REGIONAL WORKSHOP ON AMHS

AMHS

Detailed specifications

(Dakar, 28-29 May 2013)
Outline

- High level requirements
- ATS Message Service
- Validation performed
- Implementation plans
- Transition from AFTN or CIDIN to AMHS
AMHS: High level requirements

- Provide a messaging service over the ATN
- Deliver a level of service at least equivalent to that of the AFTN
- Allow transition from AFTN to ATN
- Allow transition from CIDIN to ATN
AMHS: AFTN Functionalities

- Store-and-forward messaging service ensuring no loss of messages
- 3 Transmission Priorities
- 5 Priority Indicators
- Multiple addressee messages
- Collective addresses
- Possibility to convey optional heading information
AMHS Summary

- Operational requirements
- MHS/X.400 Overview
- Definition of the ATS Message Service
- AMHS Components
AMHS Operational requirements (1/4)
AMHS Operational requirements (3/4)
AMHS Operational requirements (4/4)
AMHS / ATS Message Service
MHS/X.400 Overview: The Standards (1/2)

- CCITT / ITU-T X.400 Series of Recommendation Message Handling Systems
- ISO/IEC 10021 (9 parts): Both texts are aligned in principle.
- The ATS Message Service (AMHS) fully complies with the ISO standards which are mature and widely implemented.
ATSMHS Users

▷ Direct AMHS users shall use either the basic ATSMHS or the extended ATSMHS at an ATS message user agent.
▷ Indirect AMHS users shall use only that part of the ATSMHS which corresponds to AFTN functionalities by using the interworking capability provided by an AFTN/AMHS gateway.
▷ X.400 includes some organisational restrictions
▷ ISO is the applicable AMHS standard
AMHS / ATS Message Service
X.400 Overview : functional components

- **MTA** = Message Transfer Agent
  - Message Switch

- **UA** = User Agent
  - User Access to the MTA
  - Human Machine Interface is not standardised

- **MS** = Message Store
  - Intermediary storage between MTA and UA
  - Usually co-located with MTA

- **AU** = Access Unit
  - Conversion to other Messaging Systems
AMHS / ATS Message Service

X.400 Overview: Functional Components (MTA)
AMHS / ATS Message Service

X.400 Overview: Functional Components (UA)

MTS

P3

P1

P1

MHS

UA

MTA
AMHS / ATS Message Service
X.400 Overview : Functional Components (AU)
Operation without message store

P2 (Inter-Personal Message or IPM)

protocols

format

UA → MTA → MTA → UA

submission → transfer → delivery
Operation with message store

P2 (Inter-Personal Message or IPM)

format

protocols

submission transfer delivery retrieval

UA P3 P1 MTA MTA MS UA

P7

UA
AMHS / ATS Message Service
X.400 Overview : Messages

MESSAGE
ENVELOPE (P1 or P3) + CONTENT (P2)

Header
From :
To :
Subject :

Body
This is the text which I want to send you etc.
AMHS / ATS Message Service
X.400 Overview: Probes and Reports

▶ **Probe** = Message without Content (envelope only)

▶ **Report** = To inform the message originator about the outcome of a message conveyance:
  - Delivery Report (if delivery successful)
  - Non-Delivery Report (if transfer or delivery failed)
Management Domain:
an organisational entity which manages at least one MTA (or several),
and is responsible for the users connected to its MTA(s)

A Management Domain can be:

- ADMD (Administrative Management Domain), generally operated
  by a public telecom operator.
- PRMD (Private Management Domain), generally operated by a
  private company or organisation.

Usually an ADMD provides services to the public or a community,
while a PRMD serves only its own organisation.

In accordance with ITU-T, ICAO is now the name an ADMD
Examples of MD Interconnections
Each user (UA) in a Management Domain is identified with an **O/R Address** consisting of a set of **attributes**.

