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Well-Known Prefix for V4V6 Mcast Translation
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Abstract

This document reserves 2 Well known IPv6 Multicast prefixes for the usage of IPv4-IPv6 Multicast transition. These prefixes will be used to embed IPv4 group address as and when required.

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[1.](#) Introduction

As part of IPv4 to IPv6 migration, there are multiple standards developed for smooth transition for Unicast. Section 3 of [[I-D.ietf-mboned-v4v6-mcast-ps](#)] specifies different possible scenarios for IPv4 to IPv6 multicast transition as below,

1. IPv4 Receiver and Source connected over IPv6-Only network
2. IPv6 Receiver Connected to IPv4 Source through IPv4

- multicast access network and IPv6 Multicast network.
3. IPv6 Receiver and Source connected to IPv4-Only network.
 4. IPv6 Receiver and IPv4 Source.
 5. IPv4 Receiver and IPv6 Source.

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Section 3.6 of [[I-D.ietf-mboned-v4v6-mcast-ps](#)] identifies the use cases involving IPv4 source as highest priority.

There are also various solutions proposed (ex., [I-D.ietf-softwire-mesh-multicast], [I-D.ietf-softwire-dslite-multicast]) addressing the above use cases requirement which requires to embed IPv4 multicast address into IPv6 address. This IPv4-embedded IPv6 multicast address will be used as group address within IPv6 cloud.

There were multiple options considered and discussed and this draft is to document Well-known prefix option.

This document reserves 2 Well-Known prefixes from IPv6 Multicast address range which will be used for IPv4-IPv6 transition.

[2. Terminology](#)

(S4, G4)/(*, G4): (S, G) or (*, G) in IPv4 address format

(S6, G6)/(*, G6): (S, G) or (*, G) in IPv6 address format

SSM64PREFIX: Well-Known prefix reserved for SSM range IPv6 Multicast address as specified in [Section 3.1](#).

ASM64PREFIX: Well-Known prefix reserved for ASM range IPv6 Multicast address as specified in [Section 3.2](#).

[3. Well-Known Prefix](#)

This document reserves the below two address prefixes from

IPv6 Multicast address range for IPv4-IPv6 transition.

[3.1.](#) SSM64PREFIX Format

SSM64PREFIX is the prefix reserved from IPv6 SSM range represented as below,

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	8		4		4		8		8		16		48		32	
+	-----	+	----	+	----	+	-----	+	-----	+	-----	+	-----	+	-----	+
	11111111		0011		scop		00000000		00000000		WKP		0000~0000		V4-group	
+	-----	+	----	+	----	+	-----	+	-----	+	-----	+	-----	+	-----	+

Scop : Scope as specified in [[RFC4291](#)]

WKP : Set to 04E6 in hexadecimal format.

V4-group : IPv4 multicast group address

The textual representation of SSM64PREFIX will be as below,

FF3x:0:0:04E6::/96

[3.2.](#) ASM64PREFIX Format

ASM64PREFIX is the prefix reserved from IPv6 ASM range represented as below,

	8		4		4		8		8		16		48		32	
+	-----	+	----	+	----	+	-----	+	-----	+	-----	+	-----	+	-----	+
	11111111		0000		scop		00000000		00000000		WKP		0000~0000		V4-group	
+	-----	+	----	+	----	+	-----	+	-----	+	-----	+	-----	+	-----	+

Scop : Scope as specified in [[RFC4291](#)]

WKP : Set to 04E6 in hexadecimal format.

V4-group : IPv4 multicast group address

The textual representation of ASM64PREFIX will be as below,

FF0x:0:0:04E6::/96

[3.3](#). Text Representation

IPv4-embedded IPv6 Multicast address can be represented in text with IPv4 group address in dotted decimal notation or hexadecimal notation in conformity with [Section 2.2 of RFC4291](#).

