



EUR AMHS Manual

Appendix G-B

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1 Introduction

1.1 Scope of the Document

1.1.1 This document describes the information provided by the European Directory Service (EDS). It provides details regarding the structure and elements (Object Classes and associated Attribute Types) used by the Directory Tree in the Central European DSA and as replication in the Co-operating and Adjacent DSAs.

1.1.2 The European Directory Service (EDS) is the implementation of ATN Directory services [3] in Europe. The EDS provides future, directory-based means for collection and distribution of information within Europe and exchange of information with other Regions, States and Organisations.

1.1.3 EUROCONTROL has implemented the Central European DSA for the initial step according to the EDS Operational Concept initially defined in the EUROCONTROL EDS Operational Concept document [8], adopted by the Aeronautical Fixed Services Group (AFSG) and published in Appendix G to ICAO EUR Doc 020 (EUR AMHS Manual) [5].

1.1.4 In the initial step of the EDS Operational Concept the ATS Messaging Management Centre (AMC) is the single source of information for distribution by EDS. In support of the ATS Message Handling Service (ATSMHS) the AMC supplies related information to the Central European DSA which in turn distributes the information to Co-operating and Adjacent DSAs.

1.2 Purpose of the Document

1.2.1 The purpose of this document is the establishment of a reference document for the information/data provided by the Central European DSA and replicated in the Co-operating and Adjacent DSAs. This document describes the structure of the EDS Directory Information Tree (DIT), the Object Classes (OC) and Attribute Types, the mapping of AMC information to the directory elements and provides guidance for implementation to the parties involved.

1.2.2 The operators, engineering and maintenance personnel of States or Organisations operating Co-operating and Adjacent DSAs are the intended, primary audience of this document. In addition, this document might serve implementers and users as guidance material.

1.3 Document Structure

1.3.1 This document is composed of the following chapters:

- Chapter 1 (this chapter) contains an introduction to the document.
- Chapter 2 gives an overview on EDS content and structure.
- Chapter 3 specifies the Object Classes, Attribute Types and Object Identifiers used.
- Chapter 4 provides the mapping information between AMC and EDS data.
- Chapter 5 gives example of EDS information use.

2 EDS Content and Structure

2.1 EDS Content in support of AMHS

2.1.1 The AMHS as specified in ICAO Doc 9880 Part II [2] is one of the target applications to be supported by the ATN Directory services. Currently, the ATS Messaging Management Centre (AMC) as specified in ICAO EUR Doc 021 (ATS Messaging Management Manual) [6] manages and holds a portion of the information that has been already planned for distribution by Directory services. The information is required for:

- Determination of AMHS O/R addresses of users from their Directory Name (DN) in support of the ATS Message User Agent, the ATS Message Servers and the AFTN/AMHS Gateway;
- Address conversion in support of the AFTN/AMHS Gateway; and
- Determination of AMHS user capabilities in support of the ATS Message User Agent and the AFTN/AMHS Gateway.

2.1.2 Enabling the exchange of ATS messages between AFTN and AMHS, the Message Control and Transfer Unit (MTCU) of the AFTN/AMHS Gateway is in charge of the conversion between AFTN and AMHS addresses and vice versa.

2.1.3 Different capabilities are associated with AMHS users such as maximum length of message content and support of different message content types. In order to make use of only supported elements and to avoid Non-delivery Reports (NDRs) in the AMHS, a message originator in the Extended ATSMHS needs to determine the capabilities of the intended recipients prior to the submission of the AMHS message.

2.1.4 The specification of the ATN Directory as laid down in ICAO Doc 9880 Part IV [3] also covers address information required for AFTN/AMHS address conversion as well as the AMHS user capabilities.

2.1.5 On a Regional basis the Aeronautical Fixed Services Group (AFSG) defined in Appendix B to the ICAO EUR Doc 020 (EUR AMHS Manual) [5] the European ATS Messaging Service Profile which among other things further refines the capabilities of AMHS users.

2.1.6 In addition to information specified by ICAO Doc 9880, the ATS Messaging Management Centre (AMC) also manages among others routing information in support of the AFTN, CIDIN and ATS Message Handling Service (ATSMHS).

2.1.7 The EDS includes the information outlined above for distribution by the Central European DSA as follows:

- AMHS User Address Book; and
- Routing information of EUR Region.

2.2 Structure of EDS

2.2.1 The EDS Operational Concept merges two approaches for management and distribution of relevant information. The specification of the ATN Directory as specified by

ICAO Doc 9880 Part IV [3] describing an online service and the offline management of information as specified in ICAO EUR Doc 021 (ATS Messaging Management Manual) [6].

2.2.2 In the initial step of EDS, the AMC manages and provides the relevant information on a periodic basis to EDS. The AMC remains the single source of information. The Central European DSA in turn distributes this information as a second means. There is no modification of information within EDS in the initial step.

2.2.3 Within ATS Messaging Management, there are two areas for distribution of information: the Pre-operational and the Operational Area. EDS adopted these areas and allocated them as Managed Areas directly below the EDS base entry which in turn is allocated directly below the virtual root.

2.2.4 The EDS base entry is of the object-class *organization*. The naming attribute of type *organizationName* takes the value “European-Directory”. The managed areas are represented by entries of standard object class *organizationalUnit*. The naming attributes of type *organizationalUnitName* take the value of the respective managed area, i.e. the areas are identified as “Pre-operational” and “Operational”. Version information made available by AMC is associated with each Managed Area through the auxiliary object class *eds-collective-version* which allows for distinction of information belonging to two different cycles.

2.2.5 The general target structure for EDS given in Figure 1 shows the allocation of the Managed Areas below the EDS base entry.

