

Implementation of ENV 41214 : 1992

Information technology —

**Functional standard for profile
A/MH11 —**

**Message Handling Systems
(1988 and later) —**

**Common facilities — MTA and
MTS**

Technologie de l'information — Norme
fonctionnelle pour le profil A/MH11 —
Système de messagerie (1988 et
ultérieurement) — Facilités communes —
MTA et MTS

Informationstechnik — Funktionelle Norm
Profil A/MH11 — Mitteilungs-
Übertragungssysteme (1988 und später)
Gemeinsame Einrichtungen — MTS and MTA

UDC 681.3.01/02

National foreword

This Draft for Development is identical with the European Prestandard ENV 41214 : 1992 *Information technology — Functional standard for profile A/MIH11 — Message Handling Systems (1988 and later) — Common facilities — MTA and MTS*, prepared by CEN/CENELEC whose members have committed themselves to making it available in an appropriate form. In the UK the Draft for Development is the form now chosen for ENVs in the information technology area.

This Draft for Development is published under the direction of the Information Systems Technology Standards Policy Committee whose Technical Committee IST/18 has the responsibility to:

- aid enquirers to understand the text;
- present to the responsible international/European committee any queries on interpretation, or proposals for change, and to keep UK interests informed;
- - monitor related international and European developments and promulgate them in the UK.

NOTE. International and European Standards, as well as overseas standards, are available from BSI Sales Department, BSI, Linford Wood, Milton Keynes, MK14 6LE.

Under normal procedures, this ENV will be reviewed after 2 years by CEN/CENELEC members with a view to its:

- conversion into a European Standard;
- extension once for a further 2 years;
- replacement by a revised ENV;
- withdrawal.

However, work is already in progress to develop an International Standardized Profile (ISP) covering the same aspects of Message Handling Systems protocols.

It is expected that when the ISP has been approved it will be adopted as a European Standard and ENV 41214 will be withdrawn. This may happen before the 2 year review of the ENV is due.

The future of this Draft for Development is therefore dependent on that of the ENV.

This publication is not to be regarded as a British Standard.

UDC 681.3.01/02 Supersedes HD 270 S1 : 1983

Descriptors: Data processing, information interchange, telecommunications, messages

English version

Information technology — Functional standard for profile A/MH11 — Message Handling Systems (1988 and later) — Common facilities — MTA and MTS

Technologie de l'information — Norme fonctionnelle pour le profil A/MH11 — Système de messagerie (1988 et ultérieurement) — Facilités communes — MTA et MTS

Informationstechnik — Funktionelle Norm für Profil A/MH11 — Mitteilungen — Übertragungssysteme (1988 und später) — Gemeinsame Einrichtungen — MTS and MTA

This European Prestandard (ENV) was approved by CEN/CENELEC on 1992-04-30 as a prospective standard for provisional application. The period of validity of this ENV is limited initially to three years. After two years the members of CEN/CENELEC will be requested to submit their comments, particularly on the question whether the ENV can be converted into a European Standard (EN).

CEN/CENELEC members are required to announce the existence of this ENV in the same way as for an EN and to make the ENV available promptly at national level in an appropriate form. It is permissible to keep conflicting national standards in force (in parallel to the ENV) until the final decision about the possible conversion of the ENV into an EN is reached.

CEN/CENELEC members are the national standards bodies and national electrotechnical committees, respectively of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CEN/CENELEC

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Ref. No. ENV 41214 : 1992 E

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0 Foreword

This European Prestandard has been jointly prepared by EWOS EG MHS and ETSI TE.3.

The concept of profiles and the structure of functional standards for information technology are laid down in CEN/CENELEC/ETSI Memorandum M-IT-01. This European Prestandard is one functional profile in the set defined in CEN/CENELEC/ETSI Memorandum M-IT-02.

This European Prestandard has been approved by ETSI TE, EWOS TA and by the CEN/CENELEC members at a ballot resolution meeting in Bern, April 1992.

The relationship to ENV 41 201 (A/3211) and ENV 41 202 (A/311), which refer to the 1984 versions of the CCITT Recommendations and draft ISO Standards, is addressed. This European Prestandard does not replace ENV 41 201 and ENV 41 202.

This profile describes communication between Message Handling Systems based on MTA to MTA interworking, using the 1988 CCITT X.400 series of Recommendations and ISO/IEC 10021 MOTIS Standards, as modified by the MHS Implementors' Guide and the published ISO/IEC Technical Corrigenda.

This functional standard contains ten annexes A, B, C, D, H, J and K which are normative and E, F and G which are informative.

1 Scope

1.1 Introduction

The purpose of a profile is to recommend how certain information technology standards should be used to satisfy one or more specific requirements. In particular, a profile should determine which options available in the Base Specifications are necessary or desirable if the specific requirements are to be met.

This profile applies to Message Handling Systems within the general context of the OSI Reference Model. The profile consists of two sub-profiles:

- A/MH11.1, which defines the interworking of MTAs which implement the mts-transfer application context.
- A/MH11.2, which defines the interworking of MTAs which implement the mts-transfer-protocol and the mts-transfer-protocol-1984 application contexts.

An implementation claiming conformance to A/MH11 shall support A/MH11.1, A/MH11.2 or both.

The specific requirements of the sub-profiles are given in 4.2 and 4.6. The scope of this profile is the following:

- Specification of the conformance rules for the support of the Message Transfer Protocol (P1).
- Specification of the conformance rules for an MTA when interacting with an MTS-user.
(These conformance rules do not apply to the MTS-user).

