



International Civil Aviation Organization
CAR/SAM Regional Planning Implementation Group (GREPECAS)
CNS/ATM Subgroup
Coordination meeting of the ATN ground-ground and ground-air applications project
(Lima, Peru, 19 to 20 May 2010)

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

d) IPv6 addressing Plan

(Presented by Argentina)

SUMMARY

This working paper presents a proposal for IPv6 addressing scheme according to the requested during ATN/TF/5.

References:

- ATN / TF5 Fifth Meeting of the ATN Task Force;
- RFC 2374 IPv6 Global Unicast Address Format;
- RFC 2460 Internet Protocol v6 Specifications;
- RFC 3306 Unicast Prefix-based IPv6 Multicast Address;
- RFC 3307 Guidelines for IPv6 Multicast Addressing; and
- RFC 3513 IPv6 Addressing Architecture.

1. Introduction

1.1 During the Fifth Meeting of ATN/TF5 our Administration was assigned the task of conducting the necessary studies to define a routing scheme using the Internet Protocol version 6 (IPv6).

2. Actions

2.1 For the present study took into account requests for comment (RFC) which are a series of articles on the Internet that began publication in 1969. Each individual is a document whose content is a formal proposal for a new internet protocol network, which is explained in detail so that in case of acceptance can be implemented without ambiguity.

2.2 Anyone can submit a proposal for RFC to the Internet Engineering Task Force (IETF), but it is this that ultimately decides if the document becomes an RFC, or not. If it is interesting enough, can become an Internet standard. Each RFC has a title and an assigned number, which can not be repeated or deleted although the document is obsolete.

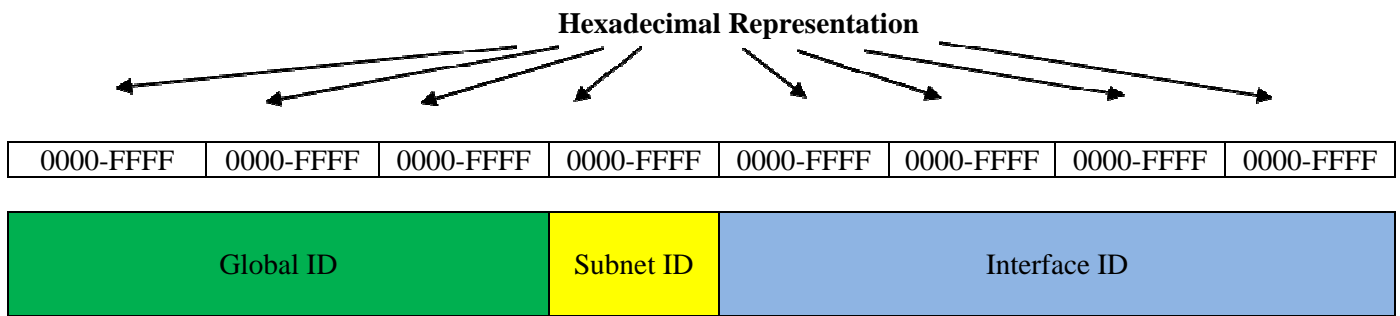
2.3 There are several categories and can be informative (if it is simply to assess the implementation of such a protocol), proposals for new standards, or historical (when they become obsolete by newer versions of the protocol described).

2.4 Before a document is treated as a RFC, must follow a strict process to ensure quality and consistency. When it succeeds, it's almost a formal protocol that probably few objections interposed, so that the meaning of his name as a request for comments has been virtually obsolete, since the criticisms and suggestions are produced in earlier stages. Anyway, the name of RFC remains for historical reasons.

2.5 For the study took into account:

- 2.5.1 RFC 2374 IPv6 Global Unicast Address Format.
- 2.5.2 RFC 2460 Internet Protocol v6 specifications.
- 2.5.3 RFC 3306 Unicast Prefix-based IPv6 Multicast Address.
- 2.5.4 RFC 3307 Guidelines for IPv6 Multicast Addressing.
- 2.5.5 RFC 3513 IPv6 Addressing Architecture.

