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**Transmission of IPv6 Packets over IEEE 802.11-OCB Networks**  
**draft-ernst-its-ipv6-over-80211ocb-00.txt**

Abstract

In this document the mapping of multicast IPv6 addresses to MAC addresses of 802.11-OCB is proposed.

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## [1.](#) Introduction

In this document the mapping of link-scoped multicast IPv6 addresses to MAC addresses of 802.11-OCB is proposed.

IPv6 protocols often make use of IPv6 multicast addresses in the destination field of IPv6 headers. For example, an ICMPv6 link-scoped Neighbor Advertisement is sent to the IPv6 address ff02::1 denoted "all-nodes" address. When transmitting these packets on 802.11-OCB links it is necessary to map the IPv6 address to a MAC address.

The same mapping requirement applies to the link-scoped multicast addresses of other IPv6 protocols as well. In DHCPv6, the "All\_DHCP\_Servers" IPv6 multicast address ff02::1:2, and in OSPF the "All\_SPF\_Routers" IPv6 multicast address ff02::5, need to be mapped on a multicast MAC address.

Other than link-scope addressing, it may be possible to conceive other IPv6 multicast addresses for specific use in vehicular communication scenarios. For example, certain vehicle types (or road infrastructure equipment) in a zone can be denoted by an IPv6 multicast address: "all-yellow-taxis-in-street", or "all-uber-cars". This helps sending a message to these particular types of vehicles, instead of sending to all vehicles in that same street. The protocols SDP and LLDP could further be used in managing this as a service.



It may be possible to map parts of other-than-link-scope IPv6 multicast address (e.g. parts of a global-scope IPv6 multicast address) into parts of a 802.11-OCB MAC address. This may help certain IPv6 operations.

## **2. Terminology**

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in [RFC 2119](#) [[RFC2119](#)].

OCB - Outside the Context of a Basic-Service Set ID (BSSID).

802.11-OCB - IEEE 802.11-2012 text flagged by "dot11OCBActivated". This means: IEEE 802.11e for quality of service; 802.11j-2004 for half-clocked operations; and 802.11p for operation in the 5.9 GHz band and in mode OCB.

## **3. Maximum Transmission Unit**

MTU is

## **4. Frame Format**

## **5. Stateless Autoconfiguration**

## **6. Link-Local Addresses**

## **7. Address Mapping -- Unicast**

## **8. Address Mapping -- Multicast**

An IPv6 packet with a multicast destination address DST, consisting of the sixteen octets DST[1] through DST[16], is transmitted to the IEEE 802.11-OCB MAC multicast address whose first two octets are the value 0x3333 and whose last four octets are the last four octets of DST.

```

+---+---+---+---+---+---+---+---+---+
|0 0 1 1 0 0 1 1|0 0 1 1 0 0 1 1|
+---+---+---+---+---+---+---+---+---+
|   DST[13]      |   DST[14]      |
+---+---+---+---+---+---+---+---+---+
|   DST[15]      |   DST[16]      |
+---+---+---+---+---+---+---+---+---+

```



A Group ID TBD of length 112bits may be requested from IANA; this Group ID signifies "All 802110CB Interfaces Address". Only the least 32 significant bits of this "All 802110CB Interfaces Address" will be mapped to and from a MAC multicast address.

Alternatively, instead of 0x3333 address other addresses reserved at IEEE can be considered. The Group MAC addresses reserved at IEEE are listed at <https://standards.ieee.org/develop/regauth/grpmac/public.html> (address browsed in July 2016).

## **9. Security Considerations**

the security section

## **10. IANA Considerations**

The Group ID for "All 802110CB Interfaces Address" is TBD.

## **11. Acknowledgements**

The authors would like to acknowledge Owen DeLong, Joe Touch, Jen Linkova, Erik Kline and participants to discussions in network working groups.

## **12. References**

### **12.1. Normative References**

[RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", [BCP 14](#), [RFC 2119](#), DOI 10.17487/RFC2119, March 1997, <<http://www.rfc-editor.org/info/rfc2119>>.

### **12.2. Informative References**

[ieee802.11p-2010]  
"IEEE Std 802.11p(TM)-2010, IEEE Standard for Information Technology - Telecommunications and information exchange between systems - Local and metropolitan area networks - Specific requirements, Part 11: Wireless LAN Medium Access Control (MAC) and Physical Layer (PHY) Specifications, Amendment 6: Wireless Access in Vehicular Environments; document freely available at URL <http://standards.ieee.org/getieee802/download/802.11p-2010.pdf> retrieved on September 20th, 2013."



## [Appendix A](#). ChangeLog

The changes are listed in reverse chronological order, most recent changes appearing at the top of the list.

From -00.txt to -00.txt:

- o first version.

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