Elements of Service, protocol elements and abstract operations are classified in a modular way (functional grouping) such that implementations may support the functional groups which are appropriate to meet their requirements.

This document also includes specifications of security elements for MTS-users (UA/MS) that define requirements that are referenced from other MHS profiles. Other End User Services, UA, MS and AU functions are not covered by this profile.

1.2 Position within the Taxonomy

This profile exists in the following context:

Information Technology - Functional Standard for Profile A/MH11 - Message Handling Systems

Common Facilities

- A/MH11 MTA and MTS
- A/MH12 UA to MS (P7)
- A/MH13 UA or MS to MTA (P3)

IPMS

- A/MH21 IPM end system to IPM end system (P2 over P1)
- A/MH22 IPM UA to IPM MS (P2 over P7)
- A/MH23 IPM UA or IPM MS to MTA (P2 over P3)
- A/MH24 Teletex to TLMA (IPM)

EDIMS

- A/MH31 EDIMS end system to EDIMS end system (P_{EDI} over P1)
- A/MH32 EDIMS UA to EDIMS MS (P_{EDI} over P7)
- A/MH33 EDIMS UA or EDIMS MS to MTA (P_{EDI} over P3)
- A/MH34 Teletex to TLMA (EDI)

1.3 Scenario Description

The scenario is described in Figure 1. Figure 2 indicates the specifications from which this profile is derived.

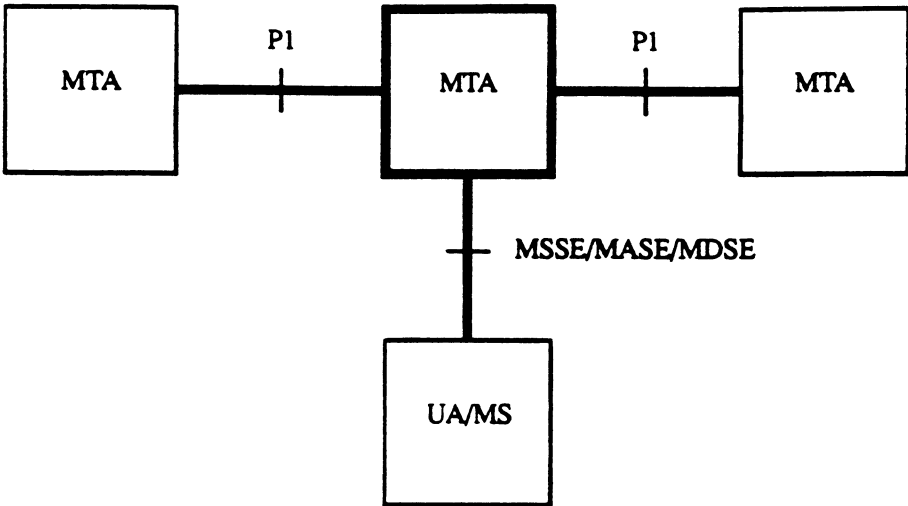


Figure 1: Interconnection of MTAs using A/MH11

MT service X.400 ISO/IEC 10021-1 X.411 ISO/IEC 10021-4 X.419 ISO/IEC 10021-6	Reliable transfer X.228 ISO/IEC 9066-2	Association control X.227 ISO/IEC 8650
Presentation layer X.208 ISO/IEC 8824 and X.209 ISO/IEC 8825 and X.226 ISO/IEC 8823		
Session layer X.225 ISO/IEC 8327		

Figure 2: Model of profile A/MH11

1.4 Maintenance

The user is invited to check with the EWOS secretariat if any defect reports or corrigenda to this profile are available and may be obtained from:

European Workshop for Open Systems
Attn: Mr. Luc van den Berghe
Rue de Stassart, 36
B - 1050 Brussels
BELGIUM

Such documents may be subject to conformance.

1.5 Base Specifications

The Base Specifications on which this profile was developed comprise the X.400 series of Recommendations and the ISO/IEC 10021 MOTIS Standards as modified by the MHS Implementors' Guide and the published ISO/IEC Technical Corrigenda numbers 1, 2, 3 and 4. An implementor shall state in the PICS whether any later version of the Implementors' Guide and any further Technical Corrigenda have been implemented.

2 Normative References

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

CCITT Recommendation X.208 (1988) Specification of Abstract Syntax Notation One (ASN.1)

CCITT Recommendation X.209 (1988) Specification of Basic Encoding Rules for Abstract Syntax Notation One (ASN.1)

CCITT Recommendation X.225 (1988) Session Protocol Specification for Open Systems Interconnection for CCITT Applications

CCITT Recommendation X.226 (1988) Presentation Protocol Specification for Open Systems Interconnection for CCITT Applications

CCITT Recommendation X.227 (1988) Association Control Protocol Specification for Open Systems Interconnection for CCITT Applications

CCITT Recommendation X.228 (1988) Reliable Transfer : Protocol Specification

CCITT Recommendation X.400 (1988) Message Handling System and Service Overview

CCITT Recommendation X.402 (1988) Message Handling Systems : Overall Architecture

CCITT Recommendation X.407 (1988) Message Handling Systems : Abstract Service Definition and Conventions

CCITT Recommendation X.408 (1988) Message Handling Systems : Encoded Information Type Conversion Rules

