



NAM/CAR Air Traffic Services Inter-facility Data  
Communication (AIDC) and North American  
Interface Control Document (NAM/IDC)  
Implementation Follow-up Meeting

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# OVERVIEW ABOUT THE AMHS DOCUMENTATION USED IN EUR/NAT REGION



# SCOPE AND OBJECTIVES OF THE PRESENTATION

- ❖ To provide an overview of the AMHS documents used in the EUR/NAT Region for:
  - ❖ Support of the States during implementation of AMHS
  - ❖ Support of the States during AMHS operations
  - ❖ Support of the States during SITA Integration
- ❖ All documents are under maintenance of the AFSG - Aeronautical Fixed Service Group – Working Group of the European Air Navigation Planning Group (EANPG). Latest update on AFSG/23 in March 2019

EUR Doc 020



## EUR AMHS Manual

EUR AMHS Manual	
Document Reference:	EUR AMHS Manual, Main Part
Author:	AFSG Planning Group
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Filename:	EUR_AMHS_Manual_v14_0.doc



## SCOPE OF THE DOCUMENT (EUR AMHS MANUAL – EUR DOC 020)

- ◆ This document has been developed by the ICAO EUR Aeronautical Fixed Service Group (AFSG) in order to present a comprehensive collection of information pertaining to the implementation of ATSMHS in the ICAO EUR Region.
- ◆ The document became the status of an EUR ICAO Document (EUR Doc 020) containing guidance material on EUR AMHS and EDS implementation.



## CONTENT OF THE DOCUMENT (EUR AMHS MANUAL – EUR DOC 020)

- ◆ The EUR AMHS Manual consists of the “Main Part” and the Appendices.
- ◆ In the main part is captured as following:
  1. Introduction
  2. EUR AMHS Requirements
  3. European ATS Messaging Service Profile
  4. System implementation - Guidelines for system requirements
  5. AMHS management
  6. Tests and validation of systems
  7. Operational procedures and Recommendations
  8. Miscellaneous

**Attachment A.** Change Control Mechanism of the EUR AMHS Manual



# LIST OF APPENDICES

(EUR AMHS MANUAL – EUR DOC 020)

- ◆ Appendix A: Abbreviations, Glossary and Definitions
- ◆ Appendix B: European ATS Messaging Service Profile
- ◆ Appendix C: AMHS Testing Requirements
- ◆ Appendix D: AMHS Conformance Tests
  - ◆ Appendix D-UA: AMHS UA Conformance Tests
- ◆ Appendix E: AMHS Interoperability Tests
- ◆ Appendix F: AMHS Pre-operational Tests
- ◆ Appendix G: European Directory Service
  - ◆ Appendix G-A: EDS User Interface Control Document
  - ◆ Appendix G-B: EDS Data Description
  - ◆ Appendix G-C: EDS Testing Guidelines
- ◆ Appendix H: Application/Service oriented AMHS Profiles

## SCOPE OF EUR AMHS MANUAL – APPENDIX A

◆ This document provides a summary of

- ◆ Abbreviations,
- ◆ Glossary and
- ◆ Definitions

used in the EUR AMHS Manual and its Appendices



# SCOPE OF EUR AMHS MANUAL – APPENDIX B

- ◆ This document provides an European ATS Messaging Service Profile
- ◆ The goal of this document is to define the operational profile to ensure the communication between AMHS direct users.

## CONTENT OF THE DOCUMENT (EUR AMHS MANUAL – APPENDIX B)

- ◆ The specifications of AMHS components in this Profile are based on the ISO/IEC ISPs and other specifications, which, in turn, are further refined by Annexes A to Q of this Profile.
- ◆ The sections indicate which ISPs and which Annexes to this Profile shall be used in specifying each of the types of AMHS components identified in section 3 (UAs, MTAs, and MSs).

# SCOPE OF EUR AMHS MANUAL – APPENDIX C

- ◆ This document provides the AMHS Testing Requirements
- ◆ The purpose of the document is to define the functional requirements for AMHS testing procedures.
- ◆ Based on known principles of testing and general assumptions on an AMHS test scenario, the scope of testing for an "AMHS Conformance Test" is specified. Elements of the specifications are generic test groups and related test configurations. Special attention is given to the “provocation” of an AMHS implementation with incorrect protocol behaviour (“negative testing”) to analyse its stability (robustness) in out-of-line situations.

# SCOPE OF EUR AMHS MANUAL – APPENDIX D

◆ This document provides the AMHS Conformance Test

◆ The purpose of the document is to define the functional tests for an AMHS Conformance Test, which allows checking an AMHS implementation against the AMHS Technical Specifications [ICAO Doc 9880, Part IIB] as a first step to ensure the interoperability between compliant systems.