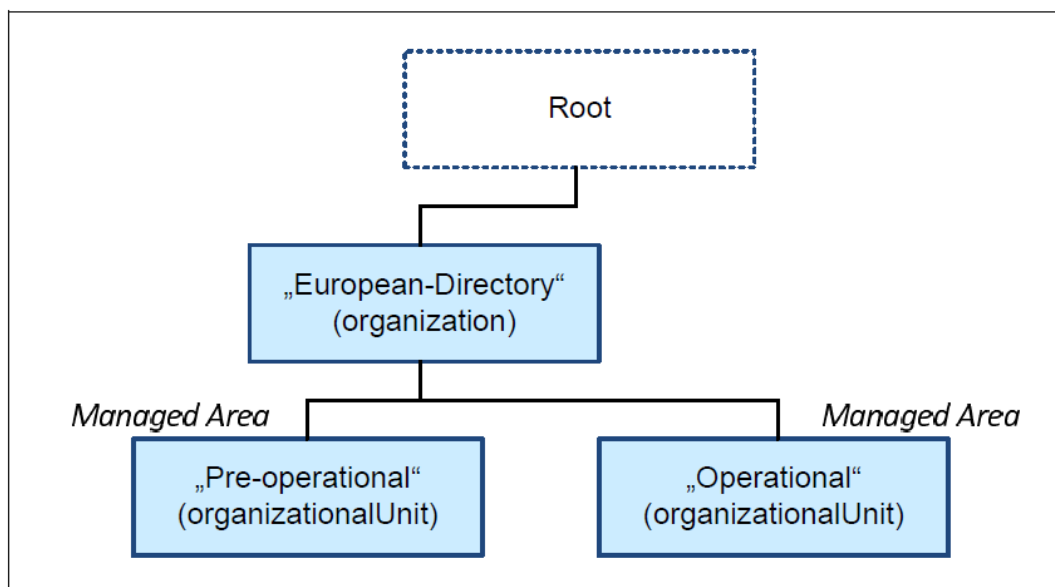


Figure 1: EDS Base Entry and Managed Areas

2.2.6 The EDS sub-schema of the pre-operational and operational areas is structured identically as outlined in Figure 2.

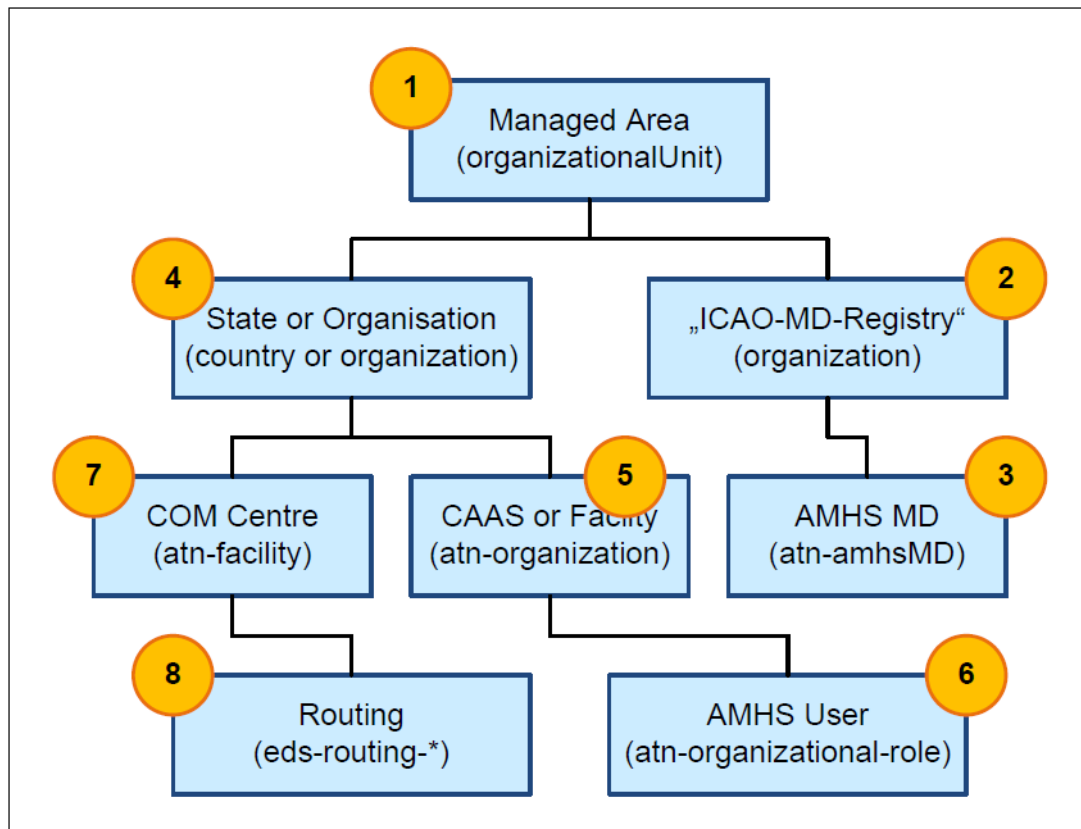


Figure 2: EDS Target Structure of Managed Areas

2.2.7 Figure 2 shows the allocation of the respective managed area (1), the ICAO MD Registry (2) including subordinate entries (3), States and Organisations (4), CAAS mapping information facilities (5), AMHS users (6), COM Centres (7) and associated routing information (8).

2.2.8 Derived from the ICAO Doc 9880 Part IV [3], the structure of EDS managed areas as given in Figure 2 holds the following information:

- AMHS MD Register (2, 3);
- CAAS mapping information (5);
- AMHS user address information (6);
- AMHS user capabilities (6); and
- Routing information (7, 8).

2.2.9 The detailed description and representation by object classes of the EDS information mentioned above is provided in the following chapters.

3 Object Classes

3.1 Basic Object Classes

3.1.1 ISO/IEC 9594-7, a standard of the X.500 series [12], contains a number of basic object classes. The definition of ATN-specific object classes in ICAO Doc 9880 Part IV [3] and the definition of EDS-specific object classes in section 3.3 refer to these basic object classes.

3.2 ATN-specific object classes

3.2.1 This section lists the ATN-specific object classes in support of the ATSMHS which refer to the definition provided by ICAO Doc 9880 Part IV [3]. In case of discrepancies the subsequent definition shall prevail.

3.2.2 The ATN-specific object class *atn-organization* shall be defined by the ASN.1 syntax:

```
atn-organization OBJECT-CLASS ::= {
    SUBCLASS OF      { organization }
    MUST CONTAIN     { atn-facility-name }
    MAY CONTAIN      { atn-per-certificate |
                    atn-der-certificate }
    ID               id-oc-atn-Organization }
```

3.2.3 The ATN-specific object class *atn-amhsMD* shall be defined by the ASN.1 syntax:

```
atn-amhsMD OBJECT-CLASS ::= {
    SUBCLASS OF      { top }
    MUST CONTAIN     { commonName |
                    atn-global-domain-identifier |
                    atn-icao-designator |
                    atn-amhs-addressing-scheme }
    MAY CONTAIN      { atn-amhsMD-naming-context }
    ID               id-oc-atn-amhsMD }
```

3.2.4 The ATN-specific object class *atn-organizational-role* shall be defined by the ASN.1 syntax:

```
atn-organizational-role OBJECT-CLASS ::= {
    SUBCLASS OF      { organizationalRole }
    MUST CONTAIN     { }
    MAY CONTAIN      { atn-per-certificate |
                    atn-der-certificate }
    ID               id-oc-atn-OrganizationalRole }
```

3.2.5 The ATN-specific object class *atn-amhs-user* shall be defined by the ASN.1 syntax:

```
atn-amhs-user OBJECT-CLASS ::= {
    SUBCLASS OF      { top }
    KIND             AUXILIARY
    MUST CONTAIN     { mhs-or-addresses }
```

```

MAY CONTAIN
    atn-ipm-heading-extensions |
    atn-amhs-direct-access }
    { mhs-maximum-content-length |
    mhs-deliverable-content-types |
    mhs-acceptable-eits |
    mhs-exclusively-acceptable-eits |
    atn-maximum-number-of-body-parts |
    atn-maximum-text-size |
    atn-maximum-file-size |
    mhs-message-store-dn |
    atn-per-certificate |
    atn-der-certificate |
    atn-use-of-amhs-security |
    atn-use-of-directory |
    atn-group-of-addresses |
    atn-AF-address }
ID
    id-oc-atn-AmhsUser }

```

Note.— Auxiliary object classes such as the object class *atn-amhs-user* can be associated with structural object classes; however they are not suitable to structure the DIT.