CCITT Recommendation X.410 (1984) Remote Operations and Reliable Transfer Service

CCITT Recommendation X.411 (1988) Message Handling Systems : Message Transfer System : Abstract Service Definition and Procedures

CCITT Recommendation X.413 (1988) Message Store: Abstract Service Operation

CCITT Recommendation X.419 (1988) Message Handling Systems : Protocol Specifications

CCITT Recommendation X.420 (1988) Message Handling Systems : Interpersonal Messaging System

CCITT Recommendation X.500 (1988) The Directory - Overview of Concepts, Models and Services

CCITT Recommendation X.509 (1988) The Directory - Authentication Framework

CCITT Recommendation T.60 (1988) Terminal equipment for use in the Teletex service

CCITT Recommendation T.61 (1988) Character repertoire and coded character sets for the international Teletex service

CEN/CENELEC/ETSI M-IT-01 (Issue 2, 1991), The Concept of Profiles and Structures of Functional Standards for Information Technology

CEN/CENELEC/ETSI M-IT-02 (Issue 5, 1991), Taxonomy of Profiles and Directory of Functional Standards

CEN/CLC ENV 41201 (1992), Private message handling system - User agent and message transfer agent - Private management domain to private management domain

CEN/CLC ENV 41202 (1992), Information systems interconnection - Message handling systems - User agent (UA) plus message transfer agent (MTA) - Access to an administration management domain

CEN/CLC ENV 41502 (1991), Information systems interconnection - Character repertoires for information received from or transmitted to the Teletex service or private information processing systems using Teletex technology

ISO/IEC 646:1991, Information Technology - ISO 7-bit coded character set for information interchange

ISO 2375:1985, Data processing - Procedures for Registration of Escape Sequences

ISO 6429: 1989, Information Processing - Control Functions for 7-bit and 8-bit Coded Character Set

ISO 6937-1: 1983, Information Processing - Coded Character Set for Text communication - Part 1 : General introduction

ISO 6937-2: 1983, Information Processing - Coded Character Set for Text communication - Part 2 : Latin alphabetic and non-alphabetic graphic characters

ISO 7498-2: 1990, Information Processing - Open Systems Interconnection Basic Reference Model - Part 2 : Security Architecture

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

ISO/IEC 8327/AD2, Information Processing - Open Systems Interconnection - Basic Connection Oriented Session Protocol Specification - Addendum 2: Incorporation of unlimited user data

ISO 8650: 1989, Information Processing - Open Systems Interconnection - Protocol specification for the Associated Control Service Element

ISO 8823: 1989, Information Processing - Open Systems Interconnection - Connection oriented presentation protocol specification

ISO 8824: 1990, Information Processing - Open Systems Interconnection - Specification of Abstract Syntax Notation One ASN.1

ISO 8825: 1991, Information Processing - Open Systems Interconnection - Specification of Basic Encoding Rules for Abstract Syntax Notation One ASN.1

ISO/IEC 8859: 1988, Information Processing - 8-bit Single-byte Coded Graphic Character Sets

ISO DIS 8883 Message Oriented Text Interchange System : Message Transfer Sublayer

ISO/IEC 9066-2: 1990, Information Processing - Text Communication - Reliable Transfer - Part 2 : Protocol Specification

ISO/IEC 9594-1: 1990, Information Technology - Open Systems Interconnection - The Directory - Part 1 : Overview of Concepts, Models and Services

ISO/IEC 9594-8: 1991, Information Technology - Open Systems Interconnection - The Directory - Part 8 : Authentication Framework

ISO/IEC 10021-1: 1990, Information Technology - Text Communication - Message Oriented Text Interchange System - Part 1 : Service and Service Overview

ISO/IEC 10021-1: 1990 Technical Corrigendum 1 (1991)

ISO/IEC 10021-1: 1990 Technical Corrigendum 2 (1991)

ISO/IEC 10021-1: 1990 Technical Corrigendum 3 (1992)

ISO/IEC 10021-1: 1990 Technical Corrigendum 4 (1992)

ISO/IEC 10021-2: 1990, Information Technology - Text Communication - Message Oriented Text Interchange System - Part 2 : Overall Architecture

ISO/IEC 10021-2: 1990 Technical Corrigendum 1 (1991)

ISO/IEC 10021-2: 1990 Technical Corrigendum 2 (1991)

ISO/IEC 10021-2: 1990 Technical Corrigendum 3 (1992)

ISO/IEC 10021-2: 1990 Technical Corrigendum 4 (1992)

ISO/IEC 10021-4: 1990, Information Technology - Text Communication - Message Oriented Text Interchange System - Part 4 : Message Transfer System: Abstract Service Definition and Procedures

ISO/IEC 10021-4: 1990 Technical Corrigendum 1 (1991)

ISO/IEC 10021-4: 1990 Technical Corrigendum 2 (1991)

ISO/IEC 10021-4: 1990 Technical Corrigendum 3 (1992)

ISO/IEC 10021-4: 1990 Technical Corrigendum 4 (1992)

ISO/IEC 10021-5: 1990, Information Technology - Text Communication - Message Oriented Text Interchange System - Part 5 : Message Store: Abstract Service Definition

ISO/IEC 10021-5: 1990 Technical Corrigendum 1 (1991)

ISO/IEC 10021-5: 1990 Technical Corrigendum 2 (1991)

ISO/IEC 10021-5: 1990 Technical Corrigendum 3 (1992)