IPv6 ADDRESSING SCHEME POLICY



REFERENCES

- Global ID (48 bits)
- Subnet ID (16 bits)
- Interface ID (64 bits)

2.6 Once understood the general regulatory addressing scheme in IPv6 proceed to present the following proposal addressing:

PROPOSAL IPv6 ADDRESSING SCHEME FOR ATN

2009	0000-FFFF	0000-FFFF	0000-FFFF	0000	0000	0000-FFFF	0000-FFFF
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Example

2009	00BF	0012	001A	0000	0000	0000	003C
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Zeros Simplification

2009	BF	12	1A	0	0	0	3C
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IPv6 Address

2009:BF:12:1A:0:0:0:3C


REFERENCES:

2009 Start year (Proposal)

 Region

 State / Organization / Territory

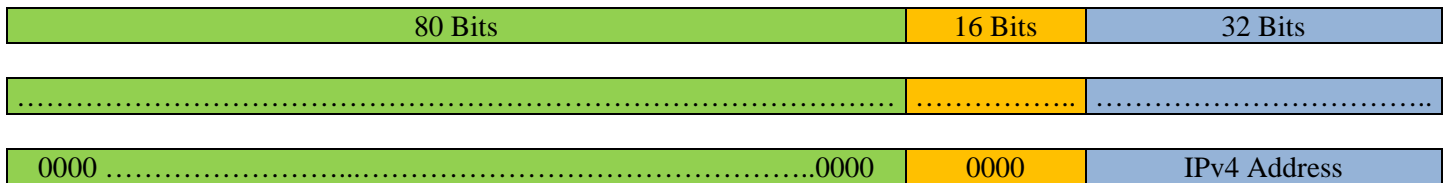
 Subnet types (AMHS, Radar, MET, etc) (8 bits)

 Interfaces or Devices (16 bits= 1,84 x 10¹⁹)

2.7 In addition to compatibility with existing networks are presented in summary form, according to RFC 3513 (IPv6 Addressing Architecture), two proposals to encapsulate IPv4 over IPv6:

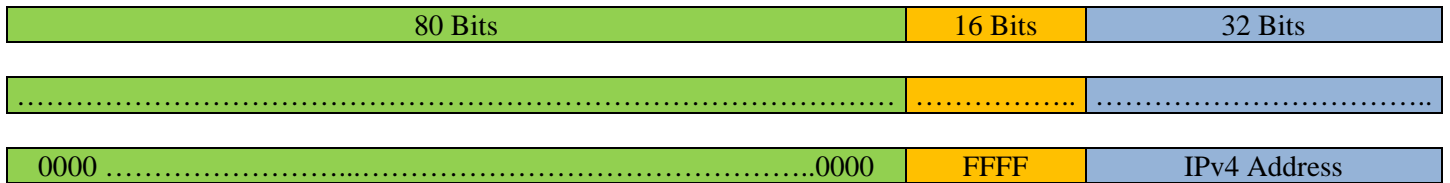
2.7.1 Option 1: "IPv4-compatible IPv6 address"

The IPv6 transition mechanisms [TRAN] include a technique for hosts and routers to dynamically tunnel IPv6 packets over IPv4 routing infrastructure. IPv6 nodes that use this technique are assigned special IPv6 unicast addresses that carry a global IPv4 address in the low-order 32 bits. This type of address is termed an "IPv4-compatible IPv6 address" and has the format:



2.7.2 Option 2: "IPv4-mapped IPv6 address"

A second type of IPv6 address which holds an embedded IPv4 address is also defined. This address type is used to represent the addresses of IPv4 nodes as IPv6 addresses. This type of address is termed an "IPv4-mapped IPv6 address" and has the format:



3 Suggested Actions

3.1 The meeting is invited to:

- a) Take note of the information presented in this paper;
- b) Analyze the proposed IP addressing scheme; and
- c) Provide comment or input.