3.2.6 The ATN-specific object class *atn-facility* shall be defined by the ASN.1 syntax:

```

atn-facility OBJECT-CLASS ::= {
    SUBCLASS OF      { top }
    MUST CONTAIN     { atn-facility-name }
    MAY CONTAIN      { atn-per-certificate |
                    atn-der-certificate }
    ID               id-oc-atn-Facility }

```

3.3 EDS-specific object classes

3.3.1 The EDS-specific object class *eds-collective-version* shall be defined by the ASN.1 syntax:

```

eds-collective-version OBJECT-CLASS ::= {
    SUBCLASS OF      { top }
    KIND             AUXILIARY
    MUST CONTAIN     { eds-airac-version |
                    eds-routing-aftn-version |
                    eds-routing-cidin-version |
                    eds-routing-amhs-version }
    ID               id-oc-eds-collective-version }

```

3.3.2 The EDS-specific object class *eds-amhs-user* shall be defined by the ASN.1 syntax:

```

eds-amhs-user OBJECT-CLASS ::= {
    SUBCLASS OF      { atn-amhs-user }
    KIND             AUXILIARY
    MUST CONTAIN     { }
    MAY CONTAIN      { eds-type-of-user | -- extends atn-group-of-addresses
                    eds-external-user }
    ID               id-oc-eds-amhs-user }

```

3.3.3 The EDS-specific object class *eds-routing-element* shall be defined by the ASN.1 syntax:

```
eds-routing-element OBJECT-CLASS ::= {
    SUBCLASS OF      { top }
    KIND              ABSTRACT
    MUST CONTAIN     { }
    MAY CONTAIN      { eds-routing-existing-main-protocol |
                      eds-routing-existing-main-com |
                      eds-routing-existing-alt-protocol |
                      eds-routing-existing-alt-com |
                      eds-routing-existing-coordination |
                      eds-routing-planned-main-protocol |
                      eds-routing-planned-main-com |
                      eds-routing-planned-alt-protocol |
                      eds-routing-planned-alt-com |
                      eds-routing-planned-coordination |
                      eds-routing-planned-event |
                      eds-routing-planned-date |
                      eds-routing-planned-description }
    ID               id-oc-eds-routing-element }
```

Note.– The object class *eds-routing-element* serves as an object superclass.

3.3.4 The EDS-specific object class *eds-routing-aftn* shall be defined by the ASN.1 syntax:

```
eds-routing-aftn OBJECT-CLASS ::= {
    SUBCLASS OF      eds-routing-element
    MUST CONTAIN     { eds-routing-aftn-indicators }
    MAY CONTAIN     { }
    ID              id-oc-eds-routing-aftn }
```

3.3.5 The EDS-specific object class *eds-routing-cidin* shall be defined by the ASN.1 syntax:

```
eds-routing-cidin OBJECT-CLASS ::= {
    SUBCLASS OF      eds-routing-element
    MUST CONTAIN     { eds-routing-cidin-indicators }
    MAY CONTAIN     { }
    ID              id-oc-eds-routing-cidin }
```

3.3.6 The EDS-specific object class *eds-routing-amhs* shall be defined by the ASN.1 syntax:

```
eds-routing-amhs OBJECT-CLASS ::= {
    SUBCLASS OF      eds-routing-element
    MUST CONTAIN     { eds-routing-amhs-addresses }
    MAY CONTAIN     { eds-routing-amhs-comment }
    ID              id-oc-eds-routing-amhs }
```

3.3.7 The EDS-specific object class *eds-unit* shall be defined by the ASN.1 syntax:

```
eds-unit OBJECT-CLASS ::= {
    SUBCLASS OF      { top }
    KIND              AUXILIARY
    MAY CONTAIN     { eds-caas-entry }
```

ID id-oc-eds-unit }

3.3.8 The EDS-specific object class *eds-heartbeat* shall be defined by the ASN.1 syntax:

```
eds-heartbeat OBJECT-CLASS ::= {
    SUBCLASS OF      { top }
    KIND              AUXILIARY
    MUST CONTAIN     { eds-timestamp
                     eds-frequency }    -- interval in minutes
    ID                id-oc-eds-heartbeat }
```

3.4 Attribute Types

3.4.1 Basic Attribute Types

3.4.1.1 ISO/IEC 9594-6, a standard of the X.500 series [12], contains a number of basic attribute types. The definition of ATN-specific attribute types in ICAO Doc 9880 Part IV [3] and the definition of EDS-specific attribute types in section 3.4.3 refer to these basic attribute types.

3.4.2 ATN-specific Attribute Types

3.4.2.1 This section lists the ATN-specific attribute types in support of the ATSMHS which refer to the definition provided by ICAO Doc 9880 Part IV [3]. In case of discrepancies the subsequent definition shall prevail.

3.4.2.2 The ATN-specific attribute type *atn-facility-name* shall be defined by the ASN.1 syntax:

```
atn-facility-name ATTRIBUTE ::= {
    WITH SYNTAX      PrintableString (SIZE (1..64))
    ID                id-at-atn-facilityName }
```

3.4.2.3 The ATN-specific attribute type *atn-global-domain-identifier* shall be defined by the ASN.1 syntax:

```
atn-global-domain-identifier ATTRIBUTE ::= {
    SUBTYPE OF      mhs-or-addresses
    SINGLE VALUE    TRUE
    ID                id-at-atn-global-domain-identifier }
```

3.4.2.4 The ATN-specific attribute type *atn-icao-designator* shall be defined by the ASN.1 syntax:

```
atn-icao-designator ATTRIBUTE ::= {
    WITH SYNTAX      PrintableString (SIZE (2..7))
    ID                id-at-atn-icao-designator }
```

3.4.2.5 The ATN-specific attribute type *atn-amhs-addressing-scheme* shall be defined by the ASN.1 syntax:

```
atn-amhs-addressing-scheme ATTRIBUTE ::= {
    WITH SYNTAX      INTEGER {
                     xf (0),
```

	caas (1), other (2) }
SINGLE VALUE	TRUE
ID	id-at-atn-Amhs-addressing-scheme }

3.4.2.6 The ATN-specific attribute type *atn-amhsMD-naming-context* shall be defined by the ASN.1 syntax:

```
atn-amhsMD-naming-context ATTRIBUTE ::= {
    WITH SYNTAX      PrintableString (SIZE (1..64))
    SINGLE VALUE     TRUE
    ID               id-at-atn-AmhsMD-naming-context }
```

3.4.2.7 The ATN-specific attribute type *atn-ipm-heading-extensions* shall be defined by the ASN.1 syntax:

```
atn-ipm-heading-extensions ATTRIBUTE ::= {
    WITH SYNTAX      BOOLEAN
    ID               id-at-atn-ipm-heading-extensions }
```

3.4.2.8 The ATN-specific attribute type *atn-amhs-direct-access* shall be defined by the ASN.1 syntax:

```
atn-amhs-direct-access ATTRIBUTE ::= {
    WITH SYNTAX      BOOLEAN
    ID               id-at-atn-amhs-direct-access }
```