Below are the example of text representation for ASM64PREFIX and SSM64PREFIX,

Well-Known Prefix	IPv4 address	V4-Embedded V6 group address
FF0x:0:0:04E6::/96	233.252.0.1	FF0X:0:0:04E6::233.252.0.1 (OR) FF0X:0:0:04E6::E9FC:0001
FF3x:0:0:04E6::/96	233.252.0.1	FF3X:0:0:04E6::233.252.0.1 (OR) FF3X:0:0:04E6::E9FC:0001

[4. Well-Known Prefix Usage](#)

This document doesn't propose any procedure to define the usage of the reserved well-known IPv6 Multicast prefix. Any solution proposed to solve the transition problem mentioned in [[I-D.ietf-mboned-v4v6-mcast-ps](#)] may use this reserved prefixes.

[5. Use Cases](#)

In this document, we also describe the behavior of one high priority scenario with above procedure.

[5.1. IPv4 Receiver and Source connected over IPv6-Only network](#)

This scenario simply known as 4-6-4 is shown below in Figure 1.

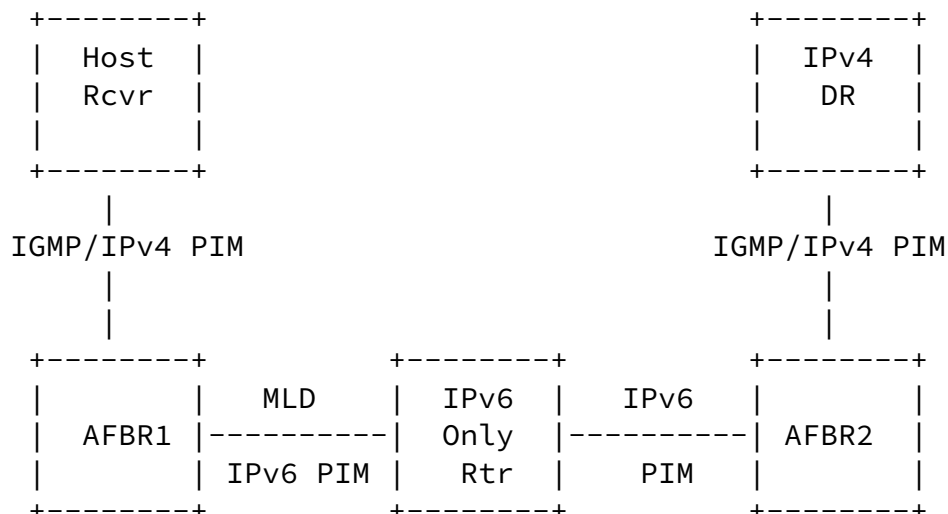


Figure 1: 4-6-4 Scenario

AFBR1 on receiving (S4, G4) or (*, G4) PIM Join or IGMP Report will perform the below,

1. If Upstream is IPv6 PIM neighbor and if G4 is from ASM range, should embed the IPv4 multicast group into last 32 bits of ASM64PREFIX and send PIMv6 JOIN towards remote AFBR.
2. If Upstream is IPv6 PIM router, and if G4 is from SSM range, should embed the IPv4 multicast group into last 32 bits of SSM64PREFIX and send PIMv6 JOIN upstream.

6. Security Considerations

This document reserves 2 IPv6 Multicast prefixes for Ipv4-IPv6 transition purpose. The same security considerations

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apply as those for [[RFC6052](#)]. This document doesn't introduce any new security issues.

7. IANA Considerations

IANA is requested to reserve 2 variable scope IPv6 Multicast prefixes for IPv4-IPv6 transition purpose. These should be the /96 prefixes;

SSM Range - FF3x:0:0:04E6::/96

ASM Range - FF0x:0:0:04E6::/96

[8. References](#)

[8.1. Normative References](#)

[RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", [BCP 14](#), [RFC 2119](#), March 1997.

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- [RFC4607] Holbrook, H. and B. Cain "Source-Specific Multicast for IP", [RFC 4607](#), August 2006.
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9. Acknowledgments

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