ISO/IEC 10021-5: 1990 Technical Corrigendum 4 (1992)

ISO/IEC 10021-6: 1990, Information Technology - Text Communication - Message Oriented Text Interchange System - Part 6 : Protocol Specification

ISO/IEC 10021-6: 1990 Technical Corrigendum 1 (1991)

ISO/IEC 10021-6: 1990 Technical Corrigendum 2 (1991)

ISO/IEC 10021-6: 1990 Technical Corrigendum 3 (1992)

ISO/IEC 10021-6: 1990 Technical Corrigendum 4 (1992)

ISO/IEC 10021-7: 1990, Information Technology - Text Communication - Message Oriented Text Interchange System - Part 7 : Interpersonal Messaging System

ISO/IEC 10021-7: 1990 Technical Corrigendum 1 (1991)

ISO/IEC 10021-7: 1990 Technical Corrigendum 2 (1991)

ISO/IEC 10021-7: 1990 Technical Corrigendum 3 (1992)

ISO/IEC 10021-7: 1990 Technical Corrigendum 4 (1992)

ISO/IEC DIS 10646, Information Technology - Universal Multiple-octet Coded Character Set (USC) (to be published)

MHS Implementors' Guide Version 8, March 1992

Directory Implementor's Guide Version 5 July 1991

Both the MHS and Directory Implementors' Guides are available from:

European Workshop for Open Systems
Attn: Mr. Luc van den Berghe
Rue de Stassart, 36
B - 1050 Brussels
BELGIUM

F/DI2 Information Systems Interconnection - Directory Data Definitions - Directory use by MHS (to be published)

3 Abbreviations

The following list of abbreviations are used in this profile:

ACSE	Association Control Service Element
ADMD	Administration Management Domain
AOW	Asia-Oceania Workshop
APDU	Application Protocol Data Unit
ASE	Application Service Element
ASN.1	Abstract Syntax Notation One
AU	Access Unit
CCITT	Comité Consultatif International Télégraphique et Téléphonique (International Telegraph and Telephone Consultative Committee)
CEN	Comité Européen de Normalisation
CENELEC	Comité Européen de Normalisation de l'Electrotechnique
CEPT	Conférence Européenne des Administrations des Postes et des Télécommunications
COMPUSEC	Computer Security
COMSEC	Communication Security
CV	Conversion
DIR	Directory
DL	Distribution List
DL	Distribution List Functional Group
DUA	Directory User Agent
EDI	Electronic Data Interchange
EDIMG	Electronic Data Interchange Messaging
EDIMS	Electronic Data Interchange Messaging System
EEC	European Economy Community
EIT	Encoded Information Type
ETSI	European Telecommunications Standards Institute
EWOS	European Workshop for Open Systems
EXT	Extended Kernel
FG	Functional Group
IA5	CCITT International Alphabet no. 5
ID	Identifier/Identification
IEC	International Electrotechnical Committee
IPM	Interpersonal Message
IPMS	Interpersonal Messaging System
ISO	International Organization for Standardization
IT	Information Technology
MASE	Message Administration Service Element
MD	Management Domain

MDSE	Message Delivery Service Element
MH	Message Handling
MHS	Message Handling System
MIN	Minimum Kernel
MLS	Multi-level Security
MOTIS	Message Oriented Text Interchange System
MPDU	Message Protocol Data Unit
MS	Message Store
MSSE	Message Submission Service Element
MT	Message Transfer
MTA	Message Transfer Agent
MTS	Message Transfer System
MTSE	Message Transfer Service Element
O/R	Originator/Recipient
OIW	OSE Implementors Workshop (North America)
OSI	Open Systems Interconnection
P1	Message Transfer Protocol
P2	Interpersonal Messaging Protocol
P3	MTS Access Protocol
P7	MS Access Protocol
PD	Physical Delivery
PD0	Physical Delivery Functional Group 0
PD1	Physical Delivery Functional Group 1
PDAU	Physical Delivery Access Unit
PDS	Physical Delivery Service
PICS	Protocol Implementation Conformance Statement
RED	Redirection
PEDI	Protocol for Electronic Data Interchange
PRMD	Private Management Domain
RTS	Reliable Transfer Server
RTSE	Reliable Transfer Service Element
SEK	Security
S0	Security Class 0
S0a	Security Class 0a
S1	Security Class 1
S1a	Security Class 1a
S2	Security Class 2
S2a	Security Class 2a
UA	User Agent

4 Conformance

4.1 General

This clause specifies the requirements placed on an implementation for which conformance to this profile is claimed.

The scope is restricted to an MTA. Conformance requirements for UA/MS/AU are defined in the relevant MHS profiles.

An implementation for which conformance to this profile is claimed shall:

- Conform to application contexts
- Conform to functionality on the basis of functional groups
- Conform to profile constraints
- Conform to the criticality mechanism
- Conform to the use of underlying services
- Conform to abstract operations

A PICS proforma for an implementation shall be completed in order to substantiate a claim of conformance to this profile. In addition to any standardised proforma, annex H contains a proforma for information relating specifically to this profile.

The content of a note embedded in the text is informative only and does not constrain a conformant implementation. When a note is placed against an element in a table, the content of the note is normative and does constrain the implementation.

4.2 Conformance to Application Contexts

An implementation for which conformance to sub-profile A/MH11.1 is claimed shall support the mts-transfer application context.