3.4.2.9 The ATN-specific attribute type *atn-per-certificate* shall be defined by the ASN-1 syntax:

```
atn-per-certificate ATTRIBUTE ::= {
    WITH SYNTAX      OCTET STRING
    ID               id-at-atn-PerCertificate }
```

3.4.2.10 The ATN-specific attribute type *atn-der-certificate* shall be defined by the ASN-1 syntax:

```
atn-der-certificate ATTRIBUTE ::= {
    WITH SYNTAX      Certificate
    ID               id-at-atn-DerCertificate }
```

3.4.2.11 The ATN-specific attribute type *atn-AF-address* shall be defined by the ASN.1 syntax:

```
atn-AF-address ATTRIBUTE ::= {
    WITH SYNTAX      PrintableString (SIZE (8))
    SINGLE VALUE     TRUE
    ID               id-at-atn-AF-address }
```

3.4.2.12 The ATN-specific attribute type *atn-maximum-number-of-body-parts* shall be defined by the ASN.1 syntax:

```
atn-maximum-number-of-body-parts ATTRIBUTE ::= {
    WITH SYNTAX      INTEGER
    SINGLE VALUE     TRUE
    ID               id-at-atn-maximum-number-of-body-parts }
```

3.4.2.13 The ATN-specific attribute type *atn-maximum-text-size* shall be defined by the ASN.1 syntax:

```

atn-maximum-text-size ATTRIBUTE ::= {
    WITH SYNTAX      ContentLength
    SINGLE VALUE     TRUE
    ID               id-at-atn-maximum-text-size }

```

3.4.2.14 The ATN-specific attribute type *atn-maximum-file-size* shall be defined by the ASN.1 syntax:

```

atn-maximum-file-size ATTRIBUTE ::= {
    WITH SYNTAX      ContentLength
    SINGLE VALUE     TRUE
    ID               id-at-atn-maximum-file-size }

```

3.4.2.15 The ATN-specific attribute type *atn-use-of-amhs-security* shall be defined by the ASN.1 syntax:

```

atn-use-of-amhs-security ATTRIBUTE ::= {
    WITH SYNTAX      BOOLEAN
    SINGLE VALUE     TRUE
    ID               id-at-atn-use-of-amhs-security }

```

3.4.2.16 The ATN-specific attribute type *atn-use-of-directory* shall be defined by the ASN.1 syntax:

```

atn-use-of-directory ATTRIBUTE ::= {
    WITH SYNTAX      BOOLEAN
    SINGLE VALUE     TRUE
    ID               id-at-atn-use-of-directory }

```

3.4.2.17 The ATN-specific attribute type *atn-group-of-addresses* shall be defined by the ASN.1 syntax:

```

atn-group-of-addresses ATTRIBUTE ::= {
    WITH SYNTAX      BOOLEAN
    SINGLE VALUE     TRUE
    ID               id-at-atn-group-of-addresses }

```

3.4.3 EDS-specific Attribute Types

3.4.3.1 This section provides the definition of EDS-specific attribute types.

3.4.3.2 The EDS-specific attribute type *eds-airac-version* shall be defined by the ASN.1 syntax:

```

eds-airac-version ATTRIBUTE ::= {
    WITH SYNTAX      PRINTABLESTRING
    SINGLE VALUE     TRUE
    ID               id-at-eds-airac-version }

```

3.4.3.3 The EDS-specific attribute type *eds-routing-aftn-version* shall be defined by the ASN.1 syntax:

```

eds-routing-aftn-version ATTRIBUTE ::= {
    WITH SYNTAX      PRINTABLESTRING
    SINGLE VALUE     TRUE
    ID               id-at-eds-routing-aftn-version }

```

3.4.3.4 The EDS-specific attribute type *eds-routing-cidin-version* shall be defined by the

ASN.1 syntax:

```
eds-routing-cidin-version ATTRIBUTE ::= {
    WITH SYNTAX      PRINTABLESTRING
    SINGLE VALUE     TRUE
    ID                id-at-eds-routing-cidin-version }
```

3.4.3.5 The EDS-specific attribute type *eds-routing-amhs-version* shall be defined by the ASN.1 syntax:

```
eds-routing-amhs-version ATTRIBUTE ::= {
    WITH SYNTAX      PRINTABLESTRING
    SINGLE VALUE     TRUE
    ID                id-at-eds-routing-amhs-version }
```

3.4.3.6 The EDS-specific attribute type *eds-type-of-user* shall be defined by the ASN.1 syntax:

```
eds-type-of-user ATTRIBUTE ::= {
    WITH SYNTAX      INTEGER {
                        elementary-address (0),
                        group-of-addresses (1),
                        distribution-list (2) }
    SINGLE VALUE     TRUE
    ID                id-at-eds-type-of-user }
```

3.4.3.7 The EDS-specific attribute type *eds-external-user* shall be defined by the ASN.1 syntax:

```
eds-external-user ::= {
    WITH SYNTAX      BOOLEAN
    SINGLE VALUE     TRUE
    ID                id-at-eds-external-user }
```

3.4.3.8 The EDS-specific attribute type *eds-routing-aftn-indicators* shall be defined by the ASN.1 syntax:

```
eds-routing-aftn-indicators ATTRIBUTE ::= {
    WITH SYNTAX      PRINTABLESTRING (SIZE (1..8))
    ID                id-at-eds-routing-aftn-indicators }
```

3.4.3.9 The EDS-specific attribute type *eds-routing-cidin-indicators* shall be defined by the ASN.1 syntax:

```
eds-routing-cidin-indicators ATTRIBUTE ::= {
    WITH SYNTAX      PRINTABLESTRING (SIZE (1..8))
    ID                id-at-eds-routing-cidin-indicators }
```

3.4.3.10 The EDS-specific attribute type *eds-routing-amhs-addresses* shall be defined by the ASN.1 syntax:

```
eds-routing-amhs-addresses ATTRIBUTE ::= {
    SUBTYPE OF      mhs-or-addresses
                    -- as per A.2.13 of ISO/IEC 10021-2:2003
    ID                id-at-eds-routing-amhs-addresses }
```

3.4.3.11 The EDS-specific attribute type *eds-routing-network* shall be defined by the ASN.1 syntax:


```
eds-routing-network ATTRIBUTE ::= {
    WITH SYNTAX      INTEGER {
                        aftn (0),
                        cidin (1),
                        amhs (2),
                        other (3) }
    ID               id-at-eds-routing-network }
```

Note.– The attribute type *eds-routing-network* serves as an attribute supertype.

