



I E T F[®]

IPv6 RA IPv6-Only Flag

<draft-ietf-6man-ipv6only-flag-04>

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Working Group Last Call



- Started on 6 September 2018
 - Many emails
 - Requests for implementations
- Thanks to Lee Howard for detailed review and everyone else's comments.
- Three new versions of draft published since IETF 102 intended to resolve issues raised in discussion and last call

Changes Since IETF102



- draft-ietf-6man-ipv6only-flag-02 (2018-August-14)
 - Added text to Section 9 to clarify that hosts not supporting this flag are not protected from IPv4-based attacks.
 - Editorial changes.
- draft-ietf-6man-ipv6only-flag-03 (2018-October-16)
 - Reorganized text about problem statement and applicability
 - Added note about shortage of flag bits
 - Clarified text about logging configuration error in Section 6
 - Editorial changes

Changes Since IETF102 (cont)



- draft-ietf-6man-ipv6only-flag-04 (5 Nov 2018)
 - Added text to Section 1 explaining why the mechanism is based on Router Advertisements.
 - Added text to Section 3 that for a VLAN, the IPv6-Only flag only applies to the specific VLAN on which it was received.
 - Changed Section 3 that administrators **MUST** only use this mechanism if they are certain that the link is IPv6-Only, instead of **SHOULD**.
 - Added ARP to Section 4 for protocols that the IPv6-Only flag applies to.
 - Renamed the IPv6-Only flag label from "6" to "S".
 - Added pointers to Section 7.2.7 of RFC4861 in Section 6.
 - Added that RFC4861 is also updated by Section 6 for routers implementing this flag.
 - Changed Section 7 from **SHOULD NOT** to **MUST NOT**.
 - Added Appendix A on implementations and testing.
 - Many small clarifications based on IPv6 list discussion and editorial changes.

Implementation and Testing



- FreeBSD Implementation by Bjoern Zeeb
 - <https://lists.freebsd.org/pipermail/svn-src-head/2018-October/119360.html>
 - ~100 lines of code
 - Tested with two FreeBSD IPv6 routers, a FreeBSD laptop on Ethernet and WiFi, and with Win10 and OSX clients
- Test using Scapy
 - <https://samsclass.info/124/proj11/proj9xN-scapy-ra.html>
 - Verified that setting this flag did not cause any adverse effects on Windows 10 and Android.

Issues Raised (1 of 2)



- Not needed because layer 2 filters sufficient
 - L2 filters may not exist on all links.
 - This is to inform hosts not to even try sending IPv4, so there is an incremental benefit
- Not needed because hosts can discover the lack of IPv4 services anyway
 - Hard to make discovery reliable, discovery process might cause other hosts to think there was IPv4 when it was just discovery traffic.
 - This is signal from Administrator that the link is IPv6-Only
- Could be done by DHCPv4 mechanism
 - Not if routers are IPv6 only; or if layer 2 blocks IPv4, or if no IPv4 services on link.

Issues Raised (2 of 2)



- Could be done by management protocol or DHCPv6
 - Management protocols not universal (BYOD devices, unmanged links, etc.)
 - RA is the only universal mechanism
- Host behavior suggested, not mandatory
 - Requirement is SHOULD, do this unless you have a good reason to not do it.
 - Administrator is saying the link in IPv6-Only
- Might cause interop issues among IPv4 hosts
 - Not an issue, the network admin has decided not to support IPv4!

Next Steps



- Authors think it is ready to advance
- Implementation experience shows it is feasible and doesn't disrupt legacy IPv6 implementations
- Next steps?



QUESTIONS / COMMENTS?