An implementation for which conformance to sub-profile A/MH11.2 is claimed shall support the mts-transfer-protocol and the mts-transfer-protocol-1984 application contexts.

NOTE: Annex D of X.411 / ISO/IEC 10021-4 summarises the difference between the conformance rules in the ISO/IEC MOTIS Standard and the CCITT series of Recommendations, which led to the definition of two different sub-profiles.

4.3 Conformance to Functional Groups

A functional group is a set of related services providing a consistent MH functionality which may, as a whole, be provided by a MHS.

A number of functional groups are specified in clause 6 including the conformance requirements for each functional group. Each is represented as a separate element in the PICS proforma in annex H. Functional groups are not negotiable between MTAs during the establishment of an association.

An implementation for which conformance to sub-profile A/MH11.1 is claimed shall implement the Minimum Kernel functional group.

An implementation for which conformance to sub-profile A/MH11.2 is claimed shall implement the Minimum Kernel and the 84 Interworking functional groups.

An implementation for which conformance to this profile is claimed may implement zero, one or more additional functional groups.

For the Physical Delivery and Security functional groups, different classes of functionality have been defined. An implementation for which conformance is claimed for such a functional group shall implement one or more of those classes.

When more than one functional group or class is implemented, and the same protocol element, Element of Service or action is included in more than one of them, then if it is mandatory in any of the functional groups or classes it shall be implemented. An exception to this is if it is out of scope in any of the functional groups or classes then it shall be out of scope.

NOTE: If the MTS is composed of MTAs which have implemented different functional groups, some Elements of Service belonging to optional functional groups and requested by an MTS-user may not be honoured by the MTS.

4.4 Conformance to Profile Constraints

The lower and upper bounds of the protocol elements supported by this profile are defined in X.411 | ISO/IEC 10021-4. The informative annex B in ISO/IEC 10021-4 on upper bounds shall be normative for the purpose of conformance to this profile. If an implementation detects a profile constraint violation, it may generate the appropriate error indication, but is not required to do so. The following constraints are identified:

- 1) The number of elements used in types "set of" and "sequence of".
An implementation for which conformance is claimed shall not generate a protocol element with a number of instances outside the specified range and shall accept and properly handle a protocol element with a number of instances included in the specified range.
- 2) The length of a bit string, an octet string and a character string.
An implementation for which conformance is claimed shall not generate a protocol element whose length (bits, octets or characters) is outside the specified range and shall accept and properly handle a protocol element whose length is included in the specified range.

Where an upper bound is used to specify the size of a Teletex String, the following interpretation applies: the quoted upper bound applies to the number of characters rendered at a human interface and double the quoted upper bound applies to the number of octets occupied by the value.

NOTE: For example, ub-organization-name-length of 64 applied to TeletexOrganizationName means upper bounds of 64 characters and 128 octets. When the same value is applied to OrganizationName, which is a Printable String, the upper bounds are 64 characters and 64 octets.

- 3) The range of an integer.
An implementation for which conformance is claimed shall not generate a protocol element whose value is outside the specified range and shall accept and properly handle a protocol element whose value is included in the specified range.
- 4) The value of an enumerated.
An implementation for which conformance is claimed shall not generate a protocol element whose value is outside the enumerated list and shall accept and properly handle a protocol element whose value is included in the enumerated list.
- 5) Teletex String
An implementation for which conformance is claimed shall support the functions and repertoires as defined in 7.2.
- 6) Message length
An implementation for which conformance is claimed shall as a minimum have the static capability to accept and properly handle messages of up to 2 Megaoctets (2097152 or 2^{21} octets) in length.

4.5 Conformance to Criticality Mechanism

An implementation for which conformance to this profile is claimed shall obey the criticality mechanism defined in the Base Specifications. Any implementation conforming to this profile shall be able to recognize the criticality attribute of any extensions (even if identified by an object identifier) and act on it as specified in the Base Specifications.

4.6 Conformance to the Use of Underlying Services

An implementation for which support for the mts-transfer application context is claimed shall obey for that application context the requirements on the use of OSI layers 5 to 7 as specified in clause 11.3 of X.419 | ISO/IEC 10021-6, supplemented by the requirements of annex K. Support for Session version 2 is mandatory. For the mts-transfer application context, the use of Session version 2 shall be proposed; the use of Session version 1 shall not be proposed.

An implementation for which support for the mts-transfer-protocol-1984 application context is claimed shall obey for that application context the requirements on the use of underlying services in ENV 41 201 and ENV 41 202. For the mts-transfer-protocol-1984 application context, the use of Session version 1 shall be proposed; the use of Session version 2 shall not be proposed.

An implementation for which support for the mts-transfer-protocol application context is claimed shall obey for that application context the requirements on the use of underlying services in ENV 41 201 and ENV 41 202. For the mts-transfer-protocol application context, the use of Session version 1 shall be proposed; in addition, session version 2 may be proposed. If session version 2 is proposed the requirements in K.5 shall be obeyed.

NOTE: Use of Session Version 1 for mts-transfer-protocol may not properly support the BIND argument or response, because of the limitation in the length of user data.

4.7 Conformance to Abstract Operations

An implementation for which conformance to this functional profile is claimed shall obey the rules defined in 5.2.3 and 5.2.4.

The minimum conformance requirement of this profile is provision of those abstract operations for MTSE and the P1 protocol, as defined in annex C and the relevant parts of annex D.

