



International Civil Aviation Organization
CAR/SAM Regional Planning Implementation Group (GREPECAS)
Air Traffic Management / Communications, Navigation and Surveillance
Subgroup (ATM/CNS/SG)
Communications, Navigation and Surveillance Committee
FIFTH MEETING OF THE ATN TASK FORCE (ATN/TF/05)
(Mexico City, Mexico, 12 to 13 June 2009)

Agenda Item 1: Review of the ATN CAR/SAM Planning / Implementation Activities

d) IP Regional Plan

SUMMARY

This working paper presents the results of the analysis made by the eight meeting of Group I – Internet Protocol Suite of the Aeronautical Communications Panel (ACP) (Montreal, Canada, 25 to 29 August 2008) to the IPv4 addressing scheme elaborated during the ATN/TF/04 meeting.

References:

- Report of the fourth meeting to the ATN Task Force (Santo Domingo, Dominican Republic, 27 to 28 June 2008);
- Report of the sixth meeting of the ATM/CNS/SG CNS Committee (Santo Domingo, Dominican Republic, 30 June to 4 July 2008);
- Report of the sixth meeting of the GREPECAS ATM/CNS/SG (Santo Domingo, Dominican Republic, 30 June to 4 July de 2008; and
- Eighth meeting of the ACP Group I - Internet Protocol Suite (Montreal, Canada, 25 to 29 August de 2009).

1. Background

1.1 The fourth meeting of the ATN Task Force (ATN/TF/4), held in Santo Domingo, Dominican Republic, from 27 to 28 June 2008, elaborated a private IPv4 addressing scheme to be adopted in the implementation of ground applications, initially in that of the CAR/SAM AMHS system.

1.2 The sixth meeting of the ATM/CNS/SG CNS Committee (CNS/COMM/6), held in Santo Domingo, Dominican Republic, from 30 June to 4 July 2008, deemed it convenient that the IP addressing scheme be sent to ICAO for its review [Aeronautical Communications Panel (ACP)].

1.3 In this regard, the Secretariat submitted the ICAO ACP the referred addressing scheme and requested its comments.

1.4 Furthermore, the Secretary of the ACP thought it appropriate that the CAR/SAM IPv4 addressing scheme proposal were analyzed by the eighth meeting of ACP Group I – Internet Protocol Suite, preparing a working paper (WP/09) for its presentation to this meeting. Copy of the mentioned working paper is shown in the **Appendix** to this paper.

2. **Analysis**

2.1 The ACP Group I, upon analyzing the working paper related with the CAR/SAM private IPv4 addressing scheme proposal, made the following comments:

2.1.1 The IPv4 addressing scheme contained in the proposal overlaps with existing ANSP IPv4 private assignments in other regions.

2.1.2 The proposed private address space is also in conflict with ARINC-664 aircraft addressing, which is currently in use in the Airbus 380/350 and Boeing 787/747-8.

2.1.3 Currently, WG-I is developing a Draft ICAO Doc 9896 which specifies that States shall request official globally unique IPv6 address space from their Regional or Local Internet Registry for ground-to-ground assignments, as already performed by another region. In addition, the Secretariat is investigating the allocation of an IPv6 prefix to further facilitate this procedure and to ease airborne assignments. This document will be completed in December 2008.

2.2 Finally, it is recommended that a survey be performed when considering a regional IPv4 addressing scheme. The survey should consist of an inventory of existing IPv4 address deployments; because the private class A address space may already be in use by ANSPs within the region.

3. **Action suggested**

3.1 The Meeting is invited to:

- a) Take note of the information provided;
- b) Analyze the reply prepared by ACP Group I on the IPv4 addressing scheme prepared by the ATN/TF, and make recommendations in this respect; and
- c) Analyze any other aspects that the Meeting might consider necessary.

