Introduction and goals (reminder)

- **Privacy, an increasing concern**
  - Layer-2 globally unique identifiers (MAC addresses) have been assigned to devices and are transmitted in the clear, for instance, in beacons, probe requests, or after association.
  - MAC addresses can easily be intercepted and used to track location or behavior.

- **Several projects in IETF, IEEE 802 and among mobile OS vendors to deal with plain-text, unique, permanent MAC addresses**
  - Assigning a random MAC address to a device per connection, per SSID, after some time period.
  - Area of extensive research (see reference Martin et al (2017) in draft for more comprehensive list of research in this area, or IEEE 802.11 RCM TIG final report in 11-19/1442r9, also in draft).

- **Goal of this draft: document Current State of Affairs regarding MAC address randomization**
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A taxonomy of MAC address selection policies

- **Per-Vendor OUI MAC address (PVOM)**
  - This form of MAC address selection is the historical default

- **Per-Device Generated MAC address (PDGM)**
  - This form of MAC address is randomly generated by the device, usually upon first boot. The resulting MAC address is stored in non-volatile storage and is used for the rest of the device lifetime

- **Per-Boot Generated MAC address (PBGM)**
  - This form of MAC address is randomly generated by the device, each time the device is booted
  - *Not* stored in non-volatile storage, does not persist across power cycles

- **Per-Network Generated MAC address (PNGM)**
  - This form of MAC address is generated each time a new network connection is created, stored and indexed per SSID

- **Per-Period Generated MAC address (PPGM)**
  - This form of MAC address is generated periodically

- **Per-Session Generated MAC address (PSGM)**
  - This form of MAC address is generated on a per session basis
<table>
<thead>
<tr>
<th>Android 10+</th>
<th>iOS 14+</th>
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</thead>
<tbody>
<tr>
<td>The randomized MAC address is bound to the SSID</td>
<td>The randomized MAC address is bound to the BSSID</td>
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<tr>
<td>The randomized MAC address is stable across reconnections for the same network</td>
<td>The randomized MAC address is stable across reconnections for the same network</td>
</tr>
<tr>
<td>The randomized MAC address does not get re-randomized when the device forgets a WiFi network</td>
<td>The randomized MAC address is reset when the device forgets a WiFi network</td>
</tr>
<tr>
<td>MAC address randomization is enabled by default for all the new WiFi networks. But if the device previously connected to a WiFi network identifying itself with the real MAC address, no randomized MAC address will be used (unless manually enabled)</td>
<td>MAC address randomization is enabled by default for all the new WiFi networks.</td>
</tr>
</tbody>
</table>
**Starting in Android 12, Android uses non-persistent randomization in the following situations: (i) a network suggestion app specifies that non-persistent randomization be used for the network (through an API); or (ii) the network is an open network that hasn’t encountered a captive portal and an internal config option is set to do so (by default it is not)**
Changelog

- **ietf-*/-00:**
  - Adopted version

- **ietf-*/-01:**
  - Addressed comments from Hai Shalom

- **ietf-*/-02:**
  - Move section 7 (OS current practices) to GitHub

- **ietf-*/-03, -04:**
  - Added section on taxonomy, removed BCP 14 terminology, other GitHub pull requests accepted

- **ietf-*/-05, -06:**
  - Title updated. Added new policy, Security consideration section
Next steps

- Document is ready
- Get reviews
  - from WG participants, WBA, IEEE and OS vendors
- WGLC?