In addition, an implementation may support those abstract operations for MSSE, MDSE and MASE as defined in annex B and the relevant parts of annex D. If any of these ASEs is realized using P3 protocol, then the implementation shall also conform to A/MH13. Otherwise, the implementation shall provide equivalent functionality to that specified for those abstract operations and how this is done shall be stated in the PICS.

5 Classification

5.1 General Principles

This classification is primarily concerned with the specification of static capability - i.e. whether an element or feature is implemented and may be made available for use. The specification of dynamic behaviour - i.e. whether an element or feature is used in a particular instance of communication - is an exceptional case and only occurs if there are functional requirements which are not met by the specification of dynamic behaviour in the Base Specifications. These categories are used in clause 6 and the annexes.

5.2 Categories of Support for Static Capability

5.2.1 Common Categories

The following static categories are common to both Elements of Service and abstract services.

Conditional (C): Support of the element or feature depends on the evaluation of a specified (static) condition.

Out of scope (I): Support of the element or feature is outside the scope of the profile, even though it is allowed in the Base Specifications.

Not applicable (-): The element or feature is logically impossible or otherwise not applicable in the context, according to the Base Specifications.

5.2.2 Elements of Service

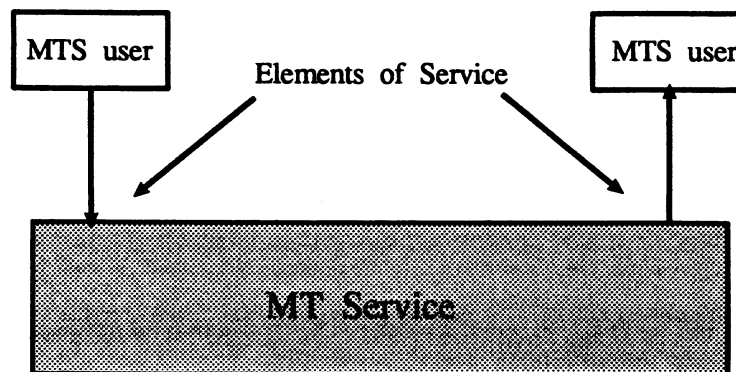


Figure 3: Elements of Service

Mandatory (M):

- **For origination (Orig):** The MTA shall make the Element of Service available to the MTS-user.
- **Implemented (Imp):** The MTA shall implement all the procedures defined in the Base Specifications to fully provide that Element of Service.
- **For reception (Rec):** The MTA shall make information associated with the Element of Service available to the MTS-user.

Optional (O):

- **For origination (Orig):** The MTA may make the Element of Service available to the MTS-user.
- **Implemented (Imp):** The MTA may implement all the procedures defined in the Base Specifications to fully provide that Element of Service.
- **For reception (Rec):** The MTA may make information associated with the Element of Service available to the MTS-user.

5.2.3 Abstract Service Operations

Mandatory (M):

- As a **supplier**: the MTA shall be able to accept and perform the operation.
- As a **consumer**: the MTA shall be able to invoke the operation.

Optional (O):

- As a **supplier**: the MTA may be able to accept and perform the operation, but, if not, the MTA shall reject the operation.
- As a **consumer**: the MTA may be able to invoke the operation, but is not required to be able to do so.

5.2.4 Abstract Service Arguments and Results

The specification of argument and result elements is relative to that of the containing element, if any. Where the constituent elements of a (non-primitive) element are not individually specified, then each is considered to have the classification of that element. If the element is an extension, its detailed classification is described in D.15.

Mandatory (M):

The MTA is required to be able to generate the element, or perform all procedures associated with the element, as relevant. This implies the ability to handle both the syntax and the semantics of the element. All errors relating to that specific argument shall be supported.

Minimal Support (M-):

The MTA is only required to be able to copy (but not necessarily to be able to generate) the element (while preserving the syntax and semantics of the element) to the corresponding element of a transferred or delivered Message, Probe or Report, as appropriate, according to the procedures as specified in the Base Specifications or as further qualified by this profile.

This classification does not require an MTA to be able to take any explicit action based on the semantics of the element other than to obey criticality. An MTA supporting additional functional groups may, however, be required to be able to perform further specific processing (as indicated by the "M" classification).

NOTE: The classification "M" is used (in preference to "M-") where the full processing requirements of the Base Specifications are no more than copying the element.

Optional (O):

The MTA is not required to support the element but may do so.

If the element is an argument and the MTA does not support it, then it shall generate an appropriate error as specified in the Base Specifications.

If the element is a result and the MTA does not support it, then it can ignore it.

5.2.5 Functional Groups

Mandatory (M):

The implementation shall fully satisfy the requirements of the conformance clause included in the definition of the functional group or class of the functional group.

Optional (O):

The implementation need not satisfy the requirements of the conformance clause included in the definition of the functional group.

5.2.6 Application Contexts

Support of an application context means that an implementation has the capability of making available a set of Application Service Elements as defined in X.419 | ISO/IEC 10021-6.

5.3 Categories of Support for Dynamic Behaviour

Mandatory (m): The implementation must ensure that the element is always generated or otherwise used, as appropriate. Absence of such an element on reception shall result in termination or rejection of the communication with an appropriate error indication as specified in the Base Specifications.