3.4.3.12 The EDS-specific attribute type *eds-routing-existing-main-protocol* shall be defined by the ASN.1 syntax:

```
eds-routing-existing-main-protocol ATTRIBUTE ::= {
    SUBTYPE OF      eds-routing-network
    SINGLE VALUE    TRUE
    ID              id-at-eds-routing-existing-main-protocol }
```

3.4.3.13 The EDS-specific attribute type *eds-routing-existing-main-com* shall be defined by the ASN.1 syntax:

```
eds-routing-existing-main-com ATTRIBUTE ::= {
    SUBTYPE OF      atn-facility-name
    SINGLE VALUE    TRUE
    ID              id-at-eds-routing-existing-main-com }
```

3.4.3.14 The EDS-specific attribute type *eds-routing-existing-alt-protocol* shall be defined by the ASN.1 syntax:

```
eds-routing-existing-alt-protocol ATTRIBUTE ::= {
    SUBTYPE OF      eds-routing-network
    SINGLE VALUE    TRUE
    ID              id-at-eds-routing-existing-alt-protocol }
```

3.4.3.15 The EDS-specific attribute type *eds-routing-existing-alt-com* shall be defined by the ASN.1 syntax:

```
eds-routing-existing-alt-com ATTRIBUTE ::= {
    SUBTYPE OF      atn-facility-name
    SINGLE VALUE    TRUE
    ID              id-at-eds-routing-existing-alt-com }
```

3.4.3.16 The EDS-specific attribute type *eds-routing-existing-coordination* shall be defined by the ASN.1 syntax:

```
eds-routing-existing-coordination ATTRIBUTE ::= {
    WITH SYNTAX    BOOLEAN
    SINGLE VALUE   TRUE
    ID             id-at-eds-routing-existing-coordination }
```

3.4.3.17 The EDS-specific attribute type *eds-routing-planned-main-protocol* shall be defined by the ASN.1 syntax:

```
eds-routing-planned-main-protocol ATTRIBUTE ::= {
    SUBTYPE OF      eds-routing-network
    SINGLE VALUE    TRUE
    ID              id-at-eds-routing-planned-main-protocol }
```

3.4.3.18 The EDS-specific attribute type *eds-routing-planned-main-com* shall be

defined by the ASN.1 syntax:

```
eds-routing-planned-main-com ATTRIBUTE ::= {
    SUBTYPE OF          atn-facility-name
    SINGLE VALUE        TRUE
    ID                   id-at-eds-routing-planned-main-com }
```

3.4.3.19 The EDS-specific attribute type *eds-routing-planned-alt-protocol* shall be defined by the ASN.1 syntax:

```
eds-routing-planned-alt-protocol ATTRIBUTE ::= {
    SUBTYPE OF          eds-routing-network
    SINGLE VALUE        TRUE
    ID                   id-at-eds-routing-planned-alt-protocol }
```

3.4.3.20 The EDS-specific attribute type *eds-routing-planned-alt-com* shall be defined by the ASN.1 syntax:

```
eds-routing-planned-alt-com ATTRIBUTE ::= {
    SUBTYPE OF          atn-facility-name
    SINGLE VALUE        TRUE
    ID                   id-at-eds-routing-planned-alt-com }
```

3.4.3.21 The EDS-specific attribute type *eds-routing-planned-coordination* shall be defined by the ASN.1 syntax:

```
eds-routing-planned-coordination ATTRIBUTE ::= {
    WITH SYNTAX         BOOLEAN
    SINGLE VALUE        TRUE
    ID                   id-at-eds-routing-planned-coordination }
```

3.4.3.22 The EDS-specific attribute type *eds-routing-amhs-comment* shall be defined by the ASN.1 syntax:

```
eds-routing-amhs-comment ATTRIBUTE ::= {
    WITH SYNTAX         PRINTABLESTRING
    ID                   id-at-eds-routing-amhs-comment }
```

3.4.3.23 The EDS-specific attribute type *eds-routing-planned-event* shall be defined by the ASN.1 syntax:

```
eds-routing-planned-event ATTRIBUTE ::= {
    WITH SYNTAX         INTEGER {
                        add (0),
                        change (1),
                        remove (2) }
    SINGLE VALUE        TRUE
    ID                   id-at-eds-routing-planned-event }
```

3.4.3.24 The EDS-specific attribute type *eds-routing-planned-date* shall be defined by the ASN.1 syntax:

```
eds-routing-planned-date ATTRIBUTE ::= {
    WITH SYNTAX         GeneralizedTime
                        -- as per 46.3 b) or c) of ISO/IEC 8824-1:2008
    EQUALITY MATCHING RULE    generalizedTimeMatch
    ORDERING MATCHING RULE    generalizedTimeOrderingMatch
    SINGLE VALUE        TRUE
    ID                   id-at-eds-routing-planned-date }
```

3.4.3.25 The EDS-specific attribute type *eds-routing-planned-description* shall be defined by the ASN.1 syntax:

```
eds-routing-planned-description ATTRIBUTE ::= {
    WITH SYNTAX          PRINTABLESTRING
    SINGLE VALUE        TRUE
    ID                   id-at-eds-routing-planned-description }
```

3.4.3.26 The EDS-specific attribute type *eds-caas-entry* shall be defined by the ASN.1 syntax:

```
eds-caas-entry ATTRIBUTE ::= {
    WITH SYNTAX          BOOLEAN
    SINGLE VALUE        TRUE
    ID                   id-at-eds-caas-entry }
```

3.4.3.27 The EDS-specific attribute type *eds-timestamp* shall be defined by the ASN.1 syntax:

```
eds-timestamp ATTRIBUTE ::= {
    WITH SYNTAX          GeneralizedTime
                        -- as per 46.3 b) or c) of ISO/IEC 8824-1:2008
    EQUALITY MATCHING RULE generalizedTimeMatch
    ORDERING MATCHING RULE generalizedTimeOrderingMatch
    SINGLE VALUE        TRUE
    ID                   id-at-eds-timestamp }
```

3.4.3.28 The EDS-specific attribute type *eds-frequency* shall be defined by the ASN.1 syntax:

```
eds- frequency ATTRIBUTE ::= {
    WITH SYNTAX          INTEGER
    SINGLE VALUE        TRUE
    ID                   id-at-eds-frequency }
```

3.5 Name Forms

3.5.1 ICAO Doc 9880 Part IV [3] identifies name forms of relevant basic object classes and defines name forms for ATN-specific object classes.

3.5.2 This section provides the definition of EDS-specific name forms. EDS-specific name forms shall comply with the following ASN.1 definition:

```
edsRoutingAftnNameForm NAME-FORM ::= {
    NAMES                eds-routing-aftn
    WITH ATTRIBUTES     { eds-routing-aftn-indicators }
    ID                   id-nf-eds-RoutingAftnNameForm }

edsRoutingCidinNameForm NAME-FORM ::= {
    NAMES                eds-routing-cidin
    WITH ATTRIBUTES     { eds-routing-cidin-indicators }
    ID                   id-nf-eds-RoutingCidinNameForm }

edsRoutingAmhsNameForm NAME-FORM ::= {
    NAMES                eds-routing-amhs
    WITH ATTRIBUTES     { eds-routing-amhs-addresses }
    ID                   id-nf-eds-RoutingAmhsNameForm }
```

3.6 Object Identifiers

3.6.1 Basic Object Identifiers

3.6.1.1 Standards of the X.500 series [12] contain definitions of basic object identifiers. International Standardized Profiles (ISPs) contain object identifiers of further elements such as name forms and related object identifiers.

