ATNP/WG3

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AERONAUTICAL TELECOMMUNICATIONS NETWORK PANEL(ATNP)

WORKING GROUP 3 - APPLICATIONS AND UPPER LAYERS

Munich, 24-28 June 1996 (seventh meeting)

Agenda Item 4.4 : ATNP/2 Ground Application Presentation Working Papers

WP/7-16A : Overview of the Draft MHS SARPs
(ATS Message Handling Services over the ATN)

Presented by the SG1 Chairman

Summary

This paper is the proposed presentation paper for the Draft SARPs for ATS Message Handling Services over the ATN, to be presented at ATNP/2, after amendment to be aligned on the structure and presentation of WG3 Flimsy 8.

ATNP/2-WP/__
11/04/96

AERONAUTICAL TELECOMMUNICATION NETWORK PANEL (ATNP)

SECOND MEETING

Montreal, 4 to 15 November 1996

Agenda Item 3 : Development of the ATN SARPs

Overview of ATS Message Handling Services over the ATN SARPs Material

(Presented by ATNP WG3 Rapporteur)

WORKING PAPER

Summary

References

[1] draft SARPs for ATS Message Handling Services over the ATN

[2] draft Manual on the ATS Message Service over the ATN, Appendix A to Chapter 5 of the Report of the first meeting of the ICAO Aeronautical Telecommunication Network Panel

1. Introduction

The Draft SARPs for ATS Message Handling Services over the ATN (MHS) define two applications which allow ATS Messages to be exchanged between service users. These applications are the ATS Message Service and the ATN Pass-Through Service.

These Draft SARPs have been produced as a deliverable of the ATN Ground-Ground Applications subgroup (SG1) within the Applications and Upper Layers Working Group (WG3) set up by ATNP/1.

2. Background

The ATNP/1 meeting recommended that the draft Manual for the ATS Message Service over the ATN (ref.[2]) be published as an ICAO Manual. Furthermore, this draft Manual was recognized as the basis for the future development of the Draft SARPs for ATS MessageHandling Services over the ATN.

The draft Manual included the specification of two ATS Message Protocol Stacks called Type A and Type B. These two protocol stacks have led to the definition of the two applications, the ATS Message Service and the ATN Pass-Through Service implementing the ATS Message Protocol Stack Type B and the ATS Message Protocol Stack Type A, respectively.

3. Discussion

3.1. Overview of the draft SARPs

The Draft SARPs for ATS Message Handling Services over the ATN define two ATS Message Handling Services which are generic messaging services over the ATN:

a) the ATS Message Service, which is a store-and-forward messaging service over the ATN; and

b) the ATN Pass-Through Service, which is a point-to-point transmission facility over the ATN for AFTN messages.

The implementation of the ATS Message Service is mandatory for conformance with the SARPs. However, as a matter of organisations' policy, the implementation of the ATS Message Service may be deferred. In order to take early advantage of the enhanced connectivity provided by the ATN, Administrations and/or Organisations with such a policy may implement and operate in the interim the ATN Pass-Through Service.

The choice to implement the ATN Pass-Through Service does not exclude the requirement to implement the ATS Message Service at the earliest possible date.

The choice to implement the ATN Pass-Through Service implies the requirement to provide the interoperability facilities to the ATS Message Service implementations. Such facilities between the ATS Message service and the ATN Pass-Through Service are a local implementation matter, provided that the behaviour exhibited externally to the facility is identical to that of an AFTN/AMHS Gateway and of an AFTN/ATN Type A Gateway, respectively.

3.2. The ATS Message Service

3.2.1. General

The ATS Message Service is provided by the implementation over the ATN of the Message Handling Systems specified in ISO/IEC 10021 and CCITT/ITU-T X.400, and complemented with the additional requirements specified in these SARPs.

The CNS/ATM-1 SARPs specify the Basic ATS Message Service, which meets the basic requirements of the MHS Profiles published by ISO/IEC as International Standardized Profiles (ISPs), and it incorporates additional features to support the service offered by the AFTN.

3.2.2. Systems involved in the ATS Message Service

Three types of ATN End Systems are defined and specified in the SARPs in relation with the ATS Message Service:

a) the ATS Message Server, which is the system offering the message switching and routing capability, as well as the storage function;

b) the ATS Message User Agent, which is the system where a user directly interfaces with the ATS Message Service; and

c) the AFTN/AMHS Gateway.

Together they form the ATS Message Service provider, and they are collectively denominated the ATS Message Handling System (AMHS). Figure 1 depicts their relationships and the particular role of each of these systems.

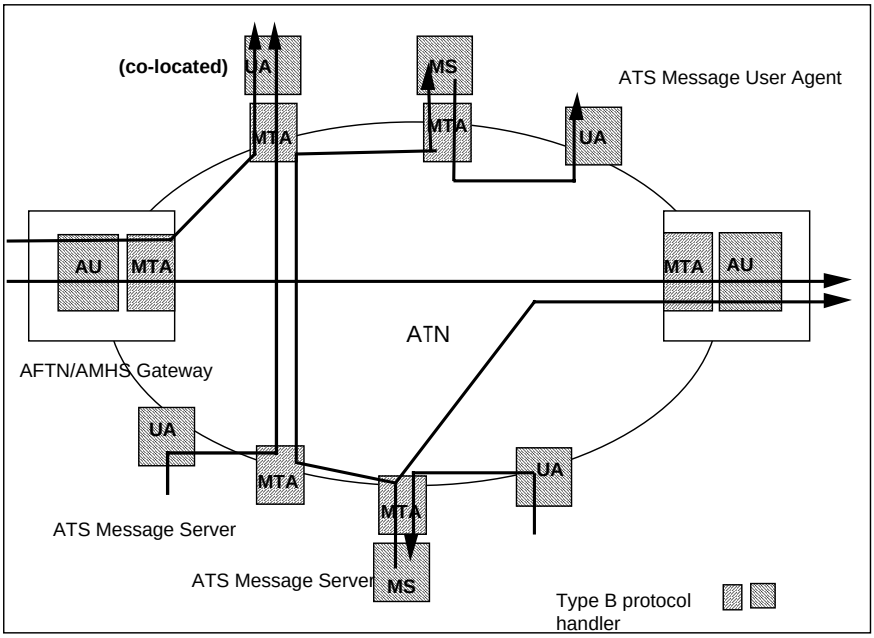

Figure 1.- Examples of traffic flows between systems involved in the ATS Message Service