Excluded (x): The implementation must ensure that the element is never generated or otherwise used. Presence of such an element on reception shall result in termination or rejection of the communication with an appropriate error indication as specified in the Base Specifications. It is recognized that some implementations may need to exclude a static capability for such elements, but such considerations are outside the scope of this profile (any elements which are classified as dynamically Excluded (x) in this profile are thus also classified as statically Out of Scope (I)).

NOTE: Clause 6.7 of ISO/IEC TR 10000-1 states that a profile shall not introduce a constraint on dynamic behaviour on reception. At least in the case of MHS security, however, the Base Specifications define a suitable error indication to cover the breach of a security policy but do not specify the precise conditions under which such error indication shall be used. Any such specification in a profile is thus a legitimate qualification of the Base Specifications provisions rather than a modification of such provisions.

Conditional (c): The use of the element or feature is according to the evaluation of a specified condition.

In the tables in annexes B through E, where an element is classified as "X/Y", then this indicates static (X) and dynamic (Y) requirements respectively. Where dynamic requirements are not specified, then they are as in the Base Specifications.

6 Functional Groups

Table 1 below illustrates the support level required for each functional group in order to claim conformance to a sub-profile, (M) being mandatory, (O) being optional. Formal conformance requirements are specified in clause 4 of this profile.

Table 1: Support for functional groups.

Functional Group/Class	A/MH11.1	A/MH11.2
Minimum Kernel	M	M
Extended Kernel	O	O
Redirection	O	O
Distribution List	O	O
Conversion	O	O
Physical Delivery		
PD0	O	O
PD1	O	O
Use of Directory	O	O
84 Interworking	O	M
Security		
S0	O	O
S0a	O	O
S1	O	O
S1a	O	O
S2	O	O
S2a	O	O

6.1 Minimum Kernel (MIN)

6.1.1 General

The Minimum Kernel defines the basic services to be provided by any MHS system.

The Minimum Kernel corresponds to the elementary services of an MTS, and an implementation may be complemented by the support of additional functional groups.

6.1.2 Elements of Service

The Minimum Kernel constitutes support for the following Elements of Service:

- Access Management
- Alternate Recipient Allowed (see 6.1.3)
- Content Type Indication
- Conversion Prohibition (see 6.1.3)
- Conversion Prohibition in Case of Loss of Information (see 6.1.3)
- Converted Indication
- Deferred Delivery
- Deferred Delivery Cancellation
- Delivery Notification
- Delivery Time Stamp Indication
- Disclosure of Other Recipients
- DL Expansion History Indication (see 6.1.3)
- DL Expansion Prohibited (see 6.1.3)
- Explicit Conversion (see 6.1.3)
- Grade of Delivery Selection
- Message Identification
- Multi-destination Delivery
- Non-delivery Notification

- Original Encoded Information Types Indication
- Prevention of Non-delivery Notification
- Probe
- Redirection Disallowed by Originator (see 6.1.3)
- Submission Time Stamp Indication
- Use of Distribution List (see 6.1.3)
- User/UA Capabilities Registration

6.1.3 Conformance

An implementation for which conformance to the Minimum Kernel is claimed shall conform to the procedures for the Elements of Service in 6.1.2, except in the case of the Elements of Service listed below. In the following list, the conformance requirement is to allow the originator to request the service:

- Alternate Recipient Allowed
- Conversion Prohibition
- Conversion Prohibition in Case of Loss of Information
- DL Expansion Prohibited
- Explicit Conversion
- Redirection Disallowed by Originator
- Use of Distribution List

For DL Expansion Eistory Indication, the conformance requirement is to be able to deliver any received expansion history.

It shall be documented in the PICS which content type values are supported on submission and delivery.

It shall be documented in the PICS which encoded information type values are supported on submission and delivery.

A definitive description of the conformance requirements for Elements of Service is given in Table A-1.

6.2 Extended Kernel (EXT)

6.2.1 General

The Extended Kernel offers a higher level of service than the Minimum Kernel.

6.2.2 Elements of Service

The Extended Kernel offers the following additional Elements of Service over the Minimum Kernel.

- Hold for Delivery
- Latest Delivery Designation
- Originator Requested Alternate Recipient (see 6.2.3)
- Return of Content

6.2.3 Conformance

An implementation conforming to this functional group shall conform to the procedures for the Elements of Service in 6.2.2, except in the case of the Element of Service Originator requested Alternate Recipient. In this case the conformance requirement is to allow the originator to request the service.

A definitive description of the conformance requirements for Elements of Service in the Extended Kernel is given in Table A-1 using the abbreviation "EXT" in the FG column.

6.3 Redirection Functional Group (RED)

6.3.1 General

The Redirection functional group supports the functionality required to execute the actions associated with the attempted delivery of a message to a recipient that is different from the one that was initially addressed by the originator. The Element of Service Redirection Disallowed by Originator is covered by the Minimum Kernel.

6.3.2 Elements of Service

The Redirection functional group provides support for the following Elements of Service:

- Alternate Recipient Allowed
- Alternate Recipient Assignment
- Originator Requested Alternate Recipient
- Redirection Disallowed by Originator
- Redirection of Incoming Messages

6.3.3 Conformance

An implementation conforming to this functional group shall conform to the procedures for the Elements of Service in 6.3.2.

The flexibility of Alternate Recipient Assignment shall be stated in the PICS. A conforming implementation shall obey the rules defined in clauses 14.3 and 14.8.1 of X.411 | ISO/IEC 10021-4.