3.6.2 ATN-specific Object Identifiers

3.6.2.1 This section lists the ATN-specific object identifiers in support of the ATSMHS which refer to the definition provided by ICAO Doc 9880 Part IV [3]. In case of discrepancies the subsequent definition shall prevail.

3.6.2.2 For the ATN Directory, object identifiers are allocated below the ATN Directory arc of ICAO. ICAO Doc 9880 Part IV [3] defines the sub-arcs for object identifiers of object classes, attribute types and name forms by the following ASN.1 definition:

```
id-oc OBJECT IDENTIFIER ::=
    { iso(1) identified-organisation(3) icao(27) atn-directory(7) oc 0 }
id-at OBJECT IDENTIFIER ::=
    { iso(1) identified-organisation(3) icao(27) atn-directory(7) at 1 }
id-nf OBJECT IDENTIFIER ::=
    { iso(1) identified-organisation(3) icao(27) atn-directory(7) nf 2 }
```

3.6.2.3 Values of object class object identifiers shall comply with the following reference definition:

```
id-oc-atn-AmhsUser OBJECT IDENTIFIER ::= { id-oc 1 }
id-oc-atn-OrganizationalRole OBJECT IDENTIFIER ::= { id-oc 4 }
id-oc-atn-Facility OBJECT IDENTIFIER ::= { id-oc 11 }
id-oc-atn-amhsMD OBJECT IDENTIFIER ::= { id-oc 12 }
id-oc-atn-Organization OBJECT IDENTIFIER ::= { id-oc 15 }
```

3.6.2.4 Values of attribute type object identifiers shall comply with the following reference definition:

```
id-at-atn-AF-address OBJECT IDENTIFIER ::= { id-at 1 }
id-at-atn-PerCertificate OBJECT IDENTIFIER ::= { id-at 2 }
id-at-atn-DerCertificate OBJECT IDENTIFIER ::= { id-at 3 }
id-at-atn-amhs-direct-access OBJECT IDENTIFIER ::= { id-at 4 }
id-at-atn-facilityName OBJECT IDENTIFIER ::= { id-at 5 }
id-at-atn-ipm-heading-extensions OBJECT IDENTIFIER ::= { id-at 8 }
id-at-atn-global-domain-identifier OBJECT IDENTIFIER ::= { id-at 9 }
id-at-atn-icao-designator OBJECT IDENTIFIER ::= { id-at 10 }
id-at-atn-Amhs-addressing-scheme OBJECT IDENTIFIER ::= { id-at 12 }
id-at-atn-AmhsMD-naming-context OBJECT IDENTIFIER ::= { id-at 13 }
id-at-atn-maximum-number-of-body-parts OBJECT IDENTIFIER ::= { id-at 14 }
```

id-at-atn-maximum-text-size OBJECT IDENTIFIER ::=	{ id-at 15 }
id-at-atn-maximum-file-size OBJECT IDENTIFIER ::=	{ id-at 16 }
id-at-atn-use-of-amhs-security OBJECT IDENTIFIER ::=	{ id-at 17 }
id-at-atn-use-of-directory OBJECT IDENTIFIER ::=	{ id-at 18 }
id-at-atn-group-of-addresses OBJECT IDENTIFIER ::=	{ id-at 19 }

3.6.2.5 Values of name form object identifiers shall comply with the following reference definition:

id-nf-atnOrgRoleNameForm OBJECT IDENTIFIER ::=	{ id-nf 2 }
id-nf-atnAmhsMDNameForm OBJECT IDENTIFIER ::=	{ id-nf 7 }
id-nf-atnOrgNameForm OBJECT IDENTIFIER ::=	{ id-nf 8 }
id-nf-atnFacilityNameForm OBJECT IDENTIFIER ::=	{ id-nf 10 }

3.6.3 EDS-specific Object Identifiers

3.6.3.1 This section provides the definition of EDS-specific object identifiers.

3.6.3.2 For the EDS, object identifiers are allocated below the ATN Directory arc of ICAO. The following sub-arcs for object identifiers of object classes, attribute types and name forms are defined by the following ASN.1 definition:

id-reg OBJECT IDENTIFIER ::=	-- regional { iso(1) identified-organisation(3) icao(27) atn-directory(7) reg 3 }	
	-- Regional Implementations	
id-eds OBJECT IDENTIFIER ::=	-- EDS { iso(1) identified-organisation(3) icao(27) atn-directory(7) reg(3) eds 0 }	
	-- European Directory Service (EDS)	
id-eoc OBJECT IDENTIFIER ::=		{ id-eds eoc 0 }
id-eat OBJECT IDENTIFIER ::=		{ id-eds eat 1 }
id-enf OBJECT IDENTIFIER ::=		{ id-eds enf 2 }

3.6.3.3 Values of EDS-specific object class object identifiers shall comply with the following reference definition:

id-oc-eds-collective-version OBJECT IDENTIFIER ::=	{ id-eoc 0 }
id-oc-eds-amhs-user OBJECT IDENTIFIER ::=	{ id-eoc 1 }
id-oc-eds-routing-element OBJECT IDENTIFIER ::=	{ id-eoc 2 }
id-oc-eds-routing-aftn OBJECT IDENTIFIER ::=	{ id-eoc 3 }
id-oc-eds-routing-cidin OBJECT IDENTIFIER ::=	{ id-eoc 4 }
id-oc-eds-routing-amhs OBJECT IDENTIFIER ::=	{ id-eoc 5 }
id-oc-eds-unit OBJECT IDENTIFIER ::=	{ id-eoc 6 }
id-oc-eds-heartbeat OBJECT IDENTIFIER ::=	{ id-eoc 7 }