3.2.3. Functionalities

The functionalities offered by the ATS Message Service are at least equivalent to those of the AFTN, and they may include additional functionalities when no interconnection with the AFTN is involved in an information exchange.

A non-exhaustive list of the base functionalities supported by the ATS Message Service are the following:

- message identification,
- filing time and submission time indication,
- non-delivery reports sent back to the originator when a message has not been delivered,
- message priorities,
- optional heading information,
- acknowledgement of SS priority messages,
- multi-destination delivery,
- distribution lists,
- delivery time indication,
- primary and copy recipients,
- subject indication.

3.3. The ATN Pass-Through Service

The ATN Pass-Through Service is the ATS Message Handling Service offered over the ATN by the use of the Dialogue Service and of the associated upper layer architecture as specified in Sub-Volume 4, to exchange AFTN Messages formatted in IA-5 in compliance with the provisions of Annex 10, Volume II.

The ATN Pass-Through Service encapsulates and decapsulates AFTN messages at an AFTN/ATN type A Gateway. The components of an AFTN Message, with the exception of the heading line, are therefore transparently conveyed without specific processing over the ATN.

3.4. System Requirements Fulfillment by the SARPs

The following System Level Requirements are fulfilled by the Draft SARPs for ATS Message Handling Services over the ATN:

OSI Standards	The ATS Message Service is based on ISO OSI Standards for Message Handling Services (ISO/IEC 10021) and on the associated International Standardized Profiles (ISO/IEC 10611 and 12062). The ATN Pass-Through Service is based on ISO OSI Standards, using the ATN Upper Layer Architecture which itself meets this requirement.
AFTN Transition to ATN	The ATS Message Service is an essential piece in the AFTN to ATN transition strategy. It offers a level of service and functionality which is at least equivalent to that of the AFTN, and includes transparent conversion mechanisms at AFTN/AMHS Gateways to make interworking possible between AMHS users and AFTN users (and vice-versa), as well as to allow the transparent conveyance of AFTN messages from an AFTN station to another through the ATN. The ATN

	Pass-Through Service contributes to the AFTN to ATN transition by the transparent encapsulation of AFTN messages at AFTN/ATN Type A Gateways. Therefore it may allow isolated AFTN islands to communicate over the ATN with other AFTN users.
Policy Based Routing	The AMHS being a store-and-forward messaging service, routing is also performed at the application level. AMHS Routing policy based between AMHS Management Domains.
Authorized Paths	No preference is expressed in terms of ATS traffic types for the ATSC communications in the ATS Message Service and the ATN Pass-Through Service, as allowed by the ATN, since these applications employ only ground subnetworks and are therefore not subject to major bandwidth restrictions.
Peer Information Exchange	The ATN Pass-Through Service enables the peer-to-peer exchange of AFTN messages over the ATN, when an authorized path exists between two AFTN/ATN Type A Gateways.
Store-and-forward Information Exchange	The ATS Message Service enables the store-and-forward exchange of information when authorized paths exist between the ATS Message Servers and, if required, the AFTN/AMHS Gateways forming the AMHS.
Lack of Path Notification	In the ATS Message Service, the service user, either a human at a user interface or an Application Process at an API is informed of a message non-delivery by means of a non-delivery report. Positive acknowledgements are also transferred for messages with the highest priority.
Unambiguous Addressing	In the ATS Message Service, all involved systems, either ATS Message User Agents, ATS Message Servers or AFTN/AMHS Gateways, are ATN End Systems addressed as such by means of NSAPs and transport, session and presentation selectors. Furthermore every user of the ATS Message Service is individually identified at the application level by means of an O/R name. AFTN/ATN Type A Gateways are also part of the ATN Addressing scheme.
Originator Identification	In the ATS Message Service, the originator identification accompanies the ATS message and it is given to the message recipient by means of the originator O/R name indication. In the ATN Pass-Through Service, the encapsulated AFTN message includes the originator indicator.
Addressing and Name Assignments	At the application level, the AMHS is organized in Management Domains of two categories respectively named Administrative Management Domains (ADMD) and Private Management Domains (PRMD) within which the aforementioned O/R names are assigned.
MHS Associations	The applications defined in these SARPs are the actual CNS/ATM-1 applications for ATS Message Handling Services over the ATN.
UTC Reference	All dates and times referenced in the ATS Message Service are expressed as UTC.

3.5. Interrelation with other SARPs

The ATS Message Service, as defined in the Draft SARPs for ATS Message Handling Services over the ATN, makes use of the Internet Communication Services.

The ATN Pass-Through Service, as defined in the Draft SARPs for ATS Message Handling Services over the ATN, makes use of the Upper Layer Communication Services, which in turn make use of the Internet Communication Services.

Furthermore, since both applications are part of the AFTN to ATN transition strategy, they make extensive references to the part of Annex 10, Volume II, which specifies the AFTN.

4. Recommendation

It is recommended that the ATN Panel accept the proposed ATS Message Handling Services over the ATN material for inclusion in the ATN SARPs.