



International Civil Aviation Organization

**AMHS/SWIM SEMINAR AND THE SEVENTH MEETING OF
AERONAUTICAL TELECOMMUNICATION NETWORK
(ATN) IMPLEMENTATION CO-ORDINATION GROUP OF
APANPIRG (ATNICG/7)**



Chiang Mai, Thailand, 5 – 9 March 2012

Agenda Item 2: Review outcome of relevant meetings/workshops

**REVIEW OF AERONAUTICAL COMMUNICATION PANEL
WORKING GROUP – I (IPS) AND M (MAINTENANCE) MEETING REPORTS**

(Presented by the Secretariat)

SUMMARY

ACP WG-I/14 and WG-M/18 were held back to back in July 2011 and ACO WG-I/15 and WG-M/19 were held from 28 November to 2 December, 2011. Both the meetings were held in Montreal Canada. This paper discusses significant outcome of the WG-I/14 and WG-M/19 meetings only, since outcome of WG-I/15 and WG-M/19 are yet to be published. The meeting is invited to develop its position and strategy on based on the report available.

This paper relates to:

Strategic Objective:

C – Environmental Protection and Sustainable Development of Air Transport

Global Plan Initiative:

GPI 22 – Communication Infrastructure

1. INTRODUCTION

1.1 Fourteenth Working Group I (IPS) meeting of Aeronautical Communication Panel (ACP WG/1) was held from 18 to 20 July 2011 in Montreal, Canada. Meeting reviewed and discussed 8 Working and 12 Information papers related to the implementation of AMHS over Internet Protocol Suite.

1.2 Aeronautical Communication Panel (ACP) Working Group M – Maintenance held its Eighteenth meeting in Montreal, Canada from 20 to 22 July 2011. Meeting reviewed and discussed 8 Working and 7 Information Papers on relevant issues.

1.3 Fifteenth meeting of ACP Working Group I (IPS) was held in Montreal, Canada from 28 to 30 November, 2011. The meeting outcome is yet to be published and hence has not been discussed in this paper.

1.4 Nineteenth meeting of Aeronautical Communication Panel Working Group M (Maintenance) was held in Montreal, back to back with Working Group I meeting from 30 November to 2 December, 2011. Since the outcome of the meeting is yet to be published the same has not been discussed in this paper.

1.5 Same paper was presented to the 10th Meeting of ATNICG Working Group held in Jaipur, India in September.

2. DISCUSSION

Working Group I (IPS) Meeting

Directory Services

2.1 ACP Working Group I, while discussing issues related to the provision of Directory Services, concentrated on the following three main issues:

- a) the origin of this requirement was unclear;
- b) the new text mixed statements of requirement with guidance material; and
- c) X.500 Directory Services when implemented over the IPS allows inadvertent changes to be made which can have a system-wide impact. Methods to control such changes have to be worked out.

Regarding the 1st item, it emerged that the requirement was generated in WG-M in order to support AMHS. The concept of operation of Directory Services had not been completed and hence published at this time. Meeting assigned the task of developing concept of operations for Directory Services by the WGW meeting in September.

On the 2nd item, it was agreed that much of the material actually should have remained in Doc 9880 from where it was lifted.

On 3rd item, it was agreed that it was premature to include reference Directory Services at this time. It was further agreed that once a concept of operations was developed and clear guidance on its implementation over IPS was available, both i) the technical provisions for the support of Directory Services over IPS and ii) guidance material on its use and implementation could be included in Doc 9896.

Voice over IP (VoIP)

2.2 To accommodate FAA's operational requirements, it was agreed that recommendations will be specified in Part III of ICAO Doc 9896 and these requirements will be withdrawn after ED 137A is updated to include FAA requirements. Meeting was reminded that the Manual for the ATN using IPS Standards and Protocols (ICAO Doc 9896) contains following parts:

- Part I – Detailed Technical Specifications: - containing general description of ATN/IPS including network, transport and security requirements
- Part II – Application Support: - containing a description of applications supported on ATN/IPS including convergence mechanism and application services that allow the operation of legacy ATN/OSI applications over the ATN/IPS transport layer
- Part III – Guidance: - contains guidance material on ATN/IPS including information on architecture, and general information to support ATN/IPS implementation. It was agreed that new section 7,2 to Part III should be added with the following sub-sections:
 - o Section 7.2.1 Radio
 - o Section 7.2.2 Telephony Documents evolution

2.3 Explaining the structure of VoIP related documentation, meeting was informed about following salient points:

- a) Document ED-137 would be split into four independent volumes; and
- b) A new edition of ED-137 is planned for the end of 2011

Informing the meeting about the outcome of FAA VoIP ‘Interoperability Event’ with multiple vendors for interoperability test, following significant observations were presented:

- a) Overall high percentages of interoperability achieved during the test sessions; and
- b) This demonstrates a very high level of confidence by all participating vendors in the standards being used.