# EXAMPLE:

## 4.3 Transfer Operations

### 4.3.1 CT301 – Transfer messages (IPMs and IPNs)

<b>CT301</b>	<b>Transfer messages (IPMs and IPNs)</b>
<b>Test criteria</b>	This test is successful, if the IUT transfers (forwards) messages (IPMs, IPNs) correctly.
<b>Scenario description</b>	<p>From the <b>AMHS Test Tool</b> send a sequence of messages to the IUT's transfer port <i>tp1</i>. All envelopes shall contain a remote recipient address reachable via transfer port <i>tp2</i>. All messages shall have the <i>originator-report-request</i> flag and the <i>originating-MTA-report-request</i> flag set to "non-delivery-report". The sequence of messages shall consist of:</p> <ul style="list-style-type: none"> <li>• an IPM with ia-5-text body part,</li> <li>• an IPM with general-text body part,</li> <li>• an IPN containing a RN,</li> <li>• an IPN containing a NRN.</li> </ul> <p>Monitor the outcome of IUT transfer ports <i>tp1</i>, <i>tp2</i> and <i>tp3</i>. Verify that:</p> <ul style="list-style-type: none"> <li>• all messages are routed correctly via transfer port <i>tp2</i>, and there is no message misrouted, i.e. no output from the IUT at transfer port <i>tp1</i> or <i>tp3</i>,</li> <li>• there is no NDR returned via <i>tp1</i>,</li> <li>• the content of the forwarded message has not changed, but is identical to the original content,</li> <li>• trace information is added in the message transfer envelope (MTE).</li> </ul>
<b>AMHS Techn. Spec. reference</b>	3.2 (ATS message server), 2.2.2 (AMHS information model)
<b>Test class</b>	Normal AMHS communications (N)

# SCOPE OF EUR AMHS MANUAL – APPENDIX D-UA

◆ This document provides the  
AMHS User Agent (UA) Conformance Test

◆ The purpose of the document is to define the functional tests for an AMHS UA Conformance Test, which allows checking any AMHS User Agent (UA) implementation against the AMHS Technical Specifications [ICAO Doc 9880, Part IIB] as a primary step to ensure the end-to-end interoperability between compliant systems.

# EXAMPLE:

## 5. Extended AMHS Service – Test Procedures with IHE (IPM heading extension)

*Note.– Unless otherwise specified in the test case description, the AMHS UA Test Tool generates IPMs containing an ia5-text body-part.*

### 5.1 Submission Operations (A2-IHE)

#### 5.1.1 CTUA1101 – Submit an IPM with IHE – basic capability (A2-IHE)

*Note.– The conformance test CTUA1101 is passed successfully by the IUT if at least one of the tests CTUA1101a, CTUA1101b or CTUA1101c is passed successfully*

<b>CTUA1101a</b>	<b>Submit an IPM with IHE, containing a basic ia5-text</b>
<b>Test criteria</b>	This test is successful, if the IUT submits an ATS message (IPM) with IHE, containing a <b>basic ia5-text</b> to a peer UA correctly.
<b>Scenario description</b>	<p>From the IUT-UA send a sequence of five ATS messages (IPMs) with IHE addressing a remote AMHS user.</p> <ul style="list-style-type: none"> <li>• Message 1 (CT1101aM01) shall have priority KK;</li> <li>• Message 2 (CT1101aM02) shall have priority GG;</li> <li>• Message 3 (CT1101aM03) shall have priority FF;</li> <li>• Message 4 (CT1101aM04) shall have priority DD;</li> <li>• Message 5 (CT1101aM05) shall have priority SS.</li> </ul> <p>Each message shall contain a basic ia5-text and have different filing time and message text. The originator-reference (OIR) element shall be absent.</p> <p>Verify the messages received by the <b>AMHS UA Test Tool</b> at the AMHS interface. Check the format and contents of the submission envelope, IPM heading and body.</p> <p>Verify in particular, the priority value contained in the submission envelope and the following elements contained in the IPM:</p> <ul style="list-style-type: none"> <li>• body-part type,</li> <li>• Repertoire,</li> <li>• absence of originator-reference (OIR),</li> <li>• precedence-policy-identifier set to value 1.3.27.8.0.0<sup>17</sup>,</li> <li>• precedence equivalent to the ATS message priority,</li> <li>• authorization-time (filing time).</li> </ul>

<sup>17</sup> object identifier value (no (1) identification-extension (0) (no (2) no-oids (0) presence (0) no-precedence-policy (0))



# SCOPE OF EUR AMHS MANUAL – APPENDIX E

◆ This document provides the AMHS Interoperability Tests

◆ The purpose of the document is to define the functional tests for AMHS Interoperability in order to ensure the end-to-end interoperability between AMHS systems under test. These tests are performed after the successful completion of AMHS conformance testing, through which the compliance of all systems under test to the AMHS technical specifications has been demonstrated.

