a series of leaf FADUs which would be generated by reading the whole file in access context UA; perform the transfer with a FADU Identity of "end" and a file access action of "insert," or with a FADU Identity of "begin" and an action of "replace," or with an FADU identity of "node number" and an action of "replace."

Table 9 - Identity constraints in the NBS Random Access Constraint Set

Action	Begin	End	NodeSeq	Node number
Locate				leaf
Read	whole		leaf	
Insert		leaf		
Erase	whole			leaf
Replace	whole			leaf

NOTE - NodeSeq = A sequence of Node-Names with a single member

D.1.1 Field of application

The NBS Random Access constraint set applies to files which are structured into a sequence of individual FADUs and to which access may be made randomly by NodeSeq. The structuring of the file into individual FADUs is determined by the Node-Name.

D.1.2 Basic constraints

The basic constraints in the NBS Random Access constraint set are given in table 8.

D.1.3 Structural constraints

The root node shall not have an associated data unit; all children of the root node shall be leaf nodes and shall have an associated data unit; all arcs from the root node shall be of length one.

D.1.4 Action constraints

Insert: the insert action is allowed only at the end of the file, with FADU-Identity of "end"; the new node is inserted following all existing nodes in the file. The location following the insert is "end."

Erase: the erase action is allowed at the root node to empty the file, with FADU-Identity of "begin." The result is a solitary root node without an associated data unit. Erase with the FADU-Identity of "node number" means truncation of the file.

Replace whole file: the FADU-Identity is "begin" and the complete series of new FADU contents is sent.

Replace new leaves: the FADU-Identity is "node number" and the number of FADUs being replaced is given by the number of FADUs sent.

D.1.5 Identity constraints

The FADU-Identity associated with the file action shall be one of the identities: begin, end, Node Number and NodeSeq. The actions with which these identities can be used are given in table 9.

Annex E (normative)

Abstract Syntaxes

E.1 NBS Node Name Abstract Syntax

Abstract Syntax Name
{ iso identified-organization oiw(14) ftamsig(5) abstract-syntax(2) nbs-node-name(3) }

"NBS random access node name abstract syntax"

This is an abstract syntax for the user-coded Node-Name in the FTAM FADU abstract syntax.

```
NBS-AS3 DEFINITIONS::=

        BEGIN

        NBS-Node-Name::= SEQUENCE

                {       starting-fadu [0] IMPLICIT INTEGER,
                        fadu-count [1] IMPLICIT INTEGER }
                        --a "fadu-count" of 0 specifies the
                        --range of FADUs

                        --beginning at "starting-fadu" and
                        --ending at "end of file"

        END
```

For this abstract syntax the following transfer syntax can be used.

{ joint-iso-ccitt asn1(1) basic-encoding(1) }
"Basic Encoding of a single ASN.1 type"

E.2 NBS Random Binary Access File Abstract Syntax

Abstract Syntax Name
{ iso identified-organization oiw(14) ftamsig(5) abstract-syntax(2) nbs-random-binary(4) }

"NBS random binary access file abstract syntax"

This is an abstract syntax for the transfer of the file contents for NBS random binary files.

NBS-AS4 DEFINITIONS::=

```
    BEGIN
        NBS-Random Binary ::= OCTET STRING
        --contains one or more presentation data values
        --concatenated together.
        --Each presentation data value is defined as
        --Datatype1 in table 4.
    END
```

For this abstract syntax, the following transfer syntax can be used:

{ joint-iso-ccitt asn1(1) basic-encoding(1) }
"Basic Encoding of a single ASN.1 type"

E.3 NBS Simple Text Abstract Syntax

Abstract Syntax Name
{iso identified-organization oiw(14) ftamsig(5)
abstract-syntax(2) nbs-simple-text(5) }

"NBS simple text abstract syntax"

```
NBS-AS5 DEFINITIONS::=

BEGIN

NBS-Text::= CHOICE {
        IA5String,--Universal Class 22
        GraphicString, --Universal Class 25
        VisibleString, --Universal Class 26
        GeneralString --Universal Class 27 }
END
```

For this abstract syntax, the following transfer syntax can be used:

{joint-iso-ccitt asn1(1) basic-encoding(1)}
"Basic encoding of a single ASN.1 type"

Annex F (normative)

Delta Protocol Implementation Conformance Statement (PICS) Pro forma

(Refer to the Working Implementation Agreements.)

Annex G (normative)

Amendments and Corrigenda

Implementations conforming to these agreements shall implement the defect report solutions contained in the following:

FTAM:

a) ISO 8571-1/Cor.1:1990;

b) ISO 8571-2/Cor.1:1990;

c) ISO 8571-3/Cor.1:1990;

d) ISO 8571-4/Cor.1:1990;

e) ISO 8571-3/Cor.2;

f) ISO 8571-4/Cor.2.

Editor's Note - The corrigenda ISO 8571-3/Cor.2, and ISO 8571-4/Cor.2 is to be published. Until it is available, the solutions can be found in the documents ISO/IEC JTC/SC21 N5234 and ISO/IEC JTC1/SC21 N 5235.