VoIP in ATM Test Suite development

2.4 Salient points brought out in the presentation on the subject EUROCONTROL VoIP Test Suite included licensing agreement, compliance of services etc.

ACP WG/I Terms of Reference

2.5 There was some discussion about the continuity of the Working Group after 2008 the date fixed at the time of its creation and it was explained that some new tasks like VoIP and Security etc. were added and hence was the requirement of continuing the Working Group was necessitated. Meeting also agreed to develop an Action Item inviting States to nominate personnel with IPS skills and support extension of work programme based on the explanation given above.

IPv6 Addressing

2.5.1 EUROCONTROL introduced a paper on IPv6 addressing scheme and BGP Autonomous System Number (ASN) assignments. Meeting discussed basic addressing requirement and the method to be adopted to meet those requirement. It was reminded that an action item to secure /32 address blocks for ground-ground communications for each of the ICAO regions had been developed at WG-I/13 and it was informed that the action item had not been completed so far since the guidance was not available on the subject. It was also reminded that Doc 9896 already had provisions for /32 addressing assignments to Mobile Service Providers to support mobile (air-ground) communications. This led to a general discussion on the merits of /32 versus /16 address blocks. After considerable discussions following points emerged:

- a) /16 addressing was needed to support ICAO 24-bit addressing scheme; and
- b) /16 address block could accommodate /32 address blocks for each of the ICAO regions (Except EUR/NAT, who had already secured a separate block)

2.5.2 It was also pointed out that the use of a common address block for aviation also had security benefits as the Boundary Gateway Protocol (BGP) could be used to prevent aviation data being carried on the public internet and conversely to prevent access to the ATN/IPS from the public internet. Meeting assigned action item for ICAO to develop a justification for a /16 address block and make an application to ARIN or IANA based on expediency of requirement.

IPv4 to IPv6 Transition

2.6 US proposed to implement dual-stack routers at the key boundary points to accommodate neighboring states when they migrate to IPv6. This method supported a phased introduction of IPv6 by States. Additionally, US will have to support OSI protocol over an IP sub-network for operation with some States. US was assigned the task to develop a guidance material for Doc 9896 on transition from IPv4 to IPv6. There was a suggestion to modify use of the OSI protocols to a Recommended Practice in Annex 10, leaving IPS as Standard.

DNS Naming

2.7 Following points were raised with reference to DNS Naming

- a) Domain names are essential for IPv6 due to address length;
- b) Since domain names were developed in order to make the addresses human-readable, it was important to determine what was important to pilots and air-traffic controllers;
- c) In many cases this would simply mean applying the principles in use today; and
- d) Consideration needed to be given to future applications since future aircraft could have as many as 256 sub-networks on board

2.7.1 If ICAO or aviation community manages Domain Name Servers, it will provide many benefits like use of aliases to both identify an airframe and also flight ID, the first one being permanent for the aircraft and the second one being temporary assignment lasting only for the duration of the flight. It was emphasized that DNS networks were inherently robust and security using PKI had already been specified by ICAO. It was mentioned that ICAO already has a Top Level Domain (TLD) name, "ICAO.int", and lower level domain names were the responsibility of TLD owners. Hence ICAO could oversee this through the use of appropriate guidance material. An action item was developed asking ICAO to apply for new TLD and draft appropriate guidance document.

Any Other Business

2.8 SWIM

2.8.1 Discussing the role of ACP (and in particular WG-I) in the implementation of SWIM, following points were noted:

- a) It was not clear which panels would have a role in SWIM, however the general view was that most would have a role defining contents;
- b) ACP may not have a direct role except to provide adequate communication media, i.e. coverage, capacity etc.
- c) As SWIM is considered to provide a common service framework for the exchange of information, ACP could serve a useful role by dealing with issues beyond the communication media, i.e. common markup language, Service Oriented Architecture Standards.