Four forms of O/R Addresses exist:
- mnemonic (mostly used)
- numeric
- postal
- terminal

The available standard attributes for mnemonic O/R addresses are:
- organisation-name (O)
- organisational-units-name (4 values) (OU1 to OU4)
- personal-name (surname, given-name, initial) (S, G, I)
- common-name (CN)
AMHS / ATS Message Service
X.400 Overview : Addressing

C=XX / A=ICAO / P=KENYA / O=ATNS / OU1 =COM Division / S=Kirkman / G=Lindi-Lee

The Management Domain is globally identified by 2 or 3 standard attributes:
- Country-name (C)
- ADMD-name (A)
- PRMD-name (P)

Country-name : XX
ADMD : ICAO
PRMD-name : South Africa

Organisation-name : ATNS
Organisational-unit-name-1 : Telecommunications
Surname : Kirkman
Given-name : Lindi-Lee
AMHS / ATS Message Service
AFTN / X.400 : functional equivalence

AFTN
X400

AFTN Centre
MTA

AFTN Station
UA

Addressee Indicator
O/R Address
The provider of the ATS Message Service is called **ATS Message Handling System (AMHS)**

<table>
<thead>
<tr>
<th>AFTN</th>
<th>MHS/X.400</th>
<th>AMHS</th>
</tr>
</thead>
<tbody>
<tr>
<td>AFTN Centre</td>
<td>MTA</td>
<td>ATS Message Server (also includes optional MS)</td>
</tr>
<tr>
<td>AFTN Station</td>
<td>UA</td>
<td>ATS Message User Agent</td>
</tr>
<tr>
<td>AU (+MTA)</td>
<td></td>
<td>AFTN / AMHS Gateway</td>
</tr>
</tbody>
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AMHS / ATS Message Service
ATS Message Handling System (AMHS)
AMHS / ATS Message Service
ATS Message Server

To other ATS Message Servers
or AFTN/AMHS Gateways

MS (optional)

MTA

Access to ATN subnetwork

Protocol selected as a local matter (can be P3 or P7 over UL)

ATN transport service

ATS message protocol stack
(P1 over upper layers)

Access to ATN subnetwork

to ATS Message User Agents
AMHS / ATS Message Service
ATS Message User Agent

To an ATS Message Server

Protocol selected as a local matter (can be P3 or P7 over upper layers)

ATN transport service
Access to ATN subnetwork

This part is out of the scope of the SARPs
AMHS / ATS Message Service
AFTN/AMHS Gateway (General Design)

To other ATS Message Servers
or AFTN/AMHS Gateways

Normal flow of messages

Message Transfer and Control Unit (AU)

AFTN procedure handler ("AFTN component")

MTA ("ATN Component")

Access to
AFTN

ATS message protocol stack

ATN transport service

Access to
ATN subnetworks

To other ATS Message Servers
or AFTN/AMHS Gateways
AMHS / ATS Message Service
AFTN/AMHS Gateway (General Functionalities)

- Management of AFTN procedure
- AFTN ITA-2 to/from IA-5 conversion if needed traffic logging
- Conversion of AFTN messages (and of certain service messages) to/from AMHS messages and reports
- Rejection of AMHS messages which cannot be conveyed over the AFTN
- Address mapping: conversion of AFTN addressee indicators to/from O/R addresses
- Full MHS/X.400 support by ATN Component
AMHS / ATS Message Service
AFTN/AMHS Gateway (Conversion of Messages)

MESSAGE COMING FROM AFTN

ZCZC BAC002
FF LFPOYIYA
011030 LFPSYHYX
THIS IS THE MESSAGE TEXT
NNNN

MESSAGE CONVERTED IN THE AMHS

-PRI : FF
-FT: 011030

-0/R Address
-Transmission priority

Other P1 envelope elements are generated by the MTCU

-0/R Address
-Receipt Notification request if SS

THIS IS THE MESSAGE TEXT
Use of XF-Addresses (defined in the SARPs)
- C=XX
- A=ICAO
- P=France
- O=AFTN
- OU1=LFOPOZTZX

Use of MF-Addresses (without further SARPs specification: local matter)
- C=XX
- A=ICAO
- P=France
- O=LFFF
- OU1=LFFPO
- CN=LFPOZTZX

Two types of addressing plans (common or local)
Two ways of mapping addresses
ATS Message Service - Position of AMHS vs ATN Internet
Conclusion on AMHS (1/2)

- A store-and-forward messaging system over the ATN Internet or over existing industrial solutions
- The system fully complies with mature standards
- Widely available using off-the-shelf products
- Full interoperability with AFTN via the AFTN/AMHS Gateway
Conclusion on AMHS (2/2)

- Significant improvements with the Basic ATS Message Service:
  - no limit on message length
  - no limit on number of recipients per message
  - non-delivery reports
  - subject indication
  - very large extension capability
    (redirection, security) with functional groups (FGs) => Extended ATS Message Service
Questions?
Thank you