A definitive description of the conformance requirements for Elements of Service in the Redirection FG is given in Table A-1 using the abbreviation "RED" in the FG column.

6.4 Distribution List Functional Group (DL)

6.4.1 General

This section identifies and specifies the Distribution List functional group, which covers all issues relating to the performance of DL expansions by an MTA. Performance of a DL expansion requires the MTA to provide sufficient DL management capabilities.

NOTE: The ability to submit a DL is provided by the Minimum Kernel. In addition a Minimum Kernel shall handle correctly a received message that contains an expanded DL.

6.4.2 Elements of Service

Support for Elements of Service is specified for the MT service only and is only concerned with the performance of DL expansion by an MTA. The Element of Service DL Expansion Prohibited is covered in the Minimum Kernel.

The Distribution List functional group provides support for the following Elements of Service:

- DL Expansion History Indication
- DL Expansion Prohibited
- Use of Distribution List

6.4.3 Conformance

An implementation conforming to this functional group shall conform to the procedures for the Elements of Service in 6.4.2.

Some aspects of DL support are defined in the Base Specifications in clause 14.3.10 of X.411 | ISO/IEC 10021-4 (loop detection and trace information), while others are implementation dependent (management of DLs, policies on DL handling, use of Directory and support of DL submit permission), and shall be specified in the PICS.

6.5 Conversion Functional Group (CV)

6.5.1 General

The Conversion functional group supports the functionality required to perform the action of EIT conversion.

A definitive description of the conformance requirements for Elements of Service in the Distribution List FG is given in Table A-1 using the abbreviation "DL" in the FG column.

6.5.2 Elements of Service

The Conversion functional group provides support for at least one of the following Elements of Service:

- Explicit Conversion
- Implicit Conversion

6.5.3 Conformance

An implementation conforming to this functional group shall conform to the procedures for the Elements of Service in 6.5.2.

A conforming implementation shall obey the rules defined in clauses 14.3.5 and 14.3.9 of X.411 | ISO/IEC 10021-4.

The PICS shall document which EIT conversions the implementation can perform.

The PICS shall also document the conditions under which loss of information is determined (if at all) for each EIT conversion supported.

A definitive description of the conformance requirements for Elements of Service in the Conversion FG is given in Table A-1 using the abbreviation "CV" in the FG column.

6.6 Physical Delivery Functional Group (PD0 and PD1)

6.6.1 General

The Physical Delivery functional group is specified as two classes which are subsets of the PDS features available in the Base Specifications. They are denoted as PD0 and PD1.

PD0 This class provides the ability to invoke the PD Elements of Service.

PD1 This class requires a co-located PDAU. It provides the MTA with the ability to make available to the PDAU the information associated with the PD Elements of Service and requires the performance of these PD Elements of Service by the PDAU. If the MTA offers a submission port, it shall also support PD0.

If the PDAU generates any error on export, the MTA shall generate a non-delivery report.

The processing required for the actual physical delivery of the message is outside the scope of this profile.

6.6.2 Elements of Service

The Physical Delivery functional group provides support for the following Elements of Services:

- Basic Physical Rendition
- Counter Collection
- EMS (Express Mail Service)
- Ordinary Mail
- Physical Forwarding Allowed
- Physical Forwarding Prohibited
- Special Delivery
- Undeliverable Mail with Return of Physical Message

6.6.3 Conformance

An MTA claiming conformance to Physical Delivery class PD0 shall allow the Physical Delivery Elements of Service defined in 6.6.2 to be invoked.

An MTA claiming conformance to Physical Delivery class PD1 shall conform to the procedures for the Elements of Service defined in 6.6.2. Additionally if the MTA provides submission port capabilities it shall also claim conformance to Physical Delivery class PD0.

A definitive description of the conformance requirements for Elements of Service in the Physical Delivery FG is given in Table A-1 using the abbreviation "PD" in the FG column.

6.7 Use of Directory Functional Group (DIR)

6.7.1 General

The directory is intended to assist users and their UAs in obtaining information for use in submitting messages for delivery by the MTS.

The MTS may also use the directory to obtain information, for example, to be used in the routing of messages. This application of the directory service is not defined by the Base Specifications and is therefore not addressed by this profile.

The MTA may access a directory service using a Directory User Agent (DUA). The interface between the MTA and DUA is local and not defined.

F/DI2 defines MHS object classes and attributes used in the context of MHS.

6.7.2 Elements of Service

The Directory functional group provides support for the following Elements of Service:

- Designation of Recipient by Directory Name
- Requested Preferred Delivery Method

6.7.3 Conformance

These services shall be provided using a directory service which accepts directory names as specified in clause 8.5.5 of X.411 | ISO/IEC 10021-4.

An implementation conforming to this functional group shall conform to the procedures for the Elements of Service in 6.7.2.

A definitive description of the conformance requirements for Elements of Service in the Directory FG is given in Table A-1 using the abbreviation "DIR" in the FG column.

6.8 84 Interworking Functional Group

6.8.1 General

The 84 Interworking functional group supports the features for interworking between implementations based on this profile and implementations based on ENV 41 201 and ENV 41 202.

When responding to an incoming 84 connection, the value of the protocol identifier is as specified in ENV 41 201 and ENV 41 202, as appropriate.

When initiating a connection with an 84 implementation, only the value "1" shall be used, as specified in annex B of X.419 | ISO/IEC 10021-6.

6.8.2 Elements of Service

There are no Elements of Service for this functional group.