3.6.3.4 Values of EDS-specific attribute type object identifiers shall comply with the following reference definition:

id-at-eds-airac-version OBJECT IDENTIFIER ::=	{ id-eat 0 }
---	--------------

id-at-eds-routing-aftn-version- OBJECT IDENTIFIER ::=	{ id-eat 1 }
id-at-eds-routing-cidin-version OBJECT IDENTIFIER ::=	{ id-eat 2 }
id-at-eds-routing-amhs-version OBJECT IDENTIFIER ::=	{ id-eat 3 }
id-at-eds-type-of-user OBJECT IDENTIFIER ::=	{ id-eat 4 }
id-at-eds-external-user OBJECT IDENTIFIER ::=	{ id-eat 5 }
id-at-eds-routing-aftn-indicators OBJECT IDENTIFIER ::=	{ id-eat 6 }
id-at-eds-routing-cidin-indicators OBJECT IDENTIFIER ::=	{ id-eat 7 }
id-at-eds-routing-amhs-addresses OBJECT IDENTIFIER ::=	{ id-eat 8 }
id-at-eds-routing-network OBJECT IDENTIFIER ::=	{ id-eat 9 }
id-at-eds-routing-existing-main-protocol OBJECT IDENTIFIER ::=	{ id-eat 10 }
id-at-eds-routing-existing-main-com OBJECT IDENTIFIER ::=	{ id-eat 11 }
id-at-eds-routing-existing-alt-protocol OBJECT IDENTIFIER ::=	{ id-eat 12 }
id-at-eds-routing-existing-alt-com OBJECT IDENTIFIER ::=	{ id-eat 13 }
id-at-eds-routing-existing-coordination OBJECT IDENTIFIER ::=	{ id-eat 14 }
id-at-eds-routing-planned-main-protocol OBJECT IDENTIFIER ::=	{ id-eat 15 }
id-at-eds-routing-planned-main-com OBJECT IDENTIFIER ::=	{ id-eat 16 }
id-at-eds-routing-planned-alt-protocol OBJECT IDENTIFIER ::=	{ id-eat 17 }
id-at-eds-routing-planned-alt-com OBJECT IDENTIFIER ::=	{ id-eat 18 }
id-at-eds-routing-planned-coordination OBJECT IDENTIFIER ::=	{ id-eat 19 }
id-at-eds-routing-planned-event OBJECT IDENTIFIER ::=	{ id-eat 20 }
id-at-eds-routing-planned-date OBJECT IDENTIFIER ::=	{ id-eat 21 }
id-at-eds-routing-planned-description OBJECT IDENTIFIER ::=	{ id-eat 22 }
id-at-eds-routing-amhs-comment OBJECT IDENTIFIER ::=	{ id-eat 23 }
id-at-eds-caas-entry OBJECT IDENTIFIER ::=	{ id-eat 24 }
id-at-eds-timestamp OBJECT IDENTIFIER ::=	{ id-eat 25 }
id-at-eds-frequency OBJECT IDENTIFIER ::=	{ id-eat 26 }

3.6.3.5 Values of EDS-specific name form object identifiers shall comply with the following reference definition:

id-nf-eds-RoutingAftnNameForm OBJECT IDENTIFIER ::=	{ id-enf 0 }
id-nf-eds-RoutingCidinNameForm OBJECT IDENTIFIER ::=	{ id-enf 1 }
id-nf-eds-RoutingAmhsNameForm OBJECT IDENTIFIER ::=	{ id-enf 2 }

4 Mapping of Information AMC – EDS

4.1 AMHS MD Register

4.1.1 The information of the ICAO Register of AMHS Management Domains (ICAO-MD Registry) is maintained by AMC and originates from the AMC address management function (AMHS MD Register).

4.1.2 The AMHS MD Register is represented by a base entry of standard object class *organization* with the naming attribute *organizationName* taking the fixed value “ICAO-MD-Registry” and its subordinate entries.

4.1.3 The AMHS MD Register includes at least one entry for each State or Organisation of ATN-specific object class *atn-amhsMD*.

4.1.4 In addition to well-formed ICAO designators such as four character location indicators, the attribute type *atn-icao-designator* may take one of the values ‘ORG1’, ‘ORG2’ to ‘ORG9’ in case the entry represents a State or Organisation external to the Aeronautical Fixed Services (AFS).

4.2 States and Organisation

4.2.1 Base entries of States and Organisations are allocated on top-level of the respective Managed Area. States are represented by entries of standard object class *country* and Organisations are represented by entries of standard object class *organization*.

4.3 CAAS Mapping Information

4.3.1 The CAAS mapping information is maintained by AMC and originates from the AMC CAAS tables.

4.3.2 Below the States’ and Organisations’ base entries, the CAAS mapping information is held using entries of ATN-specific object class *atn-organization*.

4.3.3 In order to enable restoration of a table corresponding to the AMC CSV MD look-up export the EDS-specific object class *eds-unit*, the EDS-specific attribute type *eds-caas-entry*, as well as the respective OID values have been defined.

4.4 AMHS User Addresses and Capabilities

4.4.1 The AMHS user addresses and capabilities are maintained by AMC and originate from the AMC user addresses and user capabilities tables.

4.4.2 An AMHS user is represented by an entry of ATN-specific object class *atn-organizational-role* with an EDS-specific, auxiliary object class *eds-amhs-user*. The object class *atn-organizational-role* is derived from the standard object class *organizationalRole*. The EDS-specific object class *eds-amhs-user* is derived from the ATN-specific object class *atn-amhs-user*.

4.4.3 It is noted that ICAO EUR Doc 021 (ATS Messaging Management Manual) [6] describes the capabilities of AMHS users by profiles and the related AMC CSV export denotes the capabilities of AMHS users by the corresponding profile name (e.g. A64+F2048-EA-DIR). In contrast, the ATN Directory and EDS express individual capabilities of AMHS users by corresponding attribute/value pairs (e.g. attribute types *atn-maximum-number-of-body-parts*, *atn-maximum-text-size*, *eds-type-of-user*, etc.).

4.4.4 The user short name managed by AMC is provided as the value of the attribute type *description*, which is an element of the standard object class *organizationalRole*.

4.5 COM Centres

4.5.1 COM Centres are represented by entries of ATN-specific object class *atn-facility* allocated below the respective State or Organisation operating the COM Centre.

4.6 Routing Information

4.6.1 The routing information of a COM Centre is allocated below the entry of the respective COM Centre and is represented by entries of

- EDS-specific object class *eds-routing-aftn* for the AFTN;
- EDS-specific object class *eds-routing-cidin* for the CIDIN; and
- EDS-specific object class *eds-routing-amhs* for the AMHS.

5 Example of EDS Information Use

5.1 AFTN/AMHS Gateway

5.1.1 The Message Transfer and Control Unit (MTCU) of the AFTN/AMHS Gateway needs to perform address conversion between AF- and MF-addresses and determine the AMHS user capabilities.

5.1.2 ICAO Doc 9880 Part II [2] describes the conversion of addresses using tables. This section outlines one potential way for conversion of addresses using the EDS following the principles set out by ICAO Doc 9880 Part II. It is noted that there might be other ways of achieving identical results.

AFTN to AMHS address conversion

5.1.3 The address conversion of AF- into MF-addresses comes in up to three steps which might also be used for the reverse address lookup for address conversion of MF- to AF-addresses:

- Check for availability of individual information for a specific AMHS user.
- Determine the AMHS MD of this user, the associated Global Domain Identifier (GDI), addressing scheme and naming context.
- Determine the X.400 O/R address attribute organization in order to complete the AMHS MF-address of the user.

5.1.4 First, the EDS is searched below the base entries of States and Organisations for an individual entry of object class *atn-organizational-role* with an associated object class *eds-amhs-user*. The matching criteria is an entry of object class *eds-amhs-user* including an attribute type *atn-AF-address* taking the value of the full AF-address. If an entry matches the criteria, the value of attribute type *mhs-or-addresses is read* and address conversion is successfully terminated, otherwise the next step is followed.

5.1.5 If no individual entry exists, the address conversion follows the algorithmic mapping of addresses. Starting with seven characters of the AF-address down to two (ICAO designators), the AMHS MD Register is searched for an entry with a value of the attribute type *atn-icao-designator* matching the ICAO designators determined from the AF-address. If no matching entry could be determined, the address conversion terminates unsuccessfully; otherwise the values of the attribute types *atn-global-domain-identifier* and the *atn-amhs-addressing-scheme* are read. If the addressing scheme identified by the value of the attribute type *atn-amhs-addressing-scheme* corresponds to the XF addressing scheme, the address conversion is successfully terminated; otherwise the value of the attribute type *atn-amhsMD-naming-context* is read and next step is followed.

