COIN
Internet-Draft
Intended status: Standards Track
Expires: December 9, 2019

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June 7, 2019

New IPv6 Multicast Address for Switch ML
draft-hsingh-ipv6-coin-ml-00

Abstract

Recently, in-network aggregation to scale distributed machine learning (ML) has been presented. A network switch implementation uses IPv4 broadcast messages from switch to the hosts to send updates to all workers. IPv6 does not support broadcast addresses. This document proposes, IPv6 implementations use the IPv6 link-local all-nodes multicast address to receive messages from a switch, until a new link-local multicast address is assigned by IANA for switch to hosts multicast communications for switch machine learning algorithms.

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1. Requirements Language

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].

2. Introduction

New computing in the network algorithms (https://p4.org/assets/P4WS_2019/Speaker_Slides/7_1145am_Jacob_Nelson.pdf), for IPv6, have a need for multicast communication between network switch and host worker nodes. This document proposes a new well-known multicast address be defined for such communications. Until a new address is defined, the link-local all-nodes multicast address may be used. By definition, a layer-2 switch operates in the link-local subnet. Thus, the IPv6 link-local address defined by this document suffices for switch to host multicast communications.

If a switch is configured in layer-3 mode, then IPv6 global multicast addresses will have to be used. Layer-3 mode of a switch is currently out of scope of this document.

3. Security Considerations

4. IANA Considerations

This document proposes to use "FF02:0:0:0:0:0:1:8" link-local multicast address for use by network ML. This multicast address name is Switch_ML_Host. An interface on the host MUST join this well-known multicast address.

5. Acknowledgements

Thanks (in alphabetical order by first name) to

6. 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, <https://www.rfc-editor.org/info/rfc2119>.

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