# EXAMPLE:

## 4.3 Gateway Operations (AMHS to AFTN)

### 4.3.1 IT301 – Convert an IPM generated by the UA of IUT-A to AFTN format

<b>IT301</b>	<b>Convert an IPM to AFTN format (IUT-B)</b>
<b>Test criteria</b>	This test is successful, if the receiving IUT converts IPMs correctly into AFTN format.
<b>Scenario description</b>	<p>Send from IUT-A (UA) a sequence of ATS messages (IPMs) to the IUT-B, addressing an AFTN terminal.</p> <ul style="list-style-type: none"> <li>• Message 1 (IT301M01) shall have ATS-message-priority KK.</li> <li>• Message 2 (IT301M02) shall have ATS-message-priority GG.</li> <li>• Message 3 (IT301M03) shall have ATS-message-priority FF.</li> <li>• Message 4 (IT301M04) shall have ATS-message-priority DD.</li> <li>• Message 5 (IT301M05) shall have ATS-message-priority SS.</li> </ul> <p>Each message shall have different ATS-filing-time and ATS-message-text. The <i>optional-heading-information</i> element shall be empty.</p> <p>The implicit-conversion-prohibited attribute of the AMHS message must be set to "false".</p> <p>Check the correct format of the AFTN message. Verify the AFTN priority and filing time for each received message. Compare the AFTN message text with the original ATS-message-text.</p>
<b>AMHS Techn. Spec. reference</b>	4.5.2(AMHS IPM conversion)
<b>Related FIRST interoperability test(s)</b>	ITP001/C31/C32/C52/C54
<b>Test class</b>	Normal AMHS communications (N)

# SCOPE OF EUR AMHS MANUAL – APPENDIX F

◆ This document provides the  
AMHS Pre-operational Tests

◆ The purpose of the document is to define AMHS Pre-operational Tests in order to ensure the interoperability between AMHS systems prepared for going into operation. The document defines the objectives and prerequisites as well as the tests themselves.

# EXAMPLE:

## 5.2.1 Go-NoGo test

Test reference :	Tested functionality :
PRE001	This is a simple test with the purpose to check that the configuration and underlying network work correctly. It is a prerequisite for subsequent tests.  An FF priority message is sent from Test partner 1 to Test partner2.

### Test description:

From aaaaAMHA send the following FF priority message to ddddAMHA:

```
PRE001
12345678901234567890123456789012345678901234567890123456789
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
BBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBBB
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
  
(and so on till)
  
ZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZ
```



# SCOPE OF APPENDIX G – EUROPEAN DIRECTORY SERVICE

- ◆ The purpose of this document is to provide a comprehensive analysis of the various aspects of the solution for the European Directory Service (EDS). Besides technology considerations, the document addresses operational, cooperation and transitional issues.
- ◆ The document aims to give advice in support of the implementation and operations of the European Directory Service. The major focus is set on the exchange of information at the international level.



# SCOPE OF APPENDIX G-A – EDS USER INTERFACE CONTROL DOCUMENT

- ◆ This document describes the Interface of European Directory Service (EDS) for cooperating and adjacent users. It summarises interface details for the exchange of information between the Central European DSA, and Co-operating and Adjacent DSAs.
- ◆ The European Directory Service (EDS) is the implementation of ATN Directory services 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.

# SCOPE OF APPENDIX G-B – EDS DATA DESCRIPTION

- ◆ 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.
- ◆ It 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.

# SCOPE OF APPENDIX G-C – EDS TESTING GUIDELINES

- ◆ This document describes the European Directory Service (EDS) testing activity by providing a:
  - ◆ Customisation of the EDS user interface between the Central European Test Directory System Agent (Test-DSA) and Co-operating or Adjacent Test-DSAs as given by the EDS User Interface Control Document for the purpose of the EDS testing activity;
  - ◆ Description of general aspects of the EDS testing activity such as prerequisites, environment and strategy; and
  - ◆ Definition of the steps of the EDS testing activity.



# SCOPE OF EUR AMHS MANUAL – APPENDIX H

◆ This document provides the Application/Service oriented AMHS Profiles

◆ This document defines specific AMHS profiles for the support of given applications/services, acting in limited environments, using ATS Message Handling Service.