2.8.2 Following significant points were noted from the briefing on SWIM

- a) It would be a common platform for future information exchange; and
- b) It would be able to draw information from various sources in order to produce useful composites, i.e. maps overlaid with met and flight data, dynamically.

2.8.3 It was generally agreed that ACP could start the work on media only after the Concept of Operations had been developed and various parameters like volume of data, routing rules, etc. were available. Meeting agreed that an inter-disciplinary task force should be formed to expedite the work on developing media requirements. Regarding the role of ACP in Swim, it was informed that

- a) The ATMRPP was defining a Global Flight Object Identifier (GUFID); and
- b) SWIM would contain an URL component to make every entity addressable

2.8.4 To pursue the subject, meeting adopted an Item for Follow-up asking ACP to consider the development of a suitable architecture to support SWIM.

2.9 Meeting was also informed about the concept of Aviation System Block Upgrades.

2.10 Next meeting of ACP WG I has been scheduled beginning 7 November 2011.

Working Group M – Maintenance Meeting

2.11 It was observed that Security was optional in Doc 9880, which needs to be added as mandatory. A detailed justification was provided to support the argument. Some of the participants were of the view that technically, the ATN Security material developed for 9705 edition 3 was an excellent material and it should be considered for inclusion. Meeting assigned the task of producing a report for presentation to the Working Group of the Whole meeting scheduled in September, 2011. The Report should cover current status of the work and the planned activities to define security provisions for data-link services.

Configuration Management Process

2.12 Brief introduction was provided on the requirement of configuration management between the industry standards making bodies and ICAO. It was informed that a very well organized process based on a Configuration Control Board (CCB), making use of standards forms for submission and comment and an automated distribution mechanism existed in the past. It was agreed that details of previous CCB should be provided to Standards Roundtable Group. It was agreed that establishment of WG-M CCB should be postponed till such time workload increased significantly to justify this creation.

ATN/OSI Document 9880 update status

2.13 Reference was made to the parallel industry standardization efforts within Airlines Electronics Engineering Committee (AEEC) to update ATN/OSI security references contained in ARINC Specifications 823, ACARS Message Security from ICAO Doc 9705 Sub-Volume VIII to ICAO Doc 9880 Part IV-B. The publication of ARINC Specification 823 has been deferred pending the publication of Doc 9880 Part IV-B. ICAO has been requested by AEEC to continue to make Doc 9705 Edition 3 and in particular sub-volume VIII available to support of references in original versions of ARINC 823 until such time that Doc 9880 Part IV-B is published.

Updates to VDL Mode-2 Documents

2.14 Meeting was informed about the validation activities performed by EUROCONTROL on VDL-2 multi-frequency specifications: AEEC 631-6 in following phases, contracted through SITA:

- Phase 1 – Laboratory testing started on 27 September 2010 in Montreal;
- Phase 2 – 3 DFS/SITA VDL Ground stations had been upgraded with Multi-frequency capability. Flight trials were performed on 26 November 2010 and 18 March 2011;
- Phase 3 - planned to start in Q4 2011

A number of VDL Mode 2 Multi-frequency operations had been successfully demonstrated.

Communication Road Map

2.15 Based on the presentation given to WG I meeting on the Aviation Systems Block Upgrade, it was clarified that though the Communication Roadmaps will be driven by the Blocks, they would also capture other CNS, AIM and Avionics developments. Responding to the query whether the roadmaps will be driven by NextGen/SESAR, it was clarified that these would also include the activities of other States with significant plans or activities; Australia and Canada with ADS-B and Japan with CARATS being clear examples. It was further explained that the roadmaps would not just talk about high-level technology requirements but would allow users to drill-down and obtain information on the various regulatory and procedural requirements for each region.

Other Business

2.16 The meeting was informed that the next (Fourth) Meeting of Aeronautical Communication Panel (ACP) Working Group of the Whole (WG-W) will be held in Montreal, Canada from 14 to 16 September, 2011. Next meetings of ACP WG I and WG M will be held in the week starting 7 November, 2011 also in Montreal, Canada.

3. ACTION REQUIRED BY THE MEETING

3.1 The meeting is invited to note information provided in the paper and may like to develop a Strategy on issues related to implementation of VoIP, SWIM, VDL – 2.

3.2 The meeting may also like to develop a position in due course of time on the issue of relegating ATN/OSI to Recommendation for ground-ground services and retaining ATN/IPS only as the Standard.