- - - - -

APPENDIX



International Civil Aviation Organization

WORKING PAPER

ACP-WGI08/WP-09
2008-08-19

AERONAUTICAL COMMUNICATIONS PANEL (ACP)

FIRST MEETING OF THE WORKING GROUP OF THE WHOLE

Montreal, Canada 25 – 29 August 2008

IP version 4 Addressing Plan for AMHS

(Presented by the Secretary on behalf of the CAR/SAM Region)

SUMMARY

At a recent meeting in the CAR/SAM Region, an IP version 4 Addressing Plan was developed to enable an expedited implementation of AMHS through IPv4 within the Region. This paper introduces the plan and asks for feedback from the ACP WG-I.

1. INTRODUCTION

1.1 A Preliminary AMHS Implementation Approach has been developed for the CAR/SAM Region. To expedite the implementation of AMHS, initial implementations will use IP version 4 (IPv4). In order to facilitate this plan, the last CNS Committee of GREPECAS ATM/CNS Subgroup (Sixth Meeting held in Boca Chica, Dominican Republic from 30 June to 4 July 2008) developed a proposal for an IPv4 addressing plan to be used in the Region. The plan proposed may potentially be applied to all IPv4 implementations of the AMHS service.

2. DISCUSSION

2.1 As reflected in the GREPECAS/14 Meeting report, the end goal in the CAR/SAM Region is to implement the Internet Protocol Version 6 (IPv6) as the network protocol. However to expedite the implementation of the AMHS service within the Region, the AMHS network will initially be implemented using IPv4. For inter-regional connectivity however, IPv6 will be implemented. Transition to IPv6 within the Region will be done by the means of a dual stack transition mechanism, where both IPv4 and IPv6 are implemented in the AMHS systems. This will lead to an eventual all-IPv6 network where all routers and hosts are only IPv6 based and IPv4 is disabled.

2.2 AMHS implementation is already well under way in the Region, several States have implemented AMHS. Current implementations in the Region are based on IPv4. During the last meeting of the CNS Committee of the GREPECAS ATM/CNS Subgroup, when reviewing the progress of the ongoing AMHS implementation, it was agreed that a common IPv4 addressing scheme was needed. The meeting took note of the status of IPv6 addressing activities achieved by ICAO ACP.

2.3 In regard to an IPv4 addressing scheme for the Region, the meeting analyzed an IPv4 private regional addressing plan elaborated by the ATN Task Force of the CNS Committee in its fourth Meeting (Santo Domingo Dominican Republic the 28-29 June 2008) and considered the revision contained in Section 3 below for adoption. This private IPv4 addressing plan was defined from the options available on IANA private internet addresses (following):

Name	IP address range	number of IPs	classful description	largest block	CIDR defined in
24-bit block	10.0.0.0 10.255.255.255	– 16,777,216	single class A	10.0.0.0/8	<u>RFC 1918</u>
20-bit block	172.16.0.0 172.31.255.255	– 1,048,576	16 contiguous class Bs	172.16.0.0/12	
16-bit block	192.168.0.0 192.168.255.255	– 65,536	256 contiguous class Cs	192.168.0.0/16	

3. PROPOSAL:

3.1 The IP address structure (Private IPv4) adopted in the CAR/SAM Region was the following:

1st BYTE	2nd BYTE		3th BYTE		4th BYTE
8 bits	4 bits	4 bits	4 bits	4 bits	8 bits
00001010	Region	State		Host	

The structure has as a first byte the fixed value of 10 in decimal number

The rest of 24 bits (3 bytes) have the following distribution, part of the 2nd byte should be used for identification of Regions; and part of the 3rd bytes should be used for State identification. The 4th and part of the 3rd byte should be used for hosts

The address structure has the following codification :

10.XXXX YYYY.YYYYZZZZ.ZZZZZZZZ

Sub mask 255.255.240.0

X= Region (16 regions allowed)

Y= States/Territories (256 States /Territories allowed)

Z= host (4096 hosts allowed)

4. ACTION BY THE MEETING

4.1 Based on the proposal above, the ACP WGI is invited to provide feedback on the following:

- a) the IPv4 address structure contained in the proposal (dimensioning and allocation of fields)
- b) the possibility to use this IPv4 private plan on a global basis during the transition phase to an IPv6 addressing plan,
- c) Any information/ advances on IPv6 addressing scheme, and
- d) Any other comments in this respect.

- END -