

# Recent Improvements in IPv6 Addressing

**Fernando Gont**



RIPE 81, IPv6 WG  
October 27<sup>th</sup> - 30<sup>th</sup>, 2020

# Auto-configuration Address/IID types

	Stable	Temporary
Predictable	IEEE ID-derived	None
Unpredictable	<b>RFC7217 (new)</b>	RFC 4941 <b>rfc4941bis (new)</b>

- **RFC7217** (“Stable-privacy addresses”)
  - Stable (per-network) addresses
  - Replaces traditional IEEE ID-derived IIDs
- **draft-ietf-6man-rfc4941bis**
  - Addresses issues in RFC4941

# RFC7217: implementation status

---

- There are multiple independent implementations
- Linux kernel v4.0
  - <http://www.spinics.net/lists/netdev/msg322123.html>
- NetworkManager v1.2.0-0.3.20151112gitec4d653.fc24
  - <https://blogs.gnome.org/lkundrak/2015/12/03/networkmanager-and-privacy-in-the-ipv6-internet/>
- dhcpcd 6.4.0
  - <http://mail-index.netbsd.org/tech-net/2014/06/04/msg004572.html>
- slaacd (OpenBSD)

# RFC7217: implementation status (II)

---

- At least (recent versions of) the following OSes ship with RFC 7217:
  - Mac OS
  - Ubuntu
  - Fedora
  - Raspbian
  - OpenBSD
  - FreeBSD
- **RFC7217 has already become mainstream**

# RFC4941: How it works

---

- Randomized IIDs with the following properties:
  - Randomized IID generated on a periodically (~TEMP\_PREFERRED\_LIFETIME)
  - Same IID employed for set of temporary addresses
- Configured **in addition** to SLAAC stable addresses

# RFC4941: Issues

---

- IID only changed on a periodical basis:
  - A roaming node reuses the same IID as time allows
  - Same IID also employed for multiple prefixes
  - Somewhat simple to correlate different temporary addresses of the same node
- Default TEMP\_VALID\_LIFETIME probably too long
  - Many concurrent addresses, and not that “temporary”
- Hosts not allowed to configure only temporary addresses
- All these issues being addresses a revised specification
  - draft-ietf-6man-rfc4941bis

# draft-ietf-6man-rfc4941bis: Implementation status

---

- **Linux kernel**
  - Committed to net-next in April 2020
- **slaacd(8)**
  - Last implementation bit committed to -current in March 2020
- **Freebsd kernel**
  - Patch submitted in April 2020 – **but not yet committed**
  - Care to help?

# Questions?



# Thanks!

---

**Fernando Gont**

**[fgont@si6networks.com](mailto:fgont@si6networks.com)**

**IPv6 Hackers mailing-list**

**<http://www.si6networks.com/community/>**



**[www.si6networks.com](http://www.si6networks.com)**