CBOR tags for IPv4 and IPv6 addresses and prefixes

Abstract

This document describes two CBOR Tags to be used with IPv4 and IPv6 addresses and prefixes.

RFC-EDITOR-please remove: This work is tracked at https://github.com/mcr/cbor-network-address.git

Status of This Memo

This Internet-Draft is submitted in full conformance with the provisions of BCP 78 and BCP 79.

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This Internet-Draft will expire on 7 September 2021.

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1. Introduction

[RFC8949] defines a number of CBOR Tags for common items.

Not included are ones to indicate if the item is an IPv4 or IPv6 address, or if it is an address plus prefix length. This document defines them.

2. Protocol

These tags can applied to byte strings to represent a single address.

When applied to an array, the represent a CIDR-style prefix. When a byte string (without prefix) appears in a context where a prefix is expected, then it is to be assumed that all bits are relevant. That is, for IPv4, a /32 is implied, and for IPv6, a /128 is implied.

2.1. IPv6

IANA has allocated tag TBD1 for IPv6 uses.

An IPv6 address is to be encoded as up to sixteen-byte bytestring ([RFC8949] section, 3.1, major type 2), prefixed with tag TBD1. Trailing zero octets may be omitted.

An IPv6 prefix, such as 2001:db8:1234::/48 is to be encoded as a two element array, with the length of the prefix first:

  TBD1([48, h'20010db81234'])

2.2. IPv4

IANA has allocated tag TBD2 for IPv4 uses.

An IPv4 address is to be encoded as a four-byte bytestring ([RFC8949] section, 3.1, major type 2), prefixed with tag TBD2. Trailing zero octets may be omitted.

An IPv4 prefix, such as 192.0.2.1/24 is to be encoded as a two element array, with the length of the prefix first:

```
TBD2([ 24, h'C0000201'])
```

3. Security Considerations

Identifying which byte sequences in a protocol are addresses may allow an attacker or eavesdropper to better understand what parts of a packet to attack.

Reading the relevant RFC may provide more information, so it would seem that any additional security that was provided by not being able to identify what are IP addresses falls into the security by obscurity category.

4. IANA Considerations

IANA is asked to allocate two tags from the Specification Required area of the Concise Binary Object Representation (CBOR) Tags, in the ("1+1") area.

4.1. TBD1 - IPv6

Data Item: byte-string and array
Semantics: IPv6 or [IPv6,prefixlen]

4.2. TBD2 - IPv4

Data Item: byte-string and array
Semantics: IPv4 or [IPv4,prefixlen]

5. Acknowledgements

none yet

6. Changelog

7. Normative References

[BCP14]   Leiba, B., "Ambiguity of Uppercase vs Lowercase in RFC 2119 Key Words", BCP 14, RFC 8174, DOI 10.17487/RFC8174, May 2017, <https://www.rfc-editor.org/info/rfc8174>.

[RFC8949]   Bormann, C. and P. Hoffman, "Concise Binary Object Representation (CBOR)", STD 94, RFC 8949, DOI 10.17487/

RFC8949, December 2020, <https://www.rfc-editor.org/info/rfc8949>.

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