◆ Such profiles provide detailed specification of X.400 and AMHS parameters to be adopted depending on the needs of each identified application/service. The profiles are explicitly and exclusively applicable to the application/service which they have been defined to serve (IWXXM, FIXM,...).





# ATS Messaging Management Manual

ATS Messaging Management Manual	
Document Reference:	ATS Messaging Management Manual
Author:	EUROCONTROL, AFSG Operations Group
Revision Number:	Version 14.0
Date:	07/03/2019
Filename:	ATS Messaging_Management_Manual_v14_0.doc

# SCOPE OF THE DOCUMENT (ATS MESSAGING MANAGEMENT MANUAL – EUR DOC 021)

- ◆ Gives all information necessary for the understanding of the integrated AFTN/CIDIN/AMHS Off-line Management
- ◆ Is written for those performing management operations as well as those implementing and planning the procurement of ATS Messaging systems.
- ◆ It is assumed that the reader of the Manual is familiar with the AFTN, CIDIN and AMHS concepts as described in the relevant ICAO Manuals.

# GOAL OF THE DOCUMENT (ATS MESSAGING MANAGEMENT MANUAL – EUR DOC 021)

◆ to be a self-contained description of ATS Messaging Management, describing and specifying:

- ◆ AMHS Off-line Management Functions - Implementation support (AMF-I), and
- ◆ AMHS/ CIDIN/ AFTN Off-line Management Functions - Operations (AMF-O),

◆ AMF-I functions provide support to States that are in the process of implementing AMHS (AMHS not operational).

◆ AMF-O functions provide an essential tool to States that have AFTN and/or CIDIN and/or AMHS in operation.



EUR Doc 035



## AMHS/Third Party Interconnection Architecture

### Third Party Gateways in a mixed AFTN/AMHS environment

Document Reference:	EUR AMHS Documentation, AMHS Third Party Interconnection Architecture
Author:	AFSG Operations Group
Revision Number:	Version 4.0
Date:	07/03/2019
Filename:	AMHS Third Party Interconnection Architecture v_4_0.docx

# SCOPE OF THE DOCUMENT (AMHS/THIRD PARTY INTERCONNECTION ARCHITECTURE – EUR DOC 035)

- ◆ This document has been developed by a Subgroup of the AFSG Operations Group in order to fulfil Task 26 “Study operational issues and potential solutions for the operation of a SITA Type-X gateway in a mixed AFTN/AMHS environment” assigned by the 16th Meeting of the ICAO EUR Aeronautical Fixed Service Group (AFSG) in 2012.
- ◆ It provides a description of the current and future gateway architecture and analyses the different communication scenarios and potential solutions for the required address conversion.
- ◆ Finally, a preferred solution is proposed and a list of resulting requirements is provided in order to ensure further communication between the AFTN/AMHS and the SITA Network based on modern communication protocols.
- ◆ This document is commonly used as baseline document for the SITA Integration in all ICAO Regions.





# ATS Messaging Routing Directory

## Part I - Documentation

Overview, Explanations, Procedures	
Document Reference:	Part I - Documentation
Author:	AFSG Operations Group
Revision Number:	Version 14.0
Date:	07/03/2019
Filename:	AMRD-PartI-Documentation-v14_0.docx

# SCOPE OF THE DOCUMENT

## (EUR/NAT ROUTING DIRECTORY – PART I)

◆ This document provides the explanation of the tables used within the ATS Messaging Routing Directory as well as Definitions and operational procedures for the daily operational practice.

◆ The ATS Messaging Routing Directory - consists of :

- ◆ Part I            Documentation (this document)
- ◆ Part II           Regional Routing Tables (created by ATS Messaging Management Centre per Region)
- ◆ Part III          Regional Network Inventory (created by ATS Messaging Management Centre per Region)
- ◆ Part IV          COM Charts per ICAO Region ("Booklet 'COM Charts per ICAO Region' ")



# FURTHER AMHS DOCUMENTS USED IN THE EUR/NAT REGION

- ◆ EUR AMHS Documentation Inventory
- ◆ EUR Doc 022 - EUR AFS Security Guidelines (restricted access)
- ◆ EUR Doc 026 - EUR AMHS COM Centre Training Guidelines
- ◆ EUR Doc 027 - IP Infrastructure Test Guidelines for EUR AMHS
- ◆ All these documents are available at the EUR/NAT ICAO website (<https://www.icao.int/EURNAT/Pages/EUR-and-NAT-Document.aspx> )



**Thank you for your attention**

**End**