5.1.6 A search within the State's or Organisation's entries indicated by the value of the attribute type *atn-amhsMD-naming-context* is initiated, for the mapping of the location indicator into the geographical unit. In order to meet the use of wildcards in CAAS mapping information, the values of the attribute type *organizationName* of object class *organization* are searched for the location indicator of the AF-address starting with all four characters down to one. If a match could be determined with a value for attribute type *eds-caas-entry* set to true, the value of the attribute type *atn-facility-name* is read and conversion is successfully terminated; otherwise the search is unsuccessfully terminated.

5.1.7 In case of successful termination in the first step, the MF-address is determined by the value of the attribute type *mhs-or-addresses*; otherwise the X.400 address attributes *country-name*, *administration-domain-name* and *private-domain-name* are determined by the stored GDI and the MF-address is completed depending on the addressing scheme as follows:

- XF addressing scheme: the X.400 address attribute *organization-name* is set to the fixed value “AFTN” and the first element of the X.400 address attribute *organizational-unit-names* is set to the value of the AF-address.
- CAAS addressing scheme: the X.400 address attribute *organization-name* is set to the value determined by the EDS attribute type *atn-facility-name*, the first element of the X.400 address attribute *organizational-unit-names* is set to the value of the 4-character location indicator of the AF-address and the X.400 address attribute *common-name* is set to the full, 8-character, AMHS AF-address.

AMHS User Capability

5.1.8 In order to determine the appropriate format of the AMHS message, the MTCU needs to determine the AMHS user capabilities of the intended recipients. Section 5.2 describes how user capabilities may be determined.

5.2 ATS Message User Agent

5.2.1 In support of the Extended ATS Message Handling Service an ATS Message User Agent needs to determine through its DUA the capabilities of the AMHS recipient(s) prior to encoding the AMHS message. The capabilities are used to determine the level of the service supported by the AMHS recipient(s) and to generate the AMHS message according to the common, minimum level of support.

Determination of AMHS User Capabilities

5.2.2 According to ICAO Doc 9880 Part II [2], an AMHS user supporting the Extended ATS Message Handling Service is identified by its MF-address and additionally by its Directory name which is a distinguished name. However, in case the Directory name is not available, it could be determined by searching the EDS for a match of the recipient’s MF-address.

5.2.3 In order to determine the capabilities of an AMHS user, a simple read operation using his Directory name is sufficient. In case the read operation reports success, the attribute types of the object class *eds-/atn-amhs-user* deliver the user’s capabilities; otherwise capabilities of the user are not available in EDS. Please refer to ICAO EUR Doc 021 (EUR ATS Messaging Management Manual, Appendix D) [6] for a list of capabilities defined for AMHS users.

5.2.4 The type and individual capabilities of an AMHS user are determined from the attribute types as given in Table 1.

Attribute Type	Description
eds-type-of-user	Type of user as defined in ICAO EUR Doc 021 (ATS Messaging Management Manual) [6] being an individual AMHS user (elementary address), a distribution list, or a group of several addresses. The distinction between direct and indirect AMHS users can be determined by means of the attribute type <i>atn-amhs-direct-access</i> . In absence of this attribute an individual address is assumed
eds-external-user	Identification of AMHS users external to the AFS. In absence or set to false, the AMHS user is considered part of the AFS
atn-ipm-heading-extensions	Support of the AMHS IPM Heading Extensions Functional Group (IHE FG) if set to true.
atn-amhs-direct-access	Indication of direct AMHS user if set to true; otherwise indication of indirect AMHS user.
mhs-maximum-content-length	Maximum deliverable content length given in number of octets.
mhs-acceptable-eits	Attribute type is for further study.
mhs-exclusively-acceptable-eits	Supported Encoded Information Types (EITs). Value specification may be repeated (multi-valued). Values are Object Identifiers (OIDs). See below for further details.
atn-maximum-number-of-body-parts	Maximum number of body parts supported by the AMHS user; no limitation assumed if absent.
atn-maximum-text-size	Maximum number of characters in textual body part types supported by the AMHS user; no limitation
atn-maximum-file-size	Maximum number of octets transferred in a File Transfer Body Part (FTBP) supported by the AMHS user; no limitation assumed if absent
atn-use-of-amhs-security	Indication of support of the AMHS security functional group (SEC FG) by the AMHS user if present and set to true
atn-use-of-directory	Indication of support of Use of Directory functional group (DIR FG) by the AMHS user if present and set to true

Table 1: User Capabilities

5.2.5 The optional attribute type *mhs-exclusively-acceptable-eits* is a list of Object Identifiers (OIDs) representing the user's capabilities with regard to different types of information. Following OID values are used to indicate the user's support of content types.

Capability	Object Identifier Values
IA5 Text	2.6.3.4.2 (ia5-text)

Capability	Object Identifier Values
General Text	1.0.10021.7.1.0.1 (basic control set C0), 1.0.10021.7.1.0.6 (graphics set G0 US ASCII), 1.0.10021.7.1.0.100 (graphics set G1 Basic-1)
Bilaterally Defined Body Part	2.6.3.4.0 (undefined)
File Transfer Body Part	2.6.1.12.0 (file transfer)

Table 2: Object Identifier Values

Note.— Above OID values for basic and extended IA5 Text Body Part Types, Bilaterally Defined Body Part Type and File Transfer Body Part Type are derived from ISO/IEC 10021-7 [13]. The AMHS CS [1] describes indication for support of the AMHS Functional Group FTBP through inclusion of the above OID value in the attribute type *mhs-exclusively-acceptable-eits*. For the General Text Body Part Type above OID values are derived from ICAO Doc 9880 Part II [2]. Use of Bilaterally Defined Body Part Type is discouraged and not supported by AMC.

5.3 Restoration of CAAS Look-up Table

5.3.1 For AFTN/AMHS Gateways without Directory access to EDS by means of the Directory Access Protocol, the EDS operator might need to recreate the CAAS look-up table from the EDS.

5.3.2 The restoration of the CAAS look-up table requires a two iteration step procedure. The first iteration step loops over all State and Organisations and the second iteration step loops over all entries of object class *atn-organization* allocated directly below the States and Organisations. The description in the next paragraphs assumes the determination of the CAAS look-up table from the pre-operational area.

5.3.3 First, a list or search operation is performed starting at *O=European-Directory; OU=Pre-operational* for entries of object class *country* or object class *organization*.

5.3.4 Secondly, for all entries of States and Organisation identified above a list or search operation is performed for entries of object class *atn-organization*. Entries of object class *atn-organization* belong to the CAAS look-up table, if the attribute type *eds-caas-entry* (part of object class *eds-unit*) is present and takes the value true.

5.3.5 The CAAS look-up table is composed of entries matching the above criteria. The values required for address translation are determined by the attribute types *organizationName* (O) and *atn-facility-name*.